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Donald G. Perrin, Executive Editor

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Editorial

Time to Learn

Donald G. Perrin

Paradigms of traditional education are being changed by Distance Learning. A new paradigm invalidates previous knowledge and demands assessment and validation for the new. Gaslight replaced candle light, electric replaced gaslight, and fluorescent lamps are now replacing incandescent tungsten. Each paradigm has distinctive properties and operates under its own set of rules. This occurred when the horse and carriage was modified to vehicles propelled by steam, gasoline, and other forms of energy. The Zeppelin became the airplane, space shuttle, etc..

Technology is changing the educational landscape. The slate transformed to pencil and paper, typewriter, copier, and computer. The chalkboard was enhanced with projected images, slides, films, and video. The spoken word was replicated by the phonograph, radio, cassette, and MP3 player. Discussion and role play were enhanced with interactive audio and visual media such as the telephone, language labs, two-way television, interactive multimedia, computer-based instruction, and the internet. Assessment, curriculum, library services, teaching, learning, and management have benefited from technologies that simplify or automate repetitive activities.

First level technologies emulate their predecessor, like the horse-less carriage. But technology offers new opportunities and form follows function. In education, we are moving from a factory model based on batch processing, typically 20-50 students at a time, to customized learning where a continual flow of interactive communications provide diagnostic and prescriptive data to optimize learning. In the factory model each student receives the same information in the same amount of time and learns differently. Under the new paradigm, each student receives customized learning programs where learning is the constant and time and instruction are the variables. A rubric monitors progress until the criterion level is achieved.

If what we learn is important, why accept a grade less than A? Would you buy a new automobile where reliability, performance, and safety was rated 90%? Automakers use quality control and provide a performance warranty for their product. Can education do the same?

Technology can customize and manage individual learning programs. Learning materials can be improved based on student feedback. Pre-produced lesson modules (learning objects) can adapt to individual student needs as learning is taking place. Materials can be improved with each iteration. Many repetitive tasks now accomplished by teachers can be automated and set the teacher free for tutorial assistance, individual help, and problem-solving.

There will always be a place for traditional teaching and sage-on-the-stage experiences. But as students assume greater responsibility for their own learning and the process is criterion based and results oriented, relevance and quality of learning for the masses will be greatly improved. We are no longer competing with a local, state or national standard. We are competing for jobs in a global economy, and the time to *get-ready* is now!

Editor's Note: This research links theoretical and empirical knowledge of learning to demonstrate best practices from both faculty and learner perspectives.

Best Practices in Graduate Online Teaching: Faculty Perspectives

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Abstract

Graduate online programs are readily available at colleges and universities. Faculty who teach online programs should be well versed in adult learning theories and effective online instructional practices. Therefore, understanding and identifying the best practices rooted in adult learning theory among online instructors is an important factor as a means to improve online instruction. This article reports on the findings of a self evaluation study of eight faculty members that compares the instructional practices supported by adult learning principles (Knowles, 1980, 1992) and effective online instructional practices (Graham, Cagiltay, Lim, Craner, & Duffy, 2001) that reflect the Seven Principles of Effective Teaching (Chickering & Gamson, 1987, 1999). Implications for facilitation of web based instruction and instructional design in higher education are provided.

Keywords: asynchronous learning, online teaching, adult learning theory.

Introduction

The number of online courses at the graduate level has expanded during recent years and continues to grow at a rapid rate. Allen and Seaman (2007) assert that online enrollments have increased at a faster rate than higher education enrollments in general. As a result, there is a great deal of pressure for faculty to develop courses and teach them online (Wilson, 1998) , However, many faculty members report limited professional development dedicated to helping them teach online courses (Tallent-Runnels et al., 2006). In fact, at most universities faculty are expected to make the leap from face-to-face classes to virtual ones with no significant training in effective online instructional practices (Wilson, 1998), even though instructors are aware of and express a need for training (Tallent-Runnels et al., 2006; Wilson, 1998) and training made a difference in their confidence as online instructors (Hinson & LaPrarie, 2005) Effective professional development would positively benefit faculty teaching online.

Another important consideration is the recipients of online teaching in higher education. Faculty members who teach adults online would benefit from applying adult learning theory to their practice (McCallie & McKinzie, 1999). Knowles (1990) used the term androgogy to refer to the unique aspects to teaching adults as opposed to children and adolescents. Adult learners, according to Knowles, need an orientation to learning that is grounded in life experiences, provides immediate application, is self-directing rather than teacher directed, and allows for mutual inquiry. In fact, building a sense of community among students in virtual environments is an essential component of online instruction (Palloff & Pratt, 1999; Rovai, 2001). Thus, instructional practices that promote active engagement through involvement of the lives of the learners, immediate application of learning, and mutual problem solving are necessary when teaching adults in an online environment.

This paper presents data from a descriptive research study completed during spring 2008 designed to identify the best practices among faculty who teach in the Master of Science in Instructional Design and Technology (IDT) program. The IDT program is an 18 month learning

experience in which adults from both business and education fields learn instructional design of online courses and training. The design, development, and implementation of the online courses within the IDT program are individualized by each instructor, but an advisory team that includes all faculty in the IDT program meet regularly to evaluate the program.

There are multiple ways to measure the effectiveness of online instruction (Comeaux, 2005; Moallem, 2005). In addition, the need to perform a self-evaluation study to determine the online instructional practices that are successful is strongly supported in the literature (Richlin, 2007; Rolheiser, 1996). This paper discusses a follow up study of a faculty self-assessment survey designed to examine the instructional practices of the IDT instructors. In recent years, the faculty described in this study had only assessed their practices from the students' point of view. Consequently, there was need for a faculty perspective.

Method

Participants

An eight member faculty team who instruct in the Instructional Design and Technology (IDT) program participated in this study. The instructors represent various departments (Secondary Education, Reading, Educational Leadership, Special Education, and Elementary and Bilingual Education Departments) within a College of Education at a four year public university in southern California. Five of the faculty who participated in this study have been instructing in the IDT program since its inception in 2001. The remaining three faculty members have experience teaching in higher education and have taught online courses for one to three years.

Data Collection

All participants were surveyed twice during this study. The initial contact was an online survey (see Appendix A) deployed using a web based survey tool. The survey was self-administered by the participants and responses were anonymous. A three week time period was provided to accommodate varying schedules among participants. All of the surveys (N=8) were completed and returned during the initial survey period. The questions were scored using a five-point Likert scale that permitted the participants to respond to each question posed within the survey.

The second phase of the data collection occurred during a scheduled faculty meeting. The participants completed an open ended survey (see Appendix B) formatted using Microsoft Word. The second survey consisted of 34 questions that investigated specific online instructional practices employed among faculty. The questions in the open-ended survey were based on the initial results of the first web based survey distributed in this study. The surveys were completed during the meeting; this strategy was implemented to increase the response rate. One hundred percent of the surveys were completed during the first and second data collection attempts.

The final phase of the data collection was collected via email by a focus group of four participants. The faculty responded to 10 questions based on the Seven Principles of Effective Teaching (Chickering & Gamson, 1987, 1999) that investigated their specific instructional practices online (see Appendix C). The data collected from the focus group was analyzed to determine the specific instructional strategies that are used to facilitate instruction online.

Survey One: Questions

The first survey distributed was designed based on an instrument intended to assess online facilitation (Van Duzer et al., 2007). The instrument consisted of five sections and 43 questions; each section included was identified by research as a primary role of a web based instructor (Berge, 1995; Hootstein, 2002). The sections included androgogical (adult learning), social, managerial, and technical aspects of facilitating online instruction in higher education. Each survey question was formatted using an online survey tool and a five-point Likert scale was

added to facilitate scoring among participants (see Appendix C).

- Section 1: Technical Aspects of Course Preparation
- Section 2: Social Aspects
- Section 3: Communicating Clear Expectations
- Section 4: Engagement Strategies and Motivation
- Section 5: Instructional Practices

Section One contained six questions and was focused on the technical aspects of course preparation. As noted by Gibbons and Wentworth (2001) faculty who instruct online are presented with challenges including course design and integrating androgogical principles to self directed learners. The facilitation process varies from the traditional instruction in universities and requires faculty development.

The second section of the survey investigated the social aspect of instructing online. The questions focused on social forums, networking opportunities, as well as student and faculty introductions. As characterized by adult learning principles, adults excel in an environment that is both independent and interdependent (J. Brooks & G. Brooks, 1993; Knowles, 1980, 1992). The interdependency of the adult learner permits students to work effectively in a group and online environment. Understanding these specific characteristics about adult learners is imperative to teaching online courses and providing opportunities for students to interact socially in a virtual classroom.

The next survey section consisted of six questions and about communicating expectations and assisting students with technical difficulties within the online environment. As noted by Chickering and Gamson (1987, 1999) instructors should provide clear and consistent expectations for students to promote effective learning. Assessing the specific practices that faculty use to promote course expectations is essential to identify.

Section Four, focused on social considerations of online instruction and included eight questions. The questions included netiquette guidelines, engagement strategies, and providing motivation and encouragement for students. Knowles (1984, 1992) and Kimble (1999) affirm that adults have a propensity to be self-directing and possess life experiences thereby establishing their priorities. Providing a learning environment that promotes engagement and provides students opportunities to remain motivated about their learning lends itself well to online learning and adult instructional strategies.

The final section dealt primarily with specific instructional practices and had 14 questions. Section Five addressed androgogical principles associated to teaching adults in an online environment. As indicated by Graham, Cagiltay, Lim, Craner, and Duffy (2001), the Seven Principles of Effective Teaching (Chickering & Gamson, 1987, 1999) may be applied as guidelines to evaluate online instruction.

As represented in Table 1 below, the principles outlined by Chickering and Gamson (1987, 1999) serve as a model for the evaluation guidelines created by Graham et al. (2001). Each principle can be applied to the online instructional environment to reinforce the effective teaching principles. This study compares the research findings and instructional practices among faculty to this criteria on good practices, online evaluation guidelines, and the adult learning theory.

Table 1

Seven Principles of Effective Teaching (Chickering & Gamson, 1987)	Principles Applied to Evaluating Online Courses (Graham et al. 2001) Lessons for online instruction:
Principle 1: Good Practice Encourages Student-Faculty Contact	Instructors should provide clear guidelines for interaction with students.
Principle 2: Good Practice Encourages Cooperation Among Students	Well-designed discussion assignments facilitate meaningful cooperation among students.
Principle 3: Good Practice Encourages Active Learning	Students should present course projects.
Principle 4: Good Practice Gives Prompt Feedback	Instructors need to provide two types of feedback: information feedback and acknowledgment feedback.
Principle 5: Good Practice Emphasizes Time on Task	Online courses need deadlines.
Principle 6: Good Practice Communicates High Expectations	Challenging tasks, sample cases, and praise for quality work communicate high expectations.
Principle 7: Good Practice Respects Diverse Talents and Ways of Learning	Allowing students to choose project topics incorporates diverse views into online courses.

Survey Two: Questions

After responses from the initial data collection were analyzed, a series of open-ended questions were created to address the discrepancies among the respondents (Fink, 1995). The open-ended question format was used to explore reasons associated with the instructional practices among faculty. The second survey consisted of five overarching questions with five sub questions, for a total of 25 questions. The first question addressed the use of graphics as visual organizers to teach theoretical concepts. Multimedia use and integration was addressed in the second question. The third question investigated the use of learning choices provided for adult learners within the online environment. The next series of questions explored a central adult learning principle; learning choices and the freedom to select one's own group members. The final question set dealt with instructional practices and specifically the advantages and disadvantages of permitting students to submit working drafts.

Survey Three: Focus Group Questions

The data collection for the third survey was completed by four faculty who served as a focus group. The participants responded to an open ended set of questions based on the Seven Principles of Effective Teaching (Chickering & Gamson, 1987, 1999) and shared specific information about their instructional practices (see Appendix C). The data from the focus group was used to explicitly understand the daily online practices that faculty include in their teaching.

Results

Based on the principles of adult learning theory (Knowles, 1980, 1992) and the effective online instructional practices that reflect the Seven Principles of Effective Teaching (Graham et al., 2001) the IDT faculty identified the following instructional strategies as components of their teaching repertoire. The first principle states that good instruction encourages student-faculty

contact. The online evaluation criteria reveals that clear guidelines for interaction with students should be provided by the instructor.

As displayed in Table 2 below, the response rate IDT faculty members practice strategies that promote contact between students and instructors. Communication was accomplished in a variety of ways including maintaining a personal presence on the discussion boards, communicating effectively with students, establishing a positive rapport with the class and by modeling and monitoring appropriate and respectful exchanges among students and faculty. The specific methods used by faculty include emails, discussion board postings, telephone conversations, setting a tone letting students know that they were approachable. One participant noted, "Lets the students know that I care about their success." To communicate clear expectations faculty provide guidelines in the course syllabus that clearly state the netiquette expectations for the course.

Table 2

IDT Faculty Instructional Strategies that Reflect Principle One: Contact	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Provide a personal and welcoming introduction to develop a personal presence.	0%	0%	0%	0%	100%
Design a forum for students to post introductions and share experiences.	0%	0%	0%	0%	100%
Model discussion response behavior and tone. Use a conversational tone for responses that is inviting, personal, friendly, and encouraging.	0%	0%	0%	0%	100%
Communicate with students to maintain a positive rapport.	0%	0%	0%	0%	100%
Monitor discussions for respectfulness based on netiquette standards and University behavior policies.	0%	0%	0%	11%	89%
Communicate clearly, as measured by responses from students.	0%	0%	11%	22%	67%

IDT Faculty Instructional Strategies that Reflect Principle Two: Cooperation

The second principle identified by Chickering and Gamson (1987, 1999) involves encouraging cooperative among students. This principle is applied to the evaluation of online courses by signifying that faculty should create assignments that are well designed and meaningful. The design strategy promotes meaningful exchanges and collaboration among students (Graham et al., 2001).

Table 3

IDT Faculty Instructional Strategies that Reflect Principle Two: Cooperation	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Organize collaborative projects (small, large and dyads) to achieve strong social interaction.	11%	0%	0%	11%	78%
Assign groups or create a method for students to select groups before beginning group projects.	11%	0%	11%	78%	0%
Permit students to select their own group members.	0%	22%	11%	22%	44%

As specified by the responses in Table 3, a majority of IDT faculty achieve cooperative interaction among students by organizing collaborative projects that require students to participate in pairs and groups. Furthermore, students self select their group members, thereby promoting control and self regulation for students and their learning.

Participants were questioned about permitting students to self select their group members and peer evaluation the results were similar among the faculty polled. Six of the eight faculty reported that they allowed for students to select their groups. The results from the instructors regarding the peer evaluation process were varied. When asked for the benefits of peer evaluation, responses included the ability to grade accurately because of peer evaluations indicated who was contributing to the group work. Most instructors stated that the students were reluctant to critique the work or skills of a peer for fear of being evaluated in a negative manner themselves. One instructor noted that some students did not know how to provide effective feedback and their caused difficulties among the cohort. When asked about the accuracy of peer evaluations two of the faculty that the assessments provided accurate information about group participation. The remaining six faculty members commented that the results were not a reflection of the group work that transpired during the course assignments. Furthermore, an instructor added that providing students anonymous peer evaluations may increase the accuracy of responses and improve the peer evaluation process. At this time the anonymous peer evaluation process has not been field tested.

IDT Faculty Instructional Strategies that Reflect Principle Three: Active Learning

The third principle measured states that the instructor should encourage active learning within the course. This principle is reflected in the evaluation of online courses by providing students with the opportunity to present their course projects and assignments and receive input from their classmates. Online instruction that is active will promote engagement among students.

Table 4

IDT Faculty Instructional Strategies that Reflect Principle Three: Active Learning	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Respect and facilitate diverse talents and ways of learning.	0%	0%	0%	11%	89%
Invite and encourage students to complete a peer review of individual and group projects.	0%	0%	11%	56%	33%
Utilize specific teaching/learning strategies which promote self-directed learning.	0%	0%	0%	11%	89%
Focus discussions on specific issues and uses discussion questions and problems to actively engage students in the learning process.	0%	0%	0%	11%	89%

As revealed in Table 4, participants responded that they provide students with opportunities to learn content in a variety of ways thereby validating student's diverse ways of learning. Furthermore, faculty indicated that active engagement and focused discussion questions are used in the courses taught within the IDT program.

At the forefront of adult learning theory (Knowles, 1980, 1992) is providing opportunities for learners to make choices. In the second open-ended survey faculty were asked about the learning choices provided to online students. All of the instructors polled provided students with options, including the formation of groups, because it provides students with a sense control and ownership over their learning experiences. Furthermore, participants commented on increased

motivation and a heightened level of engagement as well as the commitment to the learning outcomes when students personalized their learning. Although 50% of the faculty members agreed that providing learning choices increasing their teaching workload, they assert that it was worth the time based on student learning outcomes and achievement. Students reported in course evaluations and directly to the instructor that they appreciated having choices in their learning. Instructors noted that students seem to find their courses worthwhile, meaningful, and applications to their professional needs. Additionally, instructors stated that having choices allows adult learners to add life experiences and their own perspectives, including career and sources into their assignments thereby meeting the needs of adult learners. As noted by two faculty, the process of allowing for flexibility of students choices in their learning took time initially, but after the system was created the time factor was reduced. As noted by one instructor, "When I allowed more diversity, I received products that were in some ways more difficult to grade equitably with products other students had completed. But at the same time they were outstanding." The use of rubrics is consistent among instructors when grading assignments that have been personalized by students. One participant commented that, "I began to publish my grading rubrics in the syllabus and told students that they just had to have all of the pieces listed on the rubric, but how they created those pieces was their decision." Active learning is also encouraged by engaging in weekly online activities where students are encouraged to apply the concepts learned. To increase active engagement instructors make learning personal, relevant to career and education, and meaningful to students.

IDT Faculty Instructional Strategies that Reflect Principle Four: Prompt Feedback

The next principle is related to timely feedback provided to students by the instructor. The feedback should be prompt and provide practical content. Faculty who teach in the IDT program report that they consistently provide students with practical suggestions, encourage open lines of communications, and do so in a timely manner. As revealed in this initial survey, the participants indicated that they strongly agree (89%) to agree (11%) with the statement that they promptly respond to student questions within the timeline established in the course syllabus.

Table 5

IDT Faculty Instructional Strategies that Reflect Principle Four: Prompt Feedback	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Provide feedback indicating areas in which the students have succeeded as well as areas that require further development in a timely manner.	0%	0%	11%	11%	78%
Provide practical suggestions to students to complete their work on time.	0%	0%	11%	33%	56%
Respond to student questions promptly--consistent with timeline for feedback stated in syllabus.	0%	0%	0%	11%	89%
Invite and encourage students to use online office hours and/or to make appointments.	0%	0%	22%	0%	78%

One faculty member commented specifically about feedback to groups she stated that:

Feedback is most extensive and labor intensive on group research papers. Students must submit a draft two weeks before the paper is due so I can guide the further development of the paper. I use track changes to edit students' writing and to make recommendations how to revise the content and coherency of the paper, and improve the quality of the paper.

The practices identified by IDT faculty are consistent with the criteria of good instructional practices, adult learning theories, and the guidelines for assessing online instruction. Prompt feedback to students is provided by email communication, discussion board forums designed specifically to respond to student questions, and telephone calls.

IDT Faculty Instructional Strategies that Reflect Principle Five: Time on Task

The fifth principle measured reflects the concept of time on task. As noted by Knowles (1980, 1992) adult learning principles, adults value the economy of effort and use their time effectively. Instructors should reflect time on task and promote learning that demonstrates the need to continue the learning process in the allotted time frame. The majority of faculty responded that they provide students with suggestions, integrate transitions between topics and aid in promoting times on task.

Figure 6

IDT Faculty Instructional Strategies that Reflect Principle Five: Time on Task	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Provide helpful, constructive suggestions to students to complete assignments	0%	0%	0%	22%	78%
Provide practical suggestions to students to complete their work on time.	0%	0%	11%	33%	56%
Create transitions from one topic to the next to help students recognize time on task.	0%	0%	11%	44%	44%
Utilize specific teaching/learning strategies which promote self-directed learning.	0%	0%	0%	11%	89%

As demonstrated within the responses, the faculty members' value time on task and use a range of strategies to promote this skill during the coursework. The transitions that instructors integrate into the online environment provide students with the information needed to shift from one topic to the next within the courses. The adult learning principles applied within the online courses reflect an understanding of the needs of students among faculty who teach for the IDT program. Participants added that to promote time on task they publish the course schedule and make it available to students online. Information pertaining to due dates, timelines, and scheduling is posted in the Announcements Section of the learning management system and emailed to students. One faculty added that she keeps students on task. She stated "I am clear about the penalties for late work." Instructors emphasize to students that assignments should be completed within the published time frame. Furthermore, the prevalence of rich and engaging online discussions required that students engage with the course materials on a substantive level each and every week. Participants also reported spending considerable amounts of time reading, responding, and following up with students in their courses.

IDT Faculty Instructional Strategies that Reflect Principle Six: High Expectations

The sixth principle identified by Chickering and Gamson (1987, 1999) is the need to express high expectations to students. There are numerous methods of communicating academic expectations in an online environment. Among those expressed by faculty are the implementations of rubrics that delineate the expectations for assignments, discussion board participation, and group collaboration.

Table 7

IDT Faculty Instructional Strategies that Reflect Principle Six: High Expectations	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Implement rubrics established in course design.	0%	0%	0%	0%	100%
Provide feedback indicating areas in which the students have succeeded as well as areas that require further development in a timely manner.	0%	0%	11%	11%	78%
Challenge the students by asking questions which apply to the readings and communicating high expectations.	0%	0%	0%	0%	100%
Determine areas in which students need to improve and notify students.	0%	11%	0%	33%	56%

Faculty reflected on their acceptance of drafts as one method of establishing high expectations for students. All participants stated that they permit student to submit drafts of written papers. Seven of the eight faculty commented that accepting drafts increases their workload, however the benefits outweigh the increased time. The benefits included an improved final product and enhanced student-teacher relationships. In contrast, when asked to list the disadvantages, instructors noted that a significant amount of time was added to their workload. In one case, the instructor felt frustrated to put in the extra time when students commonly ignore the feedback received. Furthermore, the same participant commented that they felt the students avoided performing their best because the draft would be submitted and they would receive feedback prior to the deadline. Four of the eight instructors initiated a peer evaluation as a method of reducing the editing workload on their part. While another three participants said that they were available to offer feedback on any assignment at any time. However, one of the instructors commented that they discourage students from submitting drafts of their work all together.

Alternatively, high expectations are communicated to students by faculty reviewing the components, deadlines, and standards for each assignment. One participant commented that she explains to students that the assignment is challenging and will require time and effort on their part to complete. Rubrics, specific to each assignment, are created and posted for students to review.

IDT Faculty Instructional Strategies that Reflect Principle Seven: Diverse Talents

As noted by Kolb (1984) different types of learning experiences appeal to individuals. Respecting the diverse needs of adult learners and providing students with a variety of learning experiences is an essential component that reflects good teaching practices. Faculty incorporate a variety of instructional strategies that allow for students to learn using varied approaches. The multimedia elements and the tutorials that are used in the online environment provide students with delivery modes that meet the needs of varied learning styles.

Table 8

IDT Faculty Instructional Strategies that Reflect Principle Seven: Respects Diverse Talents and Ways of Learning	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Provide detailed tutorial links and/or instructions on using the technology within the assignment information to help the students feel comfortable with the technology.	0%	0%	22%	33%	44%
Provide supportive information to support course content.	0%	0%	11%	0%	89%
Respect and facilitate diverse talents and ways of learning.	0%	0%	0%	11%	89%
Use illustrations and examples to clearly explain important concepts	0%	0%	22%	11%	67%
Incorporate multimedia resources regularly.	0%	22%	11%	44%	22%

As displayed in Table 8, faculty recognize the diverse learning needs of the students in the IDT program. Accommodations are made to meet the varying demands of adult learners and supportive information is provided. These strategies reflect the identified practices by Chickering and Gamson (1987, 1999), Graham et al. (2001) and Knowles (1980, 1994) that should be used in order to meet the learning needs of adults in an online learning environment. To show respect for diverse talents faculty shared that they allow students to customize assignment to meet their own needs. The diverse ways of learning is emphasize by instructors in the various methods that they use in their teaching including group communication, whole class interactions, and personal emails.

Faculty were asked about their use of graphics to clearly explain important visual and theoretical concepts. In response to this question 88% of those polled incorporate graphics into instruction to explain concepts. The types of graphics used varied and included tutorials, pictures from textbooks, screen captures, flowcharts and graphs. Three instructor's comments that they create their own graphics additionally web resources, including Multimedia Educational Resource for Learning and Online Teaching (MERLOT) were incorporated by several instructors. Overall, to determine which graphics were appropriate to use, faculty considered the needs of the students in relation to the lesson or concept covered. One participant explained that students responded positively to the use of graphics to explain concepts. In addition to providing graphics, all instructors agreed that they provide additional support to the understanding of theoretical concepts that include virtual chats, email, and telephone conversations with individuals to clarify any misconceptions.

Implications for Online Instruction

Several studies during the past decade comparing online learning with traditional classes have made the case for the viability of distance education. Generally, research findings indicate that there are few significant differences in students' satisfaction with the quality of their learning experiences online versus traditional classrooms as measured by assessment outcomes and students' perceptions of online learning (Maki, Patterson, & Whittaker, 2000; Tolmie & Boyle, 2000). However, Garrison and Anderson (2003) remind distance education faculty that they will

face continual challenges in the delivery of courses and programs in higher education. Primary among them is using distance learning to enhance inherently deficient existing practices such as lecturing and transforming educational transactions towards the ideal of a community of inquiry (p. xiv). To meet these challenges, administrators, faculty, and program developers are rethinking how knowledge is acquired, how expertise is defined, and how computer-mediated learning affects adult learners.

Palloff and Pratt (2003) urge distance learning providers to recognize the value of community building as a central means of facilitating learning because “collaborative learning and the reflective practice involved in transformative learning differentiate the online learning community” (pp. 16-17). By promoting and sustaining a sense of an online learning community among students faculty members can demonstrate our commitment to the seven principles of effective teaching (Chickering & Gamson, 1987, 1999). Though the environment may be a virtual one, students can still be welcomed into online classes as members of a learning community—a group that will be expected to provide support and guidance for one another as the group moves through a graduate program together. Significant research supports the notion that online learning communities are essential to the formation of effective online programs. As such, the development of a sense of community among our students is a tangible way that we as dedicated faculty members can help ensure that our students feel supported as they seek meaningful ways to engage with others in their online classes.

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Appendix A

Data Collection 1: Likert Scale Survey Responses

Directions: Please rate each questions based on your experiences teaching online courses. Scale: 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree	
This set of questions related to the androgogical and technical aspects of course preparation. Please rate each area as it applies to your course preparation guidelines. At the beginning of the semester, I:	
Review past course evaluations to determine if enhancements for instructional strategies as required.	1 2 3 4 5
Make enhancements to course design where necessary.	1 2 3 4 5
Check all media for proper display (broken images, video playback, etc.)	1 2 3 4 5
Test the course navigation for accessibility and correct any accessibility problems.	1 2 3 4 5
Update course to reflect new features of the course management software.	1 2 3 4 5
2. The next set of questions relate to the social aspect of online instruction. How much to you agree or disagree with each statement based on your current instructional practices. <i>During the course I...</i>	
Provide a personal and welcoming introduction to develop a personal presence.	1 2 3 4 5
Design a forum for students to post introductions and share experiences.	1 2 3 4 5
Respond to each student's introduction.	1 2 3 4 5
Encourage students to share photographs or other representations (e.g., avatars) of themselves.	1 2 3 4 5
Model discussion response behavior and tone. Use a conversational tone for responses that is inviting, personal, friendly, and encouraging.	1 2 3 4 5
Use humor sparingly and carefully.	1 2 3 4 5
Use emoticons to express jesting.	1 2 3 4 5
Invite and encourage students to use online office hours and/or to make appointments.	1 2 3 4 5
Add a social forum for non-class related topics.	1 2 3 4 5
3. The next set of questions relate to the adult learning and technical aspects of teaching online during the first week of the semester. <i>During the semester I...</i>	
Create an ice breaker activity related to a course key objective or concept.	1 2 3 4 5
Communicate with students to maintain a positive rapport.	1 2 3 4 5
Determine areas in which students need to improve and notify students.	1 2 3 4 5
Challenge the students by asking questions which apply to the readings and communicating high expectations.	1 2 3 4 5
Provide detailed tutorial links and/or instructions on using the technology within the assignment information to help the students feel comfortable with the technology.	1 2 3 4 5
Assist students with login/access difficulties.	1 2 3 4 5
Refer students to the help desk to assist with login/access difficulties.	1 2 3 4 5
4. The social considerations of online instruction include the following areas. Please rate how well you agree or disagree with each statement. I...	

Organize collaborative projects (small, large and dyads) to achieve strong social interaction.	1	2	3	4	5
Monitor discussions for respectfulness based on netiquette standards and University behavior policies.	1	2	3	4	5
Immediately contact students who posted inappropriate posts for explanation and clarification.	1	2	3	4	5
Immediately make disrespectful posts unavailable to the class at large.	1	2	3	4	5
Block disruptive students from class activity if behavior continues to conflict with University policy.	1	2	3	4	5
Use announcements to keep class current and personal. Announcements may include holiday wishes and real world social issues (e.g. Katrina) as well as course information.	1	2	3	4	5
Continue to maintain presence in discussion forums.	1	2	3	4	5
Provide individual messages (email, postings, announcements) of encouragement.	1	2	3	4	5
5. This section refers to instructional practices during the semester. I					
Provide supportive information to support course content.	1	2	3	4	5
Respond to student questions promptly--consistent with timeline for feedback stated in syllabus.	1	2	3	4	5
Provide practical suggestions to students to complete their work on time.	1	2	3	4	5
Detect and correct misconceptions.	1	2	3	4	5
Summarize discussions.	1	2	3	4	5
Assign groups or create a method for students to select groups before beginning group projects.	1	2	3	4	5
Provide feedback indicating areas in which the students have succeeded as well as areas that require further development in a timely manner.	1	2	3	4	5
Create transitions from one topic to the next to help students recognize time on task.	1	2	3	4	5
Communicate clearly, as measured by responses from students.	1	2	3	4	5
Respect and facilitate diverse talents and ways of learning.	1	2	3	4	5
Invite and encourage students to complete a peer review of individual and group projects.	1	2	3	4	5
Utilize specific teaching/learning strategies which promote self-directed learning.	1	2	3	4	5
Focus discussions on specific issues and uses discussion questions and problems to actively engage students in the learning process.	1	2	3	4	5
Implement rubrics established in course design.	1	2	3	4	5
Modify rubrics as needed to reflect assignment details.	1	2	3	4	5
Use illustrations and examples to clearly explain important concepts.	1	2	3	4	5
Provide helpful, constructive suggestions to students to complete assignments.	1	2	3	4	5
Incorporate multimedia resources regularly.	1	2	3	4	5
Provide students with assignment choices.	1	2	3	4	5
Permit students to select their own group members.	1	2	3	4	5
Provide students the opportunity to submit drafts of assignments.	1	2	3	4	5
This concludes the survey. Thank you for your input and your time.					

Appendix B

Data Collection 2: Open Ended Survey Questions

Recently, you participated in a survey of all IDT faculty in order to determine your instructional preferences. The following questions were designed to delve deeper into those issues.

1. Listed under the Instructional Practices section of the survey the question read:

I use graphics to clearly explain important visual and theoretical concepts.

- 1a. I incorporate graphics online to explain important concepts (e.g. graphics, pictures, video clips, flowcharts, graphic organizers, semantic maps, mind maps).

Agree Disagree

- 1b. I incorporate the following graphics:

- 1c. I obtain the graphics from:

- 1d. I use the following processes to determine which graphics to use:

- 1e. I provide alternatives, other than visual graphics, to teach the theoretical concepts (e.g. telephone calls, emails, chat).

Agree Disagree

2. Listed under the Instructional Practices section of the survey the question read:

I incorporate multimedia resources regularly.

- 2a. I incorporate multimedia resources into instructional practices.

Yes No

How many times during the term segment?

- 2b. I find it most beneficial to incorporate multimedia resources for the following purposes:

- 2c. I typically use the following multimedia resources (e.g. instructor created, web based resources, acquired from another source):

- 2d. I create assignments which require students to demonstrate competencies with multimedia.

Agree Disagree

Please provide an example of such an assignment.

3. Listed under the Instructional Practices section of the survey, the question read:

I provide students with learning choices (e.g. reading assignments, groups members, topics researched, self assessment, portfolios, create own choice).

- 3a. I provide my students with learning choices.

Agree Disagree

- 3b. I have experienced the following advantages with providing students learning choices:
- 3c. I have experienced the following disadvantages with providing students learning choices:
- 3d. If not, what influenced your decision to not allow learning choices?
- 3e. If yes, what was the result of you providing the choices to students?
- 3f. I find that most students select the same learning choice.
 Agree Disagree
- 3g. Students comment about having the opportunity to make a choice in their learning.
 Agree Disagree
Please explain your response.
- 3h. I believe that offering students learning choices creates additional work for me.
 Agree Disagree
- 3i. I believe that the additional work is worth your efforts based on student performance.
 Agree Disagree
Please explain your response.
- 3j. I believe that the online environment is conducive to offering learning choices as opposed to your experiences in face-to-face courses.
 Agree Disagree
Please explain your response.

1. Listed under the Instructional Practices section of the survey, the question read: I permit students to select their own group members.

- 4a. I permit students to select their own group members.
 Agree Disagree
- 4b. I require my students to evaluate their peers.
 Agree Disagree
- 4c. I believe that peer evaluations provide accurate information about a student's performance.
 Agree Disagree
- 4d. I have experienced the following advantages from incorporating peer evaluation on assignments:
- 4e. I have experienced the following disadvantages from incorporating peer evaluation on assignments:

5. Listed under the Instructional Practices section of the survey, the question read:

I permit students the opportunity to submit drafts on written papers.

5a. I permit students to submit draft(s) of complex written papers, projects, presentations.

Agree Disagree

5b. Accepting drafts of student work increases the time that faculty spend grading.
I believe that this is time well spent.

Agree Disagree

Please explain your response.

5c. I have experienced the following advantages associated with students submitting drafts:

5d. I have experienced the following disadvantages associated with students submitting drafts:

5e. I support students in achieving the goals of instruction by accepting drafts of work in progress and (what else do you do aside from accepting drafts)

Appendix C

Data Collection 3: Open-Ended Focus Group Questions

Questions Based on 7 Principles of Effective Teaching (Chickering & Gamson, 1987)

1. How do you encourage student-faculty contact?
2. How do you provide clear guidelines for interaction with your students?
3. How do you encourage cooperation among your students?
4. How do you create well-designed discussion assignments that facilitate meaningful cooperation among students?
5. What specifically do you do, in your online courses, to encourage active learning?
6. What types of projects do you incorporate into your online courses to promote active learning?
7. How do you provide prompt feedback to your online students?
8. How do you provide information feedback to students online?
9. How do you provide acknowledgment feedback to students online?
10. What specifically do you do, in your online courses, to emphasize time on task (deadlines)?
11. How do you communicate high expectations to your online students?
12. What challenging tasks do you provide for your students?
13. How do you praise students who submit quality work?
14. How do you show respect for diverse talents and ways of learning in your online courses?

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Editor's Note: This is not our traditional research article because it does express opinions. It deals with social responsibility. The focus of the paper is not "academic" as this concept is commonly used, but the author has provided sufficient research and reference. This paper is a clear message to the Internet, web-based community that our communication tools are compromised and our society victimized by misuse of these technologies. **Caveat Emptor!**

Social Networking Websites: Are They Safe Yet?

Bruce L. Mann
USA

Introduction

The situation in Social Networking Wbsites (SNWs) is serious - serious because the User-Generated Content (UGC) displayed on-screen is destroying users' lives;¹ serious too, because of the volume of users at risk from posting their content, without intervention by a Social Network Intermediary (SNI).² Hands-off legislation, toothless policy statements, unwilling SNI's, unknowing parents, and uncaring SNW members have conspired to invite impersonation, denigration, sexual or aggressive solicitation, cyber-bullying, and happy slapping to its members.

Social Networking Websites (SNWs)

In July 2006, the US Patent and Trademark Office accepted the application from Jonathan Abrams for 'Friendster', "a system, method and apparatus for connecting users in an online computer system based on their relationships within social networks".³ The patent application that had been filed 3 years earlier, explains:

*"...a computer system collects descriptive data about various individuals and allows those individuals to indicate other individuals with whom they have a personal relationship. The descriptive data and the relationship data are integrated and processed to reveal the series of social relationships connecting any two individuals within a social network."*⁴

Today there is no shortage of social networking sites in which to share personal information. Whereas some sites are open to anyone, others are restricted by age.⁵ In October 2007 Daksh Sharma published a list of online links to 350 social networking websites (SNWs), some

¹ Bergstrom, I. (2008). Facebook can ruin your life. And so can MySpace, Bebo... The Independent, <http://www.independent.co.uk/life-style/gadgets-and-tech/news/facebook-can-ruin-your-life-and-so-can-myspace-bebo-780521.html>

² Tofalides, M. & Orakwusi, L. (December 2007). User generated content: privacy issues, Data Protection Law & Policy, (4), 12, <http://www.e-comlaw.com>

³ OUT-LAW News (July 2006). Friendster patents social networking, <http://www.out-law.com/default.aspx?page=7092>

⁴ United States Patent & Trade Mark Office. June 16, 2003, Application No. 10/462,142, <http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HITOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=7,069,308.PN.&OS=PN/7,069,308&RS=PN/7,069,308>

⁵ Wikipedia (March 2008). List of notable social networking websites, http://en.wikipedia.org/wiki/List_of_social_networking_websites

generalist, others specialist.⁶ Many encourage their users to express themselves by providing free Internet applications for displaying their pictures, music and video, and for making personal annotations.⁷ Most are not exclusively regional. The San Francisco-based 'Bebo' for example, recently became the most-visited SNW from within the UK.⁸ 'Faceparty' is also a generalist SNW, though this one is based in the UK. 'ProfileHeaven' is a specialist site for teenagers based in Northeast England with a privacy policy that 'logs and shares non-personally-identifiable information with third parties to provide more relevant services and advertisements to members. User IP addresses are recorded for security and monitoring purposes.'⁹

The specialist UK-based SNW called 'MyFaveShop' looks something like the California site SecondLife without the avatars, where shoppers design their own web store, choose products to display in their store, and invite their FaveShop friends to shop there. The terms in MyFaveShop are opt-in, stating 'We will not share or sell your personal information, including your email address, with any third parties for marketing purposes without your permission.'¹⁰

London-based 'OSOYOU' is a shopping and socialising SNW for women, that seems to behave a little like an eBay auction site, OSOYOU 'uses personal data collected through their website for editorial and feedback purposes, marketing and promotion, statistical analysis of users' behaviour, product development, delivering products and services, providing customer support, customizing and improving the content and layout of the Website, completing business transactions, administering individual accounts and meeting government regulatory requirements such as sales tax collection. Monitoring Data may be used for internal or external purposes such as researching and identifying market segments and needs.'¹¹

In the German-based SNW 'iliketotallyloveit' users share their product ideas. Its Terms and Conditions state that 'this website uses Google Analytics, a web analytics service. Google Analytics uses "cookies", to help the website analyze how users use the site.'¹² The PEACD 2002 was the first Electronic Communications Directive in Europe to address the regulation of privacy-invading technologies such as cookies and spam¹³ though they predated their use in SNW's.

In the United States, the home of Facebook, the CAN-SPAM Act of 2003 has provided little protection against the use of cookies and spam, though here again the Act predated these imposters within a SNW. Facebook's 'Pulse Feature' for example, is inadequately represented as

⁶ Sharma, D. (October 2007) Social networking God: 350+ social networking sites. Mashable: Social Networking News, <http://mashable.com/2007/10/23/social-networking-god/>

⁷ comScore Inc. (September 2006). Leading user-generated content sites see exponential growth in UK Visitors During the Past Year, <http://www.comscore.com/press/release.asp?press=993>

⁸ comScore Inc. (August 2007). Bebo becomes the most visited social networking site in the UK, <http://www.comscore.com/press/release.asp?press=1571>

⁹ ProfileHeaven. (March 2008). Privacy policy, <http://www.profileheaven.com/index.php?do=privacy>

¹⁰ MyFaveShop. (March 2008). <http://www.myfaveshop.com/page/terms.html;jsessionid=FC127E598AC98CE6963F40366AB7FEB7>

¹¹ Ohmigod Limited (March 2008). OSOYOU privacy policy, <http://www.osoyou.com/info/privacy-policy.publisha>

¹² iliketotallyloveit (March 2008). Terms and conditions, <http://www.iliketotallyloveit.com/about/en>

¹³ Edwards, L. (2005). Articles 6-7 ECD; Privacy and Electronic Communications Directive 2002 – Canning the spam and cutting the cookies: Consumer privacy online and EU regulation, In Lilian Edwards (ed). The new legal framework for e-commerce in Europe. Chapter 2. UK: Hart Publishing.

‘that friend who always knows the latest band, movie or book. Someone who knows what you like and only recommends the good stuff.’¹⁴ What is unsaid here and should be clearly stated, is that these data may be used by companies to spam users with advertising. Used together in a SNW, the cookies and spam technologies collect the preferences of a SNW user, and then sends them advertisements of products and services that reflect the preferences - ideal for marketers perhaps, but a genuine nuisance for users who had joined-up just to ‘vent’.

Then in September 2007 Facebook Engineer Phil Fung announced that Facebook had expanded their ‘Search’ engine to make limited public search listings available to people who were not logged in to Facebook, ‘so that people could more easily find their friends on Facebook. Fung assured readers that Facebook was not exposing any new information, and you have complete control over your public search listing’.¹⁵ His assurances may have been cold comfort in the light of the ‘Facebook Principles’ page:

*Facebook may collect information about you from other sources, such as newspapers, blogs, instant messaging services, and other users of the Facebook service through the operation of the service (e.g., photo tags) in order to provide you with more useful information and a more personalized experience.*¹⁶

It seems to be only a matter of limiting your profile to specific users,¹⁷ consistent with the opt-out minimum (not an opt-in) in the CAN-SPAM Act – indeed, if in fact, users would read a lengthy document in a separate area of the SNW, which documented evidence shows they do not. Then – why don’t the owners do it for them?

As of 28 March 2008, Facebook had logged 98 million registered users, and was open to people 13 years of age. Facebook has what might be called a *carte blanche* version of Facebook’s Terms of Use, which states:

By posting User Content to any part of the Site, you automatically grant, and you represent and warrant that you have the right to grant, to the Company an irrevocable, perpetual, non-exclusive, transferable, fully paid, worldwide license (with the right to sublicense) to use, copy, publicly perform, publicly display, reformat, translate, excerpt (in whole or in part) and distribute such User Content for any purpose, commercial, advertising, or otherwise, on or in connection with the Site or the promotion thereof, to prepare derivative works of, or incorporate into other works, such User Content, and to grant and authorize sublicenses of the foregoing.¹⁸

When the feature in Facebook called ‘News Feeds’ is on, every action a user takes on his or her site is displayed to ‘their friends’ the next time those friends login. So what’s the problem? If these people were in fact, real friends, then news feeds and mini-feeds shouldn’t be a worry. However

¹⁴ Facebook Pulse, <http://www.facebook.com/s.php?q=Pulse&init=q>

¹⁵ Fung, P. (2008). The Facebook Blog, <http://blog.facebook.com/blog.php?post=2963412130>

¹⁶ Facebook Principles, retrieved 6 December 2007, <http://www.facebook.com/policy.php>

¹⁷ Bierdorfer (January 2008). Staying private on Facebook, New York Times, <http://www.nytimes.com/2008/01/17/technology/personaltech/17askk-001.html?ei=5070&en=9b745acf32897efb&ex=1201237200&adxnnl=1&emc=eta1&adxnnlx=1206288143-11dZ9eoG2siQ8rYFONN32Q&pagewanted=print>

¹⁸ Facebook Terms of Use, retrieved 15 November 2007, <http://www.facebook.com/terms.php>

these people are not real friends of the user. Some of the reasons why a user would befriend someone in a SNW19:

1. To be nice to people that they hardly know (like the folks in their classes)
2. To keep face with people that they know but don't care for
3. As a way of acknowledging someone they think is interesting
4. To look cool because that link has status
5. To keep up with someone's posts, bulletins or other such bits
6. To circumnavigate the privacy problem that they were forced to use by their parents
7. As a substitute for bookmarking or 'favoriting'
8. It's easier to say yes than no when they're not sure

Facebook's privacy officer Chris Kelly admitted that "after deletion there may still be a record in Facebook's archives that a user made a particular wall post in a group on a particular date, but Facebook's servers no longer contain the information needed to connect that user ID (e.g., name, e-mail address, networks, etc.) to the person associated with that account.' Privacy may have been achieved as of mid- February 2008.²⁰

Beacon, Facebook's advertising program uses its "News Feed" feature to share members' activities on third-party sites—went from an opt-out to an opt-in program within a matter of days due to a user uprising over privacy.

However, the monitoring of social networking sites for content that may interest employers in America, is now so routine that software is being put on the market that will automate the process.²¹

The Membership: Non Compus Mentis

Users of social networking websites invariably ignore or forget to read important instructions and feedback presented in text and other visual displays regardless of their intended function, unless they are explicitly told to do so.²² The consequence amounts to a clickwrap license that constitutes permission to release personal data to third parties,²³ a contract that effectively absolves those parties and the Internet Service Provider (ISP) (should they have had knowledge of the content) of any liability. This is all due to an act of omission on the user's part, *actus reus*.

¹⁹ Boyd, D. (September 2006). Facebook's privacy trainwreck: Exposure, invasion, and drama, Apophenia Blog. <http://www.danah.org/papers/FacebookAndPrivacy.html>

²⁰ Aspan, M. (March 2008). After stumbling Facebook finds a working eraser. NY: New York Times.

²¹ Bergstrom, I. (2008). Facebook can ruin your life. And so can MySpace, Bebo... The Independent.

²² In a recent example, see: Edwards, L. (2005). Articles 12-15 ECD: ISP liability – The problem of intermediary service provider liability, In Lilian Edwards (ed). The new legal framework for e-commerce in Europe. Hart Publishing, p.57. From the 1980's and 90's, see: Reinking, D. (1987). (Ed.), Reading and computers: Issues for theory and practice. NY: Columbia University. See also: Huff, C., & Finholt, T. (1994). Social issues in computing: Putting computing in its place. NY: McGraw Hill. For unintended effects, see: Wah, B.W. (Ed.). (2008). Wiley Encyclopedia of Computer Science and Engineering. Hoboken, NJ: John Wiley & Sons, Inc.

²³ Rambam, S. (2006). Privacy is dead - Get over it. The eighth ToorCon information security conference, Sept 30 - Aug 1, San Diego, Google video clip, <http://video.google.ca/videoplay?docid=-383709537384528624&q=Steven+Rambam+Privacy+Is+Dead&total=1&start=0&num=10&so=0&type=search&plindex=0>

Barring medical or psychological reasons, 'not thinking', *non compus mentis*, can be no argument for breach of confidence. This begs the question – why do they do it? The answer seems to be, to provide their personal data with 'context, context context'.²⁴ But at what expense? Clearly the time has come for the liability, or partial liability, to rest with the user and the intervening Social Network Intermediary (SNI). The position taken here therefore, is that any person who is intent on joining a Social Network Website (SNW) should be under a duty to take reasonable steps to protect their own personal data from being viewed, re-used, or sold, article 10 ECHR notwithstanding.

Privacies

The Charter of Fundamental Rights of the European Union recognises in Article 8 that (1) Everyone has the right to the protection of personal data, and that (2) everyone has the right of access to data which has been collected concerning him or her, and the right to have it rectified.²⁵ Children are big users of SNWs. Article 24 of the Charter states that (2) a child's best interests must be a primary consideration, and that (1) children shall have the right to such protection, and may express their views freely.²⁶

Social Network Intermediary (SNI)

Social Network Intermediary (SNI) would be best placed to assist new members to manage their privacies? However the legislation absolves them of any responsibility. 'The law actually gives intermediaries an incentive to be as little involved as possible in what goes on their web servers.'²⁷ For example, Directive 2000/31/EC²⁸

(42) The exemptions from liability established in this Directive cover only cases where the activity of the information society service provider is limited to the technical process of operating and giving access to a communication network over which information made available by third parties is transmitted or temporarily stored, for the sole purpose of making the transmission more efficient; this activity is of a mere technical, automatic and passive nature, which implies that the information society service provider has neither knowledge-of nor control over the information which is transmitted or stored.

(43) A service provider can benefit from the exemptions for "mere conduit" and for "caching" when he is in no way involved with the information transmitted; this requires among other things that he does not modify the information that he transmits; this requirement does not cover manipulations of a technical nature which take place in the course of the transmission as they do not alter the integrity of the information contained in the transmission.

(44) A service provider who deliberately collaborates with one of the recipients of his service in order to undertake illegal acts goes beyond the activities of "mere conduit" or "caching" and as a result cannot benefit from the liability exemptions established for these activities.

²⁴ Boyd, D. (September 2006). Facebook's privacy trainwreck: Exposure, invasion, and drama, Apophenia Blog. <http://www.danah.org/papers/FacebookAndPrivacy.html>

²⁵ Charter of Fundamental Rights of the European Union, Official Journal of the European Communities, 2000/C 364/01, Article 8.

²⁶ Charter, Article 24.

²⁷ George, C. & Scerri, J. (2008). Web 2.0 and User-Generated Content: legal challenges in the new frontier, Journal of Information, Law and Technology, http://go.warwick.ac.uk/jilt/2007_2/george_scerri

²⁸ Directive 2000/31/EC of the European Parliament and of the Council of 8 June 2000 on certain legal aspects of information society services.

(45) *The limitations of the liability of intermediary service providers established in this Directive do not affect the possibility of injunctions of different kinds; such injunctions can in particular consist of orders by courts or administrative authorities requiring the termination or prevention of any infringement, including the removal of illegal information or the disabling of access to it.*

(46) *In order to benefit from a limitation of liability, the provider of an information society service, consisting of the storage of information, upon obtaining actual knowledge or awareness of illegal activities has to act expeditiously to remove or to disable access to the information concerned; the removal or disabling of access has to be undertaken in the observance of the principle of freedom of expression and of procedures established for this purpose at national level; this Directive does not affect Member States' possibility of establishing specific requirements which must be fulfilled expeditiously prior to the removal or disabling of information.*

This chain of thought led to the legislative “safe harbor” or total immunity for ISPs and other online intermediaries provided in the USA by the Communications Decency Act 1996,²⁹ which imposed broadcast-style content regulations on an open, and decentralized Internet.³⁰

“One Internet Service Provider's representative explained his concerns as follows: We provide free anonymous access to the net to sexual abuse survivors. We don't even know who they are, nor do we care--a lot of them are hiding out...and to try and identify them would be an enormous breach of their trust, as they are depending on us for their anonymity... some of them are under the age of 18.... Sure, we could trace each and every one of them back to their providers, and find out who they are, but I'm not going to do it, and I'm perfectly willing to go to jail to protect their identities. My integrity is worth a whole hell of a lot more than any government law.”³¹

In 1997 the Communications Decency Act was struck down as unconstitutional by the US Supreme Court. The Child Online Protection Act 1998 (COPA) filled the gap, narrowing the range of material covered. COPA only limits commercial speech and only affects providers based within the United States. COPA requires all commercial distributors of "material harmful to minors" to restrict their sites from access by minors. "Material harmful to minors" was defined as material that by "contemporary community standards" was judged to appeal to the "prurient interest" and that showed sexual acts or nudity, a much broader standard than obscenity.

In 2002 the European Union Council adopted the new Privacy and Electronic Communications Directive as voted in the Parliament that added new definitions and protections for "calls," "communications," "traffic data" and "location data" in order to enhance the consumer's right to privacy and control all kinds of data processing.³²

²⁹ Edwards, L. (2005). Article 12-15 ECD: ISP liability - The problem of Intermediate Service Provider liability. In Lilian Edwards (eds.). *The New Legal Framework for E-Commerce in Europe* (pp. 93-136) UK: Hart Publishing. Also published in: Waelde, C. & Edwards, L. (April 2005). *Online intermediaries and liability for copyright infringement, A report to the WIPO Seminar on Copyright and Internet Intermediaries.*

³⁰ Staff (March 2008). *Communications Decency Act*, Center for Democracy and Technology, <http://www.cdt.org/speech/cda/>

³¹ Bernstein, B. (November 1996) *Beyond The Communications Decency Act: Constitutional Lessons Of The Internet*, Cato Policy Analysis No. 262, <http://www.cato.org/pubs/pas/pa-262.html>

³² Electronic Privacy Information Center and Privacy International (2003). *Privacy and Human Rights: Overview*, <http://www.privacyinternational.org/survey/phr2003/overview.htm#ftnref1>

Who should be liable for the risks of user-generated content in SNWs destroying users' lives? It's not likely to be the users themselves since most seem oblivious to the risks, or choose to ignore them. It's not likely to be the ISPs because there is too much data to censor. It's not likely to be the third parties who unabashedly use the data to send product information back the users, and worse. That leaves the program itself – the social networking website, which could be treated with more contextualized form of technical protection measure (TPM), that would, eventually, be circumvented by the users.

Privacy Policies in SNWs

An indication of recent media attention is evident in some SNWs and not others. Consider the differences between the Privacy Policies of 'Friendster' updated October 2007, and that of 'gURL' updated December 2004.

Table 1
Comparison of selected privacy factors in the Privacy Policies of three SNWs.

	gURL	Bebo	Friendster
Policy updated –	December 2004.	November 2007	October 2007
Child warning -	Yes. 'gURL may be unsuitable under 13'.	Yes. 'Under 13 cannot register in Bebo'. Also they recommend 13-17 yrs not to make visible any personal info w/o their parents permission.	No statement in Friendster.
Private data Opt-In / Opt-Out -	Must opt-out to get privacy in Profile. No data visible to non-members, visitors.	Neither, however there is a clear recommendation from Bebo not to share personal contact info. Opt-in to make invisible to non-members.	Two profiles – one 'public', one Friendster. Must opt-out to get privacy. Must opt-out to make invisible to non-members, visitors. Some data visible during discussions.
3rd-Party ads Opt-In / Opt-Out -	Must opt-out of special offers, affiliate emails. But can opt-in for 3rd-Party Ads.	Default is to receive affiliate emails and 3rd-Party Ads. Widget creation will also redirect web browser to 3rd-Party sites.	Must opt-out of weekly emails. Default is to receive affiliate emails and 3rd-Party Ads.
Internet awareness warning statement -	Yes	Yes	Yes.
No-SPAM notice	No.	Yes	Yes.

Bebo appears to be the safest to use. Children under 13 are not allowed to register, most options are opt-in, and the policy has been recently updated. Bebo and gURL recommend that members using their SNW can contact them in writing should they wish to refuse to receive direct marketing, in accordance with the Data Protection Act.³³ It is worth noting too, that Bebo

³³ Data Protection Act section 11.

representatives have been helping to draft a Good Practice Guide for Providers of Social Networking and User Interactive Services, at the Home Office in the UK. That said, some researchers have found that they had no difficulty setting-up profiles as 14 year olds in Bebo, and were subsequently exposed to pornographic material.³⁴ The Privacy Policies in Bebo may soon change toward a more commercialized service anyway, now that AOL has purchased Bebo.³⁵ This news coincides with that from Commission of European Committees on promoting data protection by Privacy Enhancing Technologies (PETS).³⁶ PET appears to be a technical protection measure that protects privacy, instead of preventing copyright infringement through downloading. Ostensibly privacy is protected through the reduction of personal data – a system of redacting private data. Some balance may be achievable.

Privacies Unmanaged

The general wording in Article 8 ECHR describes the right to respect for private and family life, home and correspondence. However in the context of SNWs, section 2 in Article 8 cuts both ways. On the one hand public authorities cannot interfere unless there is a matter of national security, public safety, etc. On the other, non-interference leaves the innocent, albeit verbose user, at the mercy of those who would use the digital evidence against the user. Add to this, article 10 ECHR such that any curtailment of a user's right to say whatever is on their mind, including disclosure of their own private information, is to deny their right to freedom of expression.³⁷ Barbara Lacey's (2007) dissertation research of Internet harassment, accounted for several potential consequences of unmanaged privacy:³⁸

- 'Denigration' is "dissing" someone online. Sending or posting cruel gossip or rumors about a person to damage his or her reputation of friendships.
- 'Cyber-stalking' is repeatedly sending messages that include threats of harm or are highly intimidating or engaging in other online activities that make a person afraid for his or her safety.
- 'Outing and Trickery' is sharing someone's secrets or embarrassing information online or tricking someone into revealing secrets or embarrassing information, which is then shared online.
- 'Flaming' is online "fighting" sending electronic messages using angry and vulgar language.
- 'Harassment' is repeatedly sending offensive, rude, and insulting messages.

³⁴ OUT-LAW News. (October 2006). Code of conduct proposed for social networking sites, <http://www.out-law.com/default.aspx?page=7298>

³⁵ OUT-LAW News. (March 2008). AOL buys Bebo in \$850m cash deal. <http://www.out-law.com/default.aspx?page=8936>

³⁶ Commission of European Committees. (March 2007). Communication from the Commission to the European Parliament and the Council on promoting data protection by Privacy Enhancing Technologies (PETS), 228. final.

³⁷ European Court of Human Rights (2003). Convention for the Protection of Human Rights and Fundamental Freedoms, Articles 8 and 10.

³⁸ Lacey, B. (May 2007). Social aggression: A study of Internet harassment. A dissertation for the Ed.D. in Educational and Policy Leadership, Hofstra University. 242 pages.

- 'Impersonation' is breaking into someone's account, posing as that person and sending messages to make the person look bad, get that person in trouble or danger, or damage that person's reputation or friendships.
- 'Exclusion' (Cyberostracism) is intentionally excluding someone from an online group, like a "buddy list" or a game.

Privacies Unmanaged: Sexual Solicitation

Despite the rise of social networking sites such as MySpace, fewer young people are being sexually solicited online than five years ago.³⁹ In two US telephone surveys of a random sample of 1501 youth aged 10 through 17 years who were regular Internet users, Wolak and associates compared the results of interviews in 2000 with those 5 years later in 2005. Table 2 shows a comparison of online victimization of youth in the United States over five years.

Table 2
Comparison of online victimization of US youth over five years.⁴⁰

	<u>2005</u>	<u>2000</u>
Unwanted exposures to sexual material and online harassment	more	less
Receiving unwanted sexual solicitations.	less	more
Saw sexual material online they did not want to see	34%	25%
Exposure to unwanted sexual material occurred despite increased use of filtering, blocking, and monitoring software in households of youth Internet users.	55%	33%
Online harassment	9%	6%
Received unwanted sexual solicitations	13%	19%
Aggressive solicitations	4%	3%

Privacy Unmanaged: Cyber-Bullying and Happy Slapping

Evidence of cyber-bullying in a SNW is a harassing or humiliating text message directed at one member of the SNW to another. The object of the attack is often a child, preteen or teenager, who is bullied, harassed, humiliated, threatened, embarrassed, or targeted in some way by another person (often another young person) through the use of Internet or cell phone.⁴¹ An extended form of cyber-bullying is a video clip in a SNW showing a person undressing in front of their web cam. The cyber-bully has enticed or threatened a peer to strip-off their clothes in front of a web cam, which later appears as video footage in a social networking website.⁴²

³⁹ Kornblum, J. (October 2006). Children less likely to encounter online predators, USA TODAY, http://www.usatoday.com/tech/news/internetprivacy/2006-08-08-kids-online-survey_x.htm

⁴⁰ Wolak, J., Mitchell, K., & Finkelhor, D. (2006). Online victimization of youth: Five years later. National Center for Missing & Exploited Children. Alexandria, VA, <http://www.unh.edu/ccrc/pdf/CV138.pdf>

⁴¹ Wikipedia (April 2008). Cyber-bullying, <http://en.wikipedia.org/wiki/Cyber-bullying>

⁴² Stromdale, C. (2007). Regulating online content: A global view. Computer and Telecommunications Law Review, 13(6), pg. 7

Happy slapping in a SNW is a video clip on a social networking website depicting one individual being swarmed by several others. The video depicts several youths 'hitting a random person (on the bus, walking down the street) whilst recording the act with a video camera phone. It's a very unfortunate London phenomenon. Attackers are usually 'yoots' (youths) and 'chavs'. Victims are usually boys around the same age as the attackers, but it's not unknown for victims to be older, or even women.⁴³ In one clip a 27-year-old man can be seen shouting into the camera of his mobile phone, "this is YouTube material" as he urinates on a disabled 50-year-old woman who lay dying in the street. The woman later died in hospital.⁴⁴

Second Life

Children and young adults are big users of Second Life as well. 'Second Life' is an interactive virtual reality playground that also fits the definition of a social networking website. Reporter Jason Farrell recently investigated child pornography in Second Life (Linden Lab) virtual environment and discovered an area called 'Wonderland' that was used by child abusers where 'child-like' avatars were offering sex.⁴⁵ Since Second Life is a user-created virtual environment, player interactions are not saved on the client computer. Home Secretary Jacquie Smith, in an interview with Farrell, said that she would be publishing a consultation paper to outlaw virtual imagery of child abuse used in virtual on-line worlds. Since then, Linden Lab has installed a verification system in place, and is experimenting with tracking players' interactions.⁴⁶ Nevertheless British police are going undercover in Second Life to investigate depictions of adult-child sex to track down pedophiles.⁴⁷

Conclusions

Several conclusions can be drawn from this critical evaluation of the relationship between privacy and the growing popularity of SNWs. First there must be someone assigned to interpret the risks of disclosing information about one's most private thoughts, interests, opinions, work and health status on a SNW, particularly in times of psychological distress or personal tragedy. This 'someone' could be and should be, the SNI, a logical choice under the circumstances. Some SNWs serve a critical need, for those in psychological distress or medical tragedy. Consider the recently opened SNW in the UK that enables cancer sufferers to share their experiences and knowledge about dealing with cancer.⁴⁸ But even here, especially here, user-generated medical content is grist for anyone with an account and a buyer for these details. Worried advocates of SNWs emphasize the need for individual responsibility when using social networking sites.

⁴³ Urban Dictionary (April 2008). Happy Slapping, <http://www.urbandictionary.com/define.php?term=happy+slap>

⁴⁴ Staff. (September 2007). Man admits urinating on ill woman, BBC News, http://news.bbc.co.uk/2/hi/uk_news/england/tees/7002627.stm

⁴⁵ Farrell, J. (October 2007). Perverts use virtual world for fantasies, SkyNews, <http://news.sky.com/skynews/article/0,,30100-1290719,00.html>

⁴⁶ Virtual World News (October 2007). Age Play Report Prompts UK Investigation of Second Life Pedophilia,, <http://www.virtualworldsnews.com/2007/10/age-play-report.html>

⁴⁷ Reuters, E (October 2007). UK to investigate pedophilia in virtual worlds, Reuters/Second Life > Blog, <http://secondlife.reuters.com/stories/2007/10/30/uk-to-investigate-pedophilia-in-virtual-worlds/>

⁴⁸ Staff (March 2008). Social networking site launches for cancer sufferers, Easier Media, http://www.easier.com/view/Lifestyle/Health_and_Fitness/Health/article-169879.html The 'What Now' SNW is located at <http://www.whatnow.org.uk/> and was launched by Cancerbackup, an information and support charity in the UK.

Developing responsible citizens occurs at the family level. Parents also need to be educated about how to teach their children to be responsible Internet citizens. The children in Lacey's study were asked for *their* advice on how to prevent or stop cyberspace aggression, which could include the importance of a parental role and control, confronting the bully, security online, raising awareness and education and password protection. A couple of responses were:⁴⁹

"I think that teasing online could be stopped by parents having more control over their children and watching what their children do on the computer. Also I think that there should be some kind of block on websites like myspace and chat rooms for households with children or even teenagers." (5th grade girl).

"Restrict cell phone and internet access to all unless agreement is signed to not tease. Punishment is banning from internet." (8th grade boy).

Second given the growing risk of identity theft and marketing CAN-SPAM to users of SNWs who appear to be oblivious to the risk of generating UGC, something must be done to alert the user the risks. Documented evidence of computer users ignoring privacy policies and terms of use, in a SNW is no excuse for acts of omission by the user. Scare tactics that work for habitual drunk drivers may be needed for habitual SNW users acting *actus reus*, such as television commercials showing users in jail and others who have lost their job as a result of the UGC they generated in a SNW.

⁴⁹ Lacey, B. (May 2007). Social aggression: A study of Internet harassment. A dissertation for the Ed.D. in Educational and Policy Leadership, Hofstra University. 242 pages. Listed at http://www.hofstra.edu/academics/Colleges/SOEAHS/FLPS/flps_dissertations.html

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Editor's Note: This paper focuses on teacher competency, skills, and reasons for integrating technology into the teaching-learning process. Without successful "training" in "technology-based" distance learning, many of the educational benefits for learners will not be realized.

Teachers' Perceptions of Teaching with Computer Technology: Reasons for Use and Barriers in Usage

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Abstract

This paper investigates the teachers' reasons for integrating technology into teaching and their barriers in using it for teaching. Semi-structured interviews were employed as the means for collecting data. The findings reveal that the majority of teachers who use technology in teaching are aware of the benefits of using technology and these benefits in fact become their main reasons for integrating it into teaching. The barriers mentioned by teachers are such as lack of knowledge and skills, lack of technical support and lack of rewards.

Keywords: Computer Technology, Integration, Reasons, Barriers, Benefits, Problems, Training, Institutional Support, Access, Incentives

Introduction

A large number of educational institutions in many parts of the world have exclusively begun introducing the integration of computer technology into teaching. Many also have invested millions of dollars only to procure the technical equipment for improving the quality of their academic programs (Li, 2007). It should not be a surprise that technology-based educational institutions often require higher fees from students than those which do not have similar facilities.

The use of technology in teaching such as World Wide Website, multimedia presentation tools and so forth can offer a number of benefits. First, it allows teachers to organize their teaching in an efficient manner (Achacoso, 2003). With technology, teachers can visualize the abstract concept and create the real world simulations. They not only help students understand the topic better, but they can save their time for explaining the abstract matters to students. Second, technology, the world wide web for example, provides teachers with a wide range of resources that are useful for their teaching (Li, 2007). If they have limited time for developing the teaching materials, they can directly go to the website and select any materials or topics that meet their needs. Usually, the already available resources can offer more than what may be needed by teachers. Technology can also help teachers develop networks with other teachers from different parts of the world who share similar interests or who have the expertise in certain field (Dirksen & Tharp, 2000). Network building can help teachers solve their teaching problems and, therefore, enhance their professionalism (Becker, 1999).

The benefits of technology integration, however, can only be attained if teachers know how to use the technology well, technically and pedagogically (Achacoso, 2003). In other words, the presence of technology does not automatically promote the benefits for teaching and learning (Owen & Eaton, 1999; Chu, 2000; Achacoso, 2003; Shaunessy, 2007). Technology such as computers, Ehrmann argues (1999,p.32), "do not have predetermined impacts. It is their use that influences outcomes". Many educational institutions that spend a lot of funding on technology, Ehrmann adds, believe that the mere presence of technology can automatically enhance teaching and learning quality. The result is limited success in their technology integration program.

Several researches have indicated that teachers' lack of knowledge and skills have become primary factors in failure of a computer technology integration program in the institution (Mouza, 2003; Young, 2004). Many teachers can only operate basic computer programs although the computers they use can provide them with more advanced facility (Doherty & Orlofsky, 2001). The lack of time is also often considered as a problem by teachers in their technology mediated teaching (Granger, Morbey, Lotherington, Owston & Wideman, 2002). They are often loaded with too many teaching hours or other activities outside their teaching responsibility, so they hardly have time to plan, prepare and develop their technology mediated teaching (Kathriner, 2007). In fact, preparing to teach with technology, Kathriner argues, usually requires longer time than the teaching without technology.

The absence of adequate help or technical support to facilitate teachers' technology mediated teaching is another factor which may hinder teachers' teaching. Granger et al. (2002), based on the findings of their study about factors contributing to teachers' success in implementing the technology mediated teaching, revealed that many teachers, when having some difficulties with the technology equipment being used, had to give up using it because there was no one available to help deal with the problems. According to the teachers, the institution did not have adequate numbers of technical staff who were prepared to support teachers in technology mediated teaching. Pelgrum (2001), in his study investigating teachers' obstacles in using technology, also identified that the lack of technical staff was considered by teachers as one of the main obstacles in their successful use of technology based pedagogy.

In summary, teachers play a significant role in ensuring the successful implementation of technology integration program in any educational institutions which invest in technology. The funding spent for technology investment will be ineffective if, in operation, teachers cannot optimally use the facility in their teaching.

Setting and Purpose of the Study

The study was conducted at a public technical college located at the Province of West Kalimantan, Indonesia. It was a small part of a larger study conducted investigating the issue of technology integration program in this institution. The institution, since a few years ago, has been transforming itself from traditional institution to technology-based institution. It now has a wide variety of technology facilities including wireless internet, LCDs in all classrooms, notebooks for all teachers, a computer laboratory, and so forth. The purpose of this study was to investigate teachers' reasons for using technology and barriers they faced in incorporating it into teaching. As argued, the investment in technology will be considered a waste of money if the facility cannot be optimally used by teachers (Achacoso, 2003).

Method

Instrument for Data Collection

Semi-structured interviews were used as the instrument for collecting data. Semi-structured interviews provide the researcher and participants with the opportunities to discuss some topics in considerable detail. In addition, the researcher can use cues or prompts to encourage the interviewee to consider the question further (Hancock, 1998). The questions asked in the interviews were meant to uncover information about teachers' reasons for using technology and the barriers they faced in integrating it into teaching. Each participant was individually interviewed at several locations such as the participant's home and office and one of the rooms in the institution. The interviews were tape recorded and transcribed.

Participants

Flyers containing information about the study were displayed on the notice boards in the institution in order to recruit the participants. As a result, ten participants were recruited. Their participation in this research is voluntary. Among all the participants, three were senior teachers who have worked for the institution for more than seven years, while the rest were junior teachers. The participants were also assured about their confidentiality. In line with that, in the reporting of findings, false names were used.

Research Questions

1. What reasons do teachers (at the State Polytechnic of Pontianak, Indonesia) give for integrating technology in their teaching?
2. What barriers do teachers have in the implementation of teaching with technology?

Findings

A number of themes emerged from the interviews. The themes which were connected to participants' reasons in using technology include the availability of facility, access to online teaching resources, communication with students, and building network with peers. Meanwhile, the themes under the barriers of technology integration were such as lack of computer skills, lack of technical support and lack of incentives.

Teachers' Reasons for Using Technology

The availability of technology facility. Most teachers mentioned that the main reason why they integrate technology into teaching is because they are provided with the facilities by the institution. In one instance, one of the teachers explained:

This institution has been very generous. Every teacher is provided with the latest model of laptop. I have been very lucky because if not given by the institution, I will never have my own laptop. So, there is no reason for me not to make use of it for my teaching (Agus)

Another teacher, mentioned:

'I have been working in this institution for nearly twenty years but I could only experience the teaching with technology in the last couple of years. In the past computers were only used by the bosses but now all teachers can use them. I am glad that we all now have our own computers and can use them for enhancing our teaching quality'(Inul).

The excitement of being provided with a technology facility is not only expressed by senior teachers but also by a number of teachers who joined the institution in the last two years. Yudi and Lilis, for example, said:

'We are just new teachers here but we are also provided with laptops for teaching just like other senior teachers. That is great'. Yudi further adds 'You know what... I have been fond of playing computers since I was a school boy. I will use this facility for teaching as often as I can'.

Access to online teaching resources. All participants agreed that with the internet facility they can access the online teaching materials easily. *'Most of my teaching materials are taken from the internet. Many of them are of good quality so all I need to do is just select them and choose the ones which are suitable for my students'* says Zul who teaches business economics in the institution.

Some participants mentioned that the internet or World Wide Web can provide them with up-to-date materials for teaching. for example Lilis who teaches English explains, *'I always find new and up to date materials that I can use for my teaching. One of my favorite websites that I always visit to access the online materials is www.tesol.org'*. For Ani, the internet has motivated her to

always upgrade her teaching materials. *'I always introduce new teaching materials to students ...all of them are obtained from the internet'*.

Improved communication with students. Several participants have also indicated that they use technology, the internet in particular, because they can develop better communication with students. Susan, for instance, asserts, *'I require my students to always check their emails because I usually inform them about all things related to the lesson via email'*. Another teacher also explains *'the students now do not need to come to me in person for discussing the class related issues. Today we usually communicate outside the class using online facilities'*(Anto).

Building network with peers. Most teachers participating in this study reported that making contact with other teachers with similar interests from different schools or colleges also motivate them to use technology. *'My best place to solve my teaching related problems is through discussion with other teachers from different colleges. Not only that, we also often share and exchange teaching materials to be used in our own college'* respond Ali who develops online communication group with other English teachers from different institutions.

Teachers' Barriers in Integrating Technology into Teaching

Lack of knowledge and skills. Despite their active use of technology into pedagogy, most teachers still feel that they lack adequate knowledge and skills for optimally integrating the facility into teaching. Susan, for example, admits, *'I frequently use technology to support my teaching but, honestly, I am only able to use basic computer programs such as email and Power Point. I never use other programs such as CMC or desktop teleconference. Knowing how to operate other advanced programs would be very useful, I think'*. Similar to that, another participant explains *'I actually expect that I can design my own website so that I can send all the teaching materials to it for access by students'*(Yudi).

Lack of technical support. Nearly all teachers complain about the shortage of technical staff in the college. They find this a serious problem that needs to be dealt with quickly by the institution. For Yudi, *'technical staff should be available before, during and after the class sessions'*. He believes that the ongoing unsolved technical matters *'can be a disaster for technology integration program in the institution'*. Other teachers such as Susan, Yosi and Taufik also comment that it is difficult for them to get help when they experience problems with the computers. *'Once I was about to start my teaching and I had difficulty in turning on the LCD...I tried to seek help but no technical staff was available at that time so at last I decided not to use the computer in my teaching'*(Yosi).

Lack of incentives. Throughout the interviews, the lack of incentives was repeatedly mentioned by several participants. They admit that there is no additional incentive provided by the institution for the innovations they have made. One of the teachers, for example maintains *'the main reason I use technology for teaching is because I like learning new things and I like technology...if I didn't I would be less likely to use it unless there are incentives for that'*(Rita). Another teacher seems to be unhappy with the situation. He states *'This college is rich. It can invest millions of dollars for technology investment but it does not appreciate its teachers who use technology and make innovations in their teaching ...how come there is no difference in amount of incentives received by teachers who use technology and those teaching without technology?'*(Taufik)

Discussion

The findings have revealed that the majority of participants are aware of the benefits of teaching with technology. They believe that the inclusion of technology into pedagogy can enhance their teaching quality. Zemsky and Massy (2004) assert that it can be a good indication of successful implementation of the technology integration program if teachers know about the benefits of

technology for teaching and make frequent use of it in their instructional activities. However, there are still a few other participants who only mention the availability of technology facility as their reason for integrating technology into teaching. Teachers who only have this reason as the basis for teaching with technology will usually gain very little from the program because they may not realize the extensive benefits that technology can provide to enhance their professionalism. They are only motivated by the institution's generous policy which provides them with the latest model of laptops. Teachers of this type usually know only very basic things about computer technology. In regard to this, Carnevale (2004) argue that if teachers know only very little about computers, the institution's investment in the facility may become less efficient.

The findings also suggest that teachers are faced with a number of problems or barriers in their teaching with technology. Most of these barriers are, in fact, directly linked to the institution's willingness to provide supports for teachers in addition to providing them with the technology facility. Several teachers mention that they lack the skills in operating computer technology. They can make use of the facility and feel the benefits of using it for their teaching but they also realize that they can even get more benefits if they have better skills in operating it. It is obvious that teachers need to be provided with technology training to help them become competent technology users. Keengwe (2007) contends that professional development in technology is essential for teachers. The program, he argues, needs to be aligned with the institution's plan to invest in technology. Similar to that, Mouza (2003, p. 274) maintains that training in technology is "a critical ingredient in effective use of technology in the classrooms".

The data indicate that lack of technical support is considered one of the major problems experienced by teachers in their teaching with technology. The technical support staff play a very important role in ensuring the success of technology integration program implementation. It is every institution's responsibility to make sure that teachers are provided with adequate technical staff who are prepared to assist teachers whenever they experience difficulties with the technical equipment. Diem (2000) argues that *'teachers who are supported are less likely to feel threatened and develop more positive attitudes toward technology'* (p. 495). Teachers should not "get frustrated when using technology" because, if they do, their teaching will be negatively affected.

Lack of incentives or rewards is also mentioned by the participants as a barrier. This component seems to be a small matter but its impact can be disastrous for the institution. Teachers need also to be supported financially for their attempts to successfully implement the institution's technology program otherwise they may not become motivated to introduce innovations in their teaching. Piotrowski and Vodanovich (2000) contend that the availability of adequate rewards or compensation is also important and may influence teachers' use of technology. Incentives or rewards, according to them, can stimulate teachers to be more innovative within their teaching. If teachers are not provided with adequate rewards or incentives, or if the compensation they receive is no difference from their conventional teaching, teachers may not be motivated to upgrade their skills in using technology for teaching (Khan, 1997).

The study interestingly did not record any information which indicated that lack of time was considered by teachers as the barrier in their teaching with technology. Many researchers suggested that lack of time was one of the major barriers faced by teachers (Granger et al, 2002 ; Kathriner, 2007). This could be the case because in this technical college teachers were only allocated twelve hours (in maximum) per week for teaching. So, they still have time to, for example, prepare, develop and deliver their technology mediated teaching.

Implications

There are a number of implications which arise as the result of this study. First, the institution has taken the right decision, to invest in technology. However, problems will emerge if such a decision is not followed by other initiatives such as sending teachers to technology training, supporting them with better rewards, and making sure that there are adequate numbers of technical staff for teacher support in implementing technology. All these factors or components are important to be considered and implemented otherwise the money spent for technology investment will be considerably less effective.

Second, the institution's leaders also play a very significant role in ensuring the success of technology implementation program. They need to know how teachers use technology in their teaching. By knowing this, they will then know what needs to be done in order to better support teachers in their teaching. If possible, the leaders also should be familiar with technology and be competent in using it. If they do, they will usually have a better sense about what may be lacking in the technology integration program in the institution.

Finally, it should be well understood that the availability of a good technology facility itself does not automatically impact positively on teachers' teaching performance. It is their ability to integrate it well in their teaching which influences the outcome.

Recommendations for Future Research

This study investigated teachers' reasons and possible barriers to using technology. Moreover, it only involved a small number of participants in an educational institution. Therefore, future similar studies which involve a larger number of participants and explore other issues such as teachers' frequency in using technology, students' perceptions' about teachers' teaching using technology and so forth need to be conducted.

The study looking at the role of leadership in facilitating the success of a technology integration program is also another possibility. There is not many research conducted on this issue. In fact, as argued earlier, leaders are key persons behind the success of program implementation.

The impact of using technology in teaching is also worth researching, especially looking at the differences between learner performance without competent use of technology and learners' performance following well designed and implemented technology.

Limitations

This study involved a small number of teachers in one institution. Results do not necessarily to technology integration programs at other educational institutions such as universities or schools. Some findings may be useful for future research or as a starting point for planning technology integration in other institutions.

This study was conducted within the framework of qualitative research and the interpretations of findings were subjective and influenced by the researcher's ability to make objective judgments. Quantitative studies should be conducted in a variety of circumstances to provide objective interpretation of data and generalized results to guide institutions and teachers in successful implementation of technology integration programs in the future.

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Editor's Note: Storage and retrieval of knowledge has been revolutionized by the printing press, copy systems, and more recently – computers. The explosion of knowledge has created extraordinary problems for storage and retrieval of information. Title-Author systems do not provide sufficient information; abstract-index systems were an improvement but slow to produce. Computers automated the production of real-time keyword indexes to facilitate instantaneous selection, retrieval, data processing, and electronic distribution of documents in full-text databases. This conceptual model was developed thesis and dissertations in Iran.

Electronic Thesis and Dissertations (ETDs) in E-Learning Environments: A Conceptual Model for Iran

**Sirous Alidousti, Maryam Saberi, Nader Naghshineh
Iran**

Abstract

Development of E-learning, as the outcome of the widespread application of Information and Communication Technology (ICT) in education, requires certain infrastructures including efficient management of educational and research information resources. Among these resources are theses and dissertations which are the product of research studies of graduate students. However, without a proper system for managing the information in these documents; obviously it would be difficult to develop e-learning at the graduate level. Such a system should make the production, organization, storage, retrieval, and dissemination of the information in electronic form possible. Therefore, in this article, after defining theses and dissertations and after introducing electronic theses and dissertations, their role in e-learning is explained and their current state in Iran is briefly discussed. Finally, a conceptual model for managing the information of theses and dissertations in Iran is sketched out.

Keywords: e-Learning; e-Education; Electronic theses and dissertations; Conceptual model; Information management

Introduction

The world is so rapidly changing that the future is basically unpredictable. This change has fundamental dimensions and nature and partly due to Information Technology (IT). During the last decade, this technology has had profound impact on various dimensions of learning and education. Nowadays, it is widely acknowledged that the methods of learning and education are affected by and closely associated with IT. Therefore, it can be predicted that technology will continue to play a significant role in all levels of education and learning in the future.

Information and Communication Technology (ICT) has provided genuine opportunities for educational institutes to open up, have access to new markets, and reap economic and educational benefits such as reduced time to introduce products to the market and greater opportunities for international cooperation. Unique capabilities of this technology bring fundamental changes to the social structure and in the way things are done. Educational institutes react to these changes and respond to opportunities and challenges that result from widespread application of this technology in education in universities. These institutions need to address the question of how the very nature of this technology may bring changes in different aspects of their organization and activities (Hanna and Latchem, 2002; Oh, 2003). E-Learning and education is one of the responses by universities to this question. E-learning is a form of distance learning presented through computer and more specifically through the Internet (Henderson 2003, 2; Clark and

Mayer 2003, 11). Such learning is rapidly expanding in universities and organizations and is believed to be the dominant form of education in the near future (Beaubien, 2002, 221-222)

However defined, e-learning is characterized by: (1) separation of place (location) and/or time between the teacher and the students, among the students, and between the students and the educational resources; (2) interaction between the teacher and the students, among the students, and between the students and educational resources through one or more media, especially via ICT; and (3) a process of teaching and learning not limited to the immediate time and/or space (Oh, 2003). With its unique features, such learning, offers exceptional benefits; the possibility of individualized and independent learning, facilitation of group learning, provision of virtual learning environment, learner support, flexibility in learning and teaching, and provision of appropriate tools of education for the instructor (Brindley 2005).

Libraries have been no exceptions in this regard and have been greatly affected by ICT, but the effect of this technology on libraries has been somehow different, since for long some individuals have been advocating the abandonment of traditional or paper-based libraries (Sapp and Gilmour, 2003). The increasing transformation of information environment to electronic environment (Scammell, 1997, 3) and the eye-catching expansion of ICT in the areas of information and library sciences (Abdoulaye and Majid, 2000; Bardley, 1997, 16-17; Kaku 1998, 49-50; McMurdo, 1997) has introduced a new kind of libraries called digital or virtual libraries, all parts of which are in electronic or machine-readable format (Oppenheim, 1997; Foster, 2000). Such libraries are counted as the major foundation of e-learning and education (Garten, 2005, 167). The role of libraries is, in fact, changing in the light of electronic and web-based e-instruction and are now held responsible for the major tasks of provision of digital resources like e-books, full-text databases, and real-time services in the electronic environment (Buchanan, 2005, 1261).

So far, one of the resources used in libraries, especially in university libraries, have been Master's Theses and PhD Dissertations (TDs). These resources have been recognized as major library resources and are considered of primary importance as research reference (Zhenglu & Yuntao, 2006). In fact, theses and dissertations are not only considered the first research experience of many graduate students, but also signs of the quality and status of education and research in universities. As well as reflecting the research level and areas of expertise and focus of research in universities (Zhenglu & Yuntao, 2006), these documents can help and guide researchers and students to initiate or accomplish further research projects. The significance of these documents on the one hand and the limitations of their print form in terms of availability or access on the other (Weisser and Walker, 1997), have contributed to the emergence of their electronic versions, known as Electronic Dissertations and Theses (ETDs) in recent years. Widespread attempts are currently under way to develop ETDs and to establish NDLTD⁵⁰ as well as ETD databases, all of which aimed at enhancing the acceptance, creation, access, application, expansion, restoring, archiving, and maintenance of electronic versions of TDs (Park, Zou, and McKnight, 2007).

However, without a proper TDs managing system which facilitates the production, organization, restoring, retrieving, and dissemination of their information, the development of e-learning at the graduate level will obviously face difficulties. Therefore, in this article after defining TDs and ETDs and describing the present status of ETD in Iran and other countries, a conceptual model of ETD information management system in e-learning environment has been presented.

⁵⁰ Networked Digital Library of Theses and Dissertations

Defining Dissertations and Theses

Theses and dissertations are Master and PhD research reports (Hussey and Hussey, 1997, 23; Easterby-Smith, Thorpe, and Lowe, 2002, 153). In the Iranian higher education system these documents are defined as:

1. **Theses:** reports of student research at the final stage of the master's level which is conducted under the supervision of a university teacher and whose acceptance by the committee of referees is a requirement of graduation at this level (Supreme Planning Council, 1993).
2. **Dissertations:** reports of student research at the PhD level which is conducted under the supervision of a university teacher and whose acceptance by a committee of referees is a prerequisite for graduation at this level (Supreme Planning Council (1993).

Electronic Thesis and Dissertation (ETD)

ETDs comprise a new generation of scientific documents which consist of audio-visual materials and are originally produced, organized, and presented to the user in the electronic format. In other words, ETDs are exclusively produced, organized, and managed by the application of the capabilities of ICT (Weisser and Walker, 1997; Fineman, 2003; Vijayakumar, Murthy and Khan, 2006). The Online Dictionary of Information and Library Sciences defines ETDs as theses and dissertations presented digitally rather than on paper. In this dictionary, ETDs are differentiated from TDs, which are presented on paper and usually converted to machine-read format after being scanned (Reitz, 2004).

Containing the research results of graduate students similar to the print version (Virginia Tech, 2003), ETDs are digital-born and their submission, access, and archiving is in electronic form from the outset (Weisser and Walker, 1997). Reduced costs, amount of paper, library space, and working hours in libraries, as well as raised standards of scientific research, enhanced provision of academic studies, faster access to information content of sources, the possibility of linking the theses/dissertations with the author's homepage or CV, and accelerated communication among researchers are considered as the main advantages and outcomes of these electronic resources (Yu Zhenglu & Yuntao, 2006, Vijayakumar, Murthy & Khan, 2006). Although most of these documents are presented only as texts, electronic media can be integrated to introduce additional features of multimedia, animation, and instructiveness in ETDs (Chatraverty, 2001). Electronic documents can, therefore, be provided without current limitations and can provide the author with the possibility of exploiting multimedia instruments in ETDs to dynamically present huge amounts of data, a possibility not previously available in print (Andrew, 2004).

Electronic Dissertations and Theses in Iran

Although most of the universities that offer graduate courses in Iran have various regulations for writing and designing dissertations and theses, the regulations are basically the same and the differences relate only to details. Theses and dissertations in Iran are predominantly in print form and in all universities they are compiled and presented in their print versions.

An investigation of the regulations of thesis and dissertation writing guidelines conducted in June 2006 at 11 major universities offering graduate courses demonstrated that four universities require their students to provide an Optic Disc along with the print version of their dissertations or theses: Iran University of Science and Technology (Iran University of Science and Technology Graduate Studies, 2004, 38 & 44), Khaje Nasireddin-e Toosi University (Khaje Nasireddin-e Toosi University Graduate Studies Office, 2004, 60), Amir Kabir University of Technology (Payam Bita Digital Library), and Tarbiat Modarres University (Tarbiat Modarres University,

2004, 101). Al-Zahra University, University of Tehran, Sharif University of Technology, Arts University, and Allameh Tabatabaee University did not mention electronic versions of TDs. Shaheed Beheshti University and Tarbiat Moallem University have not provided organized and written regulations for TDs, either. These regulations show that electronic versions of TDs have rarely been mentioned. The rare cases being confined to "Optic Discs" and "Floppy Discs", with no specification of format. Moreover, no section of the TD information management process – from production to distribution – is carried out electronically. However, a number of national and academic information centers have attempted to digitalize the print versions of TD, among which Iranian Scientific Information and Documents Research Center has been the most active. The research center has created a full-text database of TDs since 2001. By early 2006, about 73000 Farsi titles have been digitized and uploaded on this database.

It is worth mentioning that this research center and similar centers have only focused on converting TDs in the print versions after their production. In other words, so far no system of production and management of ETD has been created in Iran. The absence of such a system may hinder the development of e-learning at the graduate level. Therefore, in the next section a conceptual model of ETD information management system is presented as part of the infrastructure for the development of e-learning at the graduate level in Iran.

A Conceptual Model of ETD Information Management System In E-Learning Environment

System Functions

Information management system of ETDs performs the following main functions:

1. Providing electronic and online environments for production, evaluation, and confirmation of ETDs at universities;
2. Creating one of the infrastructures necessary for the development of e-learning at the graduate level;
3. Providing online national and international access to ETDs;
4. Providing additional services in line with the improvement of ETD quality.

System Levels

ETD Information Management System (ETDIMS) functions at four levels Level 1, which lies at the center of the model, includes creation of ETD. At this level ETDs are created by students under the supervision or advice of university teachers as part of the graduation process at the graduate level. At the second level of the model are universities which support and ultimately confirm the production of ETDs. This confirmation is regarded as the authentication of ETDs for the next stage as well as the endorsement of student graduation. At this level which involves the management of university ETD network, university libraries play a major role. The third level of the model is the national level which involves ETD management at the national level. Finally, at the fourth level, the national ETD network is linked to national networks of other countries and to the international ETD network.

The Conceptual Model

In the conceptual model of ETDIMS, six major entities are at work: policymakers, national ETD center, universities, ETD authors, national users, and international users.

This model is based on the management information received from the system. Policymakers designate and issue system policies that guide the fundamental activities of the system. ETD authors, including students and teacher advisors make up the next entity involved in this system.

Students conduct research within the suggested frameworks and under the guidance of university teachers and submit the outcome to the university as their theses or dissertations. To produce ETDs, authors employ a virtual environment which should be provided for them by this system. Moreover, in order to produce ETDs in such an environment the authors should receive the necessary education from the system and use the relevant guidelines and standards.

After receiving ETDs, universities restore them in their temporary ETD information databases and carry out the refereeing and confirmation process. Endorsed ETDs are submitted to the national ETD center and thereby transferred to the permanent ETD information databases. The national ETD center is responsible for ETD information management in this system.

Information users in this system logically fall into two categories of national and international users. The system presents the bulk of ETDs to the users and also educates them on the use of the information and services the system offers. Users can have access to the information and services in relation to their own information needs and access level provided to them by the system. The information and services include not only bibliographic information, abstracts, and ETD content but also other related information and services. International users of this system can be linked to the system in English.

In addition to databases for comments and temporary and permanent ETD information, the system contains "related information", "people", and "universities" databases as well as other helpful information that serve the functions of the system.

Subsystems

The ETD Information Management System has a number of main subsystems:

- 1. Education.** The success of the system depends on ETD production and use. Therefore both ETD authors and users of ETD information and services should be able to operate within its framework. This capability is partly attained through education. This education involves helping students and teachers with producing ETDs, universities with managing and endorsement, university libraries with managing the university ETD networks and users with using the system information and services. This subsystem generally is in action to enhance computer and information literacy and to help users in using the system and in various troubleshooting.
- 2. Virtual shelf.** This subsystem provides professors with the facility to archive ETDs in the production of which they were involved in a virtual environment and to employ facilities such as having direct access, making notes and comments in the margin and the like.
- 3. Virtual office.** The office is a virtual environment in which students and teachers work as the authors of ETD. In this environment students and teachers can agree on TD topics and have them approved by the university through the submission subsystem. After the approval, the students and teachers interact in this environment to produce ETDs. In this subsystem, students present their work to teachers and receive their suggestions, comments, and advice. All ETD records are restored and made accessible for later references by teachers, students, and the university in this subsystem. The final version of ETDs are evaluated and endorsed by the university through the "submission" subsystem.
- 4. Preservation.** Digital information like other type of information needs to be preserved. Since ETD information should never exit the information cycle, certain provisions need to be made for their long term preservation and maintenance. TD preservation and maintenance policies and organization should be based on their digital format. Issues like

disaster management, backup versions, technology-datedness, and recording environmental changes through time, and the like should be accounted for in this subsystem.

5. **Persian language requirements.** Since Persian is the primary language of ETDs in Iran, Farsi-compatible requirements like orthography, writing direction, grammar, etc. need to be studied and taken into account.
6. **Data analysis.** Information of TDs put together and by themselves and in contrast with other data sources create new information. Such information evolves from sorting, categorization, prioritization, and interconnection and organization of the data based on new and integrated paradigms. Thesis and dissertation data can be analyzed independently or contrastively. The analysis of each set of data also reveals their change trends through time. The area of the analysis may develop as other data sources are included. TD information can therefore be analyzed on the basis of data from various sources. In this subsystem a pattern could be devised for the analysis of TD information based on their data and other related sources. Analysis of the information of the ETDs in the system can also be carried out through this pattern. Based on such analyses ETDs, their authors, universities, scientific disciplines, and so forth can be evaluated respectively, for instance, to introduce sample TDs, most referenced ETDs, etc. Statistical information of ETD use based on various criteria, such as an ETD, ETDs in a given academic discipline, university, etc., can be another byproduct of this subsystem.
7. **Protection against plagiarism.** Considering the availability of TDs in the electronic version, it might be very straightforward to compare their contents in order to stop possible plagiarism and to report the cases to the individuals in charge. The very existence of such a subsystem would in itself act as a preventive measure.
8. **Monitoring.** TDs are usually published in various ways and their results are applied in different forms. This subsystem monitors and documents outcomes of ETDs, so that they are accessible alongside with the ETDs. These effects and outcomes may include the publication of research findings as books, the publication of papers based on the research results, reception of patents, applications in specific practical areas, etc.
9. **Access.** Accessing the ETD information and other data on this system, as the main system objective, calls for specific considerations. Accessing part of the information, especially ETD information, depends on the copyright and relevant permissions. The system should provide access to various entities involved in the system, relevant to their specific conditions, and should be able to modify their access levels with changes in their situations. Access to ETD information can be full or limited to bibliographic information, abstract, table of contents, index, references, one or more chapters, etc which is determined based on author copyright and permission. In this subsystem, access to information and different stages of operational processes are managed through usernames and passwords that can be provided for individuals or organizations and for national and international users. Therefore, identity authentication is another function of this subsystem. The access subsystem also deals with the digital gap among the users and manages it so that access is readily enhanced for users with different levels of access to the internet.
10. **Manuals of style.** Integration of the system and assurance of its proper functioning requires coordination among its various entities. This coordination is partly achieved through general manuals of style for different operations and outcomes. Creation of TDs forms a major part of these manuals of style, including orthography and documentation requirements. Manuals of style are of two levels: The first level is the university level at

- which current manuals of style for each university are presented. At the second level nationwide manuals of style are provided by the system which may include some general considerations and can replace manuals of style by local universities. Following some others will be mandatory as they pertain to the function of the whole system.
- 11. Standards.** Standards focus on ETD meta-data and the way ETDs are organized. Following these standards would be mandatory.
 - 12. Assessment.** Proper system functioning and its compatibility and adaptability with environmental requirements, on the one hand, and user demands, on the other, requires ongoing assessment. Therefore, system functioning should be constantly scrutinized through assessing user satisfaction, system quality, development of activities and the like. Strategies for improvement should be adopted.
 - 13. Electronic publishing.** Electronic publication of ETDs is one of the major subsystems of this system that provides the framework for the submission of ETD content. This framework should account for and support production of texts, pictures, graphics, animations, sound and so forth. Furthermore, it should determine the specific language and format of ETD production.
 - 14. Infrastructure.** Providing ETD services at national and international levels requires adequate infrastructure and proper management. Part of this infrastructure is provided by organizations such as the Ministry of Information and Communication Technology. Some other parts like the networks among universities have already been established and only need to be adequately employed. Other required parts need to be specifically provided for the system. This subsystem should address the needs of the system and should be updated along with the development of technology.
 - 15. Organization.** Organization of system data, especially ETD data consisting of assignment of metadata, descriptors, indexing, abstracting, and so on, is vital to restoring and retrieving information. Organization could be carried out at different levels, some of which are operational while some others carry out the confirmation process. However, ensuring proper organization of data can lead to dependable restoring and retrieval. This subsystem also produces required key word indexes or develops and improves current indexes in order to facilitate organization.
 - 16. Communication.** This subsystem facilitates communication among various users. Since in this system TD information is nationally accessible from the early stage of endorsement of proposals by each university up to the submission of the final version, data feedback can help improve different aspects of the system including the ETDs themselves. This feedback may include the possibility of commenting on proposals and ETDs, asking questions and receiving answers from authors, grading proposals and ETD by users, writing reviews on each proposal or ETD, and so on. Another dimension of communication regards provision of opportunity for interaction among students, researchers, and university teachers, and so forth through disseminating bulletins, mailing-lists, etc. In this subsystem, university teachers can call for theme-based papers and invite students to conduct research on TDs.
 - 17. Databases.** System function depends to a large extent on proper establishment and management of databases. These ETD databases include people databases (including information about university teachers and students), universities databases, and so on.
 - 18. Portal.** System services in general are provided through a portal that facilitates access from a single point to all parts of the system. In truth, this subsystem focuses on ETD

- portal management which encompasses national and international access to services in both Persian and English.
- 19. Search engine.** This subsystem provides a suitable search engine for searching in ETDs and other system information. The search engine should possess the capability of ordinary and advanced searches based on ETD features as well as facilitate thesaurus-mediated search. The capability of dissemination of selected information is also provided to enable users to access information offline.
 - 20. Cooperation.** The system will not achieve success without national and international cooperation. Therefore, this subsystem plays the role of planning, establishing, and evaluation of the cooperation among related entities such as universities in order to improve the system.
 - 21. Translation.** In Iran, ETD is usually produced in Persian. Therefore, in this subsystem ETD information is translated for and submitted to international users.
 - 22. Submission.** During the ETD production process, students usually present their ETDs to the university in two stages and receive the confirmation to continue the process. The first stage is proposing the topic of the research project and acquiring its confirmation. The second stage is presenting the TD and receiving its final endorsement. In this subsystem environment for the submission in both stages is automatically provided and needs to be capable of adapting to local requirements of universities and also of being updated.
 - 23. Reengineering.** ETD management operational processes, from production to distribution, require reengineering in time and with respect to environmental and technological changes. The function of this subsystem is ongoing assessment of processes and their reengineering.
 - 24. Change management.** The transition of TDs from traditional to electronic is a complex process which fails to attain its objectives if managed inadequately. The subsystem of change management involves management of transition from traditional to new conditions and preservation of the system through adopting appropriate strategies which are compatible with the Iranian context.
 - 25. Additional services.** ETD information is accompanied by several additional services including access to ETD databases in other countries, subscribed reference services, scientific questions and answers, free research software and methodology guides, subject-based and controlled data gates, related links, and so on.

Summary and Conclusion

Information and communication technology has brought about fundamental changes in all aspects of human life in the world with its unique nature and dimension. The influence of this technology on teaching and learning has created original opportunities for educational institutions; fueled their reaction in taking advantage of these opportunities and therefore the widespread application of this technology in education, particularly in universities. Electronic learning is a reaction of universities to this issue.

However, the effect of this technology on libraries has created a new phenomenon called digital libraries, which play a major role in electronic teaching and learning. The role of libraries is altering in the light of electronic and web-based learning and provision of digital resources has been considered their primary role in such an environment. Some of these resources are dissertations and theses. The significance of these documents and their limitations in the print

form has in recent years led to the emergence of their electronic versions known as Electronic Theses and Dissertations (ETDs). Obviously, the development of electronic learning at the graduate level will be seriously hampered without a proper system of Thesis and Dissertation information management capable of production, organization, restoring, retrieval, and dissemination of their data and related information. It is, therefore, necessary to provide a system of ETD Information Management Systems (ETDIMS) compatible with requirements of the electronic learning environment. Such a system would not only provide online and electronic environment for the production, evaluation, and verification of ETDs, but also would form part of the infrastructure required for the development of electronic learning at graduate level.

To function properly, the ETD management system needs to have four levels. Production of ETD is the first level and lies at the center of the model; the second level of the model comprises universities, which support and finally endorse the production of ETDs; the third level of the model is the national level which accomplishes ETD management throughout the country; and at the fourth level the national ETD network is linked to national networks of other countries and to the international ETD network. Moreover, six major entities play specified roles at different levels of the model: policymaker, national ETD center, universities, ETD authors, and national and international users. In addition to databases for proposals and temporary as well as permanent ETD information, used for restoring these kinds of data, the system also includes "related information", "people", and "universities" databases that contain further information helping the proper functioning of the system. The system consists of 25 main subsystems, which in one way or another, facilitate its function.

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