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Editorial

## Paradigm Shifts

Donald G. Perrin

It is time to re-read Joel Barker (1992) *Paradigms: The Business of Discovering the Future*. The economic crisis is having a severe negative impact on education budgets and reduces the opportunities for growth and change. Rather than appraising the situation as “destruction of education and training as we know it”, perhaps it should be considered as an opportunity for paradigm shifts that were imminent, but not possible under the “old” rules. Use the U.S. Automobile industry for comparison.

The automobile industry is controlled by public policy, unions, and business models based on early twentieth century successes in mass production and marketing. It is a transportation device using a reciprocating engine and fossil fuel. This masterpiece of engineering continues to be improved in performance, reliability, safety, and environmental protection. However, it cannot meet 21<sup>st</sup> century requirements because it depends on fossil fuels and produces unacceptable greenhouse gases. Vested interest in the current technology led to paradigm paralysis so that foreign auto makers are a decade ahead in development of hybrid and electric cars that use renewable, non-polluting, energy resources.

The United States, once a leader, is also lagging behind other nations in its educational programs, especially the teaching of mathematics, science, and engineering. The paradigm for group instruction came out of the industrial revolution in the 19<sup>th</sup> century; and “objective” methods of testing were born at the beginning of the 20<sup>th</sup> century. The world has seen vast changes, yet public education is frozen in the old paradigm.

James Finn (1962) stated:

*Education, as a sector of national life, has, for the most part, been cut off from the technological advances enjoyed by industry, business, the military establishment, etc. The American educational enterprise exists out of technological balance with great sectors of society. . . . As Dr. George Gerbner says: “the public school system is the last stronghold of folk culture in America.”*

Almost 50 years later, the observations that follow suggest this assertion has not changed.

1. Over the past century, automation and innovations such as information technology have greatly increased business efficiency. Today, business spends approximately one third of its budget (33%) on information technology
2. K-12 public education classrooms are surprisingly similar to those of a century ago. Communication technologies are not part of every classroom, and schools spend most of their budget on personnel and buildings. Less than 8 % is used for pupil and instructional staff support services (teacher training, classroom materials, textbooks, audiovisuals, chalk, duplication; consumables for shops and science laboratories; and computers, networks, software and maintenance.
3. Based on standardized tests, K-12 students in *many* industrialized countries score higher in math and science than the United States. U.S. programs to update and standardize curriculum, upgrade credentials, and add rigorous testing have had minimal results.

Although elements of the new paradigm for education are still under development, distance learning has demonstrated many aspects of the new paradigm to be effective:

1. Achievement of objectives with observable and measurable outcomes and criteria where students use exploration and available (web) resources to structure their own learning.
2. Learning can take place anywhere and at anytime. It is not necessary to construct more classrooms if we reconfigure education to use “all the world” as a classroom.
3. People learn from real life, games, simulations, television, interactive multimedia and computers. Computers can monitor and guide student performance, administer tests, keep individual student records, and provide statistical data for revision of courseware.
4. The internet has made significant inroads to commerce, healthcare, government, and education. It has revolutionized the way in which information is input, processed, stored, retrieved, and communicated. The ubiquitous computer interface provides instant contact to global resources, with new ways to conduct business and better ways to learn. Hundreds of thousands of schools and universities are supporting their students with Internet resources, and the new learning paradigm is emerging hybrid and stand-alone courses and programs.

As Joel Barker points out, in times of turmoil, people are much more likely to consider change. Like the automobile industry, U.S. Education is dealing with a paradigm shift it does not fully understand. We are faced with diminishing resources and increased demands. We need to use resources from the [American Recovery and Reinvestment Bill of 2009](#) to push our research and development agenda and adopt a paradigm that is responsive to our educational and societal needs.

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1. Joel Arthur Barker (1992). *Paradigms: The Business of Discovering the Future*. Harper Business.
2. James D. Finn, Donald G. Perrin, Lee E. Champion. (1962) Occasional Paper #6 of the Technological Development Project, *Studies in the Growth of Instructional Technology I: Audio-Visual Instrumentation for Instruction in the Public Schools, 1930-1960*. National Education Association.
3. American Recovery and Reinvestment Bill of 2009, [appropriations.house.gov/pdf/RecoveryBill01-15-09.pdf](http://appropriations.house.gov/pdf/RecoveryBill01-15-09.pdf)

**Editor's Note:** This is a thoughtful, interesting, evocative, and cautionary guide to use of blended learning for English as a Foreign Language.

## Interaction in Blended EFL Learning: Principles and Practice.

Mei-Ya Liang and Curtis J. Bonk

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### Abstract

The trend of acquiring English as a foreign language (EFL) through blended learning (BL) has prompted teachers to develop strategic plans and directions for its onsite implementation and evaluation. This paper applies the concept of interaction to the challenge of creating a BL curriculum for an EFL class. General principles of interaction based on three dimensions of interaction—textual, social, and technological interaction—are presented and then applied specifically to EFL classes at a Taiwanese university by adopting the following practical steps: (1) setting course objectives; (2) formulating techniques and strategies; (3) selecting media and tools; (4) organizing activities and technologies; and (5) evaluating student learning. Students' reactions to and comments on six BL curriculum units indicate that various combinations of BL based on level and dimension of interaction are well adapted to the specific university EFL class. Our findings suggest that the interaction-driven approach should be the focal point for future development and implementation of BL in EFL classes.

**Keywords:** blended learning; blogging; chat; English as a Foreign Language; language learning; web-based learning; sociocultural theory; online news media; online pedagogy; instructional strategies.

### Introduction

Current trends of acquiring English as a foreign language (EFL) through blended learning (BL) have led to the fundamental questions of why blend, what to blend, and how to blend. Over the past decades, a wide variety of technologies have been incorporated in computer-assisted language learning (CALL) classes for different purposes, including self-paced skills practice, collaboration and communication, project-based learning, content-based learning, and other academic or specific purposes (Egbert, 2005). Paralleling the emergence of the Web as a learning environment, CALL, which is traditionally defined as language learning in a computer laboratory or a classroom aided by various media and methods, is now oriented towards BL--a blend of both face-to-face (FTF) experiences and online interactive activities outside the classroom-- in order to increase the level of active learning strategies and access to learning (Graham, 2006; Whitelock & Jelf, 2003). Regarding BL in certain EFL contexts, there is a pressing need to rethink issues such as why blend Web-based interaction into FTF classroom-based learning, what is added to the experience that could not be obtained in the traditional classroom, and how to blend Web-based interaction into FTF learning effectively.

To design thoughtful pedagogies that create meaningful interaction with technology, instructors need to reflect upon contextual aspects of how technologies might be used across settings and how language learners might respond to them (Bax, 2003; Beatty & Nunan, 2004; Brandl, 2002; Leakey & Ranchoux, 2006; Oliver & Trigwell, 2005; Stracke, 2007). In particular, BL researchers (e.g., Stracke, 2007; Murday, Ushida, & Chenoweth, 2008) have pointed out the importance of connections between learners' FTF experiences and CALL components by means of social support and training, as well as interaction with reading and writing materials for effective BL experiences. Despite increasing attention paid to different dimensions of interaction in BL, for the most part, research results have yet to find their way into practice.

In this paper, the authors report on an action research project related to the development of BL pedagogical approaches at a university EFL class in Taiwan. We are interested in designing BL activities for EFL students and identifying critical aspects of the activities. By examining the concept of interaction, we elaborate guiding principles and instructional steps that are critical to an effective BL environment. In the following sessions, practical applications to the EFL course curriculum are explicated and students' reaction to techniques, activities, and tools in the pedagogy are presented. Finally, implications are offered that can inform the future design and use of BL in EFL classes.

## Principles of interaction

The concept of interaction is an essential ingredient in both online and FTF education. Specifically, different types of interaction have been widely discussed: learner-content, learner-learner, learner-instructor, learner-self, and learner-interface interaction (Bude, Bonk, Magjuka, Liu, & Lee, 2005). In the following sessions, the authors put forward three principles of interaction by defining the scope and boundary of three dimensions of interaction--: (1) textual interaction, (2) social interaction, and (3) technological interaction—that have been incorporated in the design of a BL pedagogy for a specific EFL context

### **Textual interaction**

Textual interaction is often viewed as a process of readers' interaction with reading and writing materials. Reading for comprehension or main ideas is a major goal of EFL learning (Grabe, 2002). Studies on second language learning (L2) reading processes and instruction (e.g., Alderson, 2000; Bernhardt, 1991; 2003; Carrell, 1988; Chun, 2001) have found that a learner's comprehension of an L2 text requires an interactive combination involving simultaneously processing of lower-level linguistic knowledge (i.e., vocabulary and sentence structures) and higher-level background knowledge (i.e., metacognition, strategies, and perception). These studies suggest that L2 readers depend on their own motivation, attitudes, interest, reading purposes, and background knowledge as well as on vocabulary and structural knowledge. Online environments also afford hypertext with linked text and multimedia annotations for comprehension and meaning construction (Chun, 2001). L2 students must determine their reading purposes (e.g., scanning for information, skimming for main ideas, interacting with multimedia for pleasure, or learning new words) in order to deal with the structural and motivational (e.g., difficult and unfamiliar) elements embedded in the authentic online materials. Therefore, blended EFL curricula should include different combinations of linguistic activities and reading materials that will facilitate meaning construction and content engagement in textual interaction (Principle 1).

### **Social interaction**

Social interaction involves L2 learners' interaction with others in social learning environments. Inspired by the concept of the zone of proximal development--i.e., context of assisted learning and development (Vygotsky 1978), various forms of instructional techniques have been proposed to assist learners in performing complex tasks and adjusting their responses based on their experiences and knowledge. In particular, Collins, Brown, and Newman (1989) introduced cognitive apprenticeship with six key levels of strategy training: (1) modeling, (2) coaching, (3) scaffolding, (4) articulation, (5) exploration, and (6) reflection. These strategies demonstrate *expert thinking* and a transfer of assistance to peers and learners themselves as learners become more proficient in applying the strategies on their own. These strategies might help adult students take responsibility of their own learning.

A similar technique applied in reading groups is reciprocal teaching (Brown & Palincsar, 1989; Palincsar & Brown, 1984) through which students practice strategies, such as questioning,

clarifying, summarizing, and predicting. These apprenticeship techniques have been effectively applied to L2 classes (Klingner & Vaughn, 2000) and computer-supported collaboration (Angeli, Valanides, & Bonk, 2003; Liu, 2005) to engage students in social interaction and active learning. In fact, opportunities for social interaction have exploded with the emergence of Web-based learning technologies and activities. Therefore, blended EFL curricula should include different forms of instructional techniques and organizational structures that will facilitate strategy use and active participation in social interaction (Principle 2).

### ***Technological interaction***

Technological interaction relates to learners' interaction with or through technologies. As indicated, with the emergence of the Web, and now the Web 2.0, there are a plethora of ways to integrate technology in the curriculum. Despite the technological innovation, thoughtful design is key. In terms of pedagogical design, several approaches have been identified in the field of CALL and Web-based language learning. For example, Bax (2003) observed three approaches for CALL, (1) restricted, (2) open, and (3) integrated CALL. Restricted CALL refers to restricted interaction with CALL lessons in the forms of closed drills and quizzes. Open CALL includes games, simulations, computer-mediated communication (CMC) lessons for genuine communication. In Integrated CALL, CMC technology and activities are "normalized" or fully integrated in everyday practice as appropriate to learners' needs and contexts.

Similarly, Brandl (2002) described three approaches: (1) teacher-determined lessons with pre-selected online materials and comprehension activities; (2) teacher-facilitated lessons with given tasks, topics and learning goals; (3) learner-determined lessons with teacher support and guidance throughout the learning process as necessary. While the effectiveness of CALL and Web-based language learning is inconclusive, these researchers have underscored the importance of technological integration and pedagogical considerations, such as task and feedback types, teacher's roles, and student attitudes. Obviously blended pedagogies and technology may also place new demands on EFL learning.

As specified in the textual and social interaction sections, there are common techniques and activities applicable to both settings, but online technological tools also afford interactive tasks, which often entail diverse interaction sequences and communicative strategies unique to the medium. For example, text chat shares the task element of real-time negotiations across FTF and online settings, but contains specific features of delayed discourse and alternative turn-taking organizations (Blake, 2000; Negretti, 1999; Savignon & Roithmeier, 2004; Smith, 2003). Moreover, certain technological tools afford rich multimedia for learners of diverse learning styles and abilities, but individual learners with their unique experiences and preferences might react differently to various multimedia tools and resources (Chun, 2001). With such a blend, learners are exposed to new and multiple interactive practices to share feelings, establish communication, and maintain social connection across different settings. At the same time, such combinations present a diverse array of opportunities to instructors that can overwhelm and frustrate them as well as offer new possibilities for success. Therefore, blended EFL curricula should provide different options of rich media and supporting technologies that will facilitate flexible learning and interactive experiences within technological interaction (Principle 3).

In general, the three principles of interaction aim to solve the problem of designing BL activities for EFL students by asking the fundamental questions: (1) What materials and activities will promote comprehension and learning? (2) What techniques and strategies will facilitate active participation? and (3) What media and technologies will bring interactive experiences? To make certain decisions for a specific EFL learning situation, we also need to understand the context (e.g., who the target students are and what their learning goals are).

## Action research methodology

This particular study aims to investigate the above concrete and practical issues. It is part of a larger action research program that features exploratory methods and allows for taking interpretations in new directions (Burns, 2003). It is an action research project which occurred in a Freshman English class at a well-known university in northern Taiwan. As a required course, Freshman English at the university (as well as at many other universities in Taiwan) had an imposed curriculum with uniform materials, course objectives, and midterm and final exams. In addition to FTF instructions on textbook content, a course-level blend also included a website with supplementary readings, language exercises, and writing topics and prompts to help students review and practice textbook content outside the classroom. The goal was to prepare non-English majors for academic reading, writing, and communications, so that their English proficiency would reach the upper-intermediate level of a nationwide general English proficiency test—the GEPT test.

Thirty-five engineering majors (27 males and 8 females) took the class with the first author. The class, which met for 18 weeks, consisted of four-hours of FTF class attendance on a weekly basis. At the beginning of the semester, students took the GEPT and filled out a questionnaire about their online and EFL learning experiences. The test results indicated that the students' English ability was at an intermediate or upper-intermediate level. The results from the questionnaire were interesting. First, all students but one began studying English in junior high school at the age of 12 or 13. Second, all students were skillful at Microsoft Word and multimedia devices (e.g., Media Player, Quick Time, Real Player, etc). Third, more than half could use Web editing tools (e.g., Front Page and Dream Weaver); Fourth, about two-thirds of the students used the Internet 15 hours a week or more. Finally, the most frequent reason for students to access Internet sites was for email and Internet messaging. Suffice to say, students were fairly adept with Web technology.

The outcomes of the questionnaire show that CMC technology and activities, such as email and chat, are widely adopted in students' everyday lives, but that the traditional blend within the imposed curriculum offered extremely restricted interaction with CALL lessons in the forms of closed drills and quizzes. This fairly traditional curriculum limited students' opportunities and choices for social interactions even with an additional modality. A radical transformation of the pedagogy might not be practical or effective in this situation. However, small, fresh changes to the online pedagogy can motivate students. To do so, the new blend includes the following five steps or parts: (1) setting course objectives; (2) selecting media and tools; (3) formulating techniques and strategies; (4) organizing activities and technologies; and (5) evaluating student learning. Each of these is explored in the following sections.

### 1. Setting course objectives

Considering the engineering students' work and study needs, the course objectives were reformulated as follows: (1) to improve L2 ability through uses of online tools and resources, (2) to improve strategy use by communicating in different formats of L2 texts with peers online; and (3) to improve text comprehension and production by constructing online content.

### 2. Selecting media and tools

One reason for the use of technology was it offers various multimedia tools and materials, which could promote L2 ability, strategy use, and text comprehension and production. In this study, three media—i.e., online news sites, text chat rooms, and weblogs (or blogs)—were selected. We outline their potential benefits as follows.

### ***Online news sites***

Both instructional and commercial news sites were used. CNN Interactive (<http://literacynet.org/cnnsf/>), for example, is an online instructional news site for ESL learners. The website includes pre-selected news stories and interactive activities (e.g., vocabulary exercises, comprehension questions, story outlines, and selected links) for guiding language learning and comprehension. Commercial news sites, such as The New York Times (<http://www.nytimes.com/>) and MSNBC Headline News (<http://www.msnbc.msn.com/>), afford updated news with multiple channels of information (auditory and visual) for exploration.

### ***Text chat rooms***

Text chat rooms in Tapped In Community Center (<http://ti2.sri.com/tappedin/index.jsp>) were used to facilitate participants' communication and collaboration. The free synchronous conferencing tool is offered through Stanford Research Institute. It includes the graphics area with personal tools (e.g., the whiteboard, the room map, and notes), and the text input area with action and command menus. In addition, automatic transcripts of discussions could be saved and discussed in later FTF class meetings as well as reflected upon in students' blogs. While other commercial sites have more graphics and tools, Tapped In gains online support and interaction opportunities from the Help Desk staff and volunteers when they log on to the website.

### ***Blogs***

Free blogging software (i.e., Blogger.com) was used for constructing and publishing content. The instructor used the blog to provide timely coaching and scaffolding of student language learning. Students were also asked to: (1) log online learning materials and resources, (2) post links to news articles they read, (3) outline key points of reading texts, (4) write thoughts and reflections, (5) record the results of group learning activities in news sites and text chat rooms, and (6) provide peer comments on blog summary posts.

## **3. Formulating techniques and strategies**

Aimed at the three objectives—guided language practice, collaborative strategy use, and exploratory text production—instructional techniques and strategies were employed to blend online components into FTF learning. The instructors used them to communicate task priority.

### ***Guided language practice***

In FTF meetings, the instructor introduced writing conventions and models summarizing and paraphrasing skills. In online learning, different online tools and resources (e.g., online dictionaries, multimedia annotations, and instructional sites) were also added to model expert thinking and coach students' online reading, writing, and study skills. Special attention was paid to encourage students to solve their linguistic problems by using appropriate tools and resources.

### ***Collaborative strategy use***

Using the reciprocal teaching technique, the instructor assisted students in FTF discussions. After class, students practiced strategies through online interaction. Additional study guides for online discourse facilitated their paired or small group discussions. Emphasis was put on explaining tasks, questioning peers, offering suggestions, encouraging articulation, pushing learning, and fostering reflection. As indicated earlier, such activities are key components of an effective cognitive apprenticeship.

### ***Exploratory text production***

The last part focused on reviewing and exploring myriad texts, tools, resources for online publishing. In FTF settings, peer response groups provided oral reviews for student work. In synchronous and asynchronous CMC activities, students: (1) shared and gave feedback to peers;

(2) collaboratively revised texts and made responses to other groups, and (3) evaluated the effectiveness of individual and group work.

#### **4. Organizing activities and technologies**

Different learning activities and supporting technologies were organized into a sequence of three phrases, each of which included two learning units to illustrate possible progression in the course of study (For details, see Appendix A). When combined, the online text-based activities, social interaction, and learning technologies were intended to scaffold and apprentice student second language learning.

##### ***Level 1 interaction***

The first phrase involved student interaction with somewhat familiar and relatively easy to use technologies (e.g., news sites and blogs) under teacher guidance. Students chose topics, texts, and exercises and activities to practice L2 skills in the assigned news sites.

##### ***Level 2 interaction***

The next level of interaction incorporated more elements of social and technological interactions. Emphasis was put on student participation in collaborative activities with peers in both FTF and online interactions. At the end of the second stage, students were expected to take a more active role by articulating their thoughts and communicating with group members.

##### ***Level 3 interaction***

In the last stage, various networked activities and media types were integrated in BL. Students presented their work and reflected on their own online learning experiences or further explore their collaborative work.

#### **5. Evaluating student learning**

Formative evaluation was used to understand students' perceived learning and affective outcomes. For each of the learning unit, we gathered students' opinions about whether they agreed or disagreed with two statements: (1) I enjoy activities in this unit; (2) I learn well from this unit for each of the learning unit.

### **Findings**

#### ***Quantitative data***

Twenty-six students provided their opinions and comments in the forms of learning logs. Table 1 shows the number of the respondents in each of the response level, and Figure 1 illustrates the average level of agreement (series 1 for the first statement and series 2 for the second). The results revealed that the class had more positive attitudes toward these two statements across the six learning units. Of all the six units, the highest average level of agreement on both statements was at Unit 5 "Full Coverage," and the lowest was at Unit 6 "Hot Off the Press." In other words, most of the respondents enjoyed group discussion in the chat room and felt that they learned well from it. However, respondents had more diverse attitudes toward peer editing for publishing.

#### ***Qualitative data***

Students' comments were further analyzed based on dimensions and levels of interaction.

##### ***Level 1 interaction: Guided language practice***

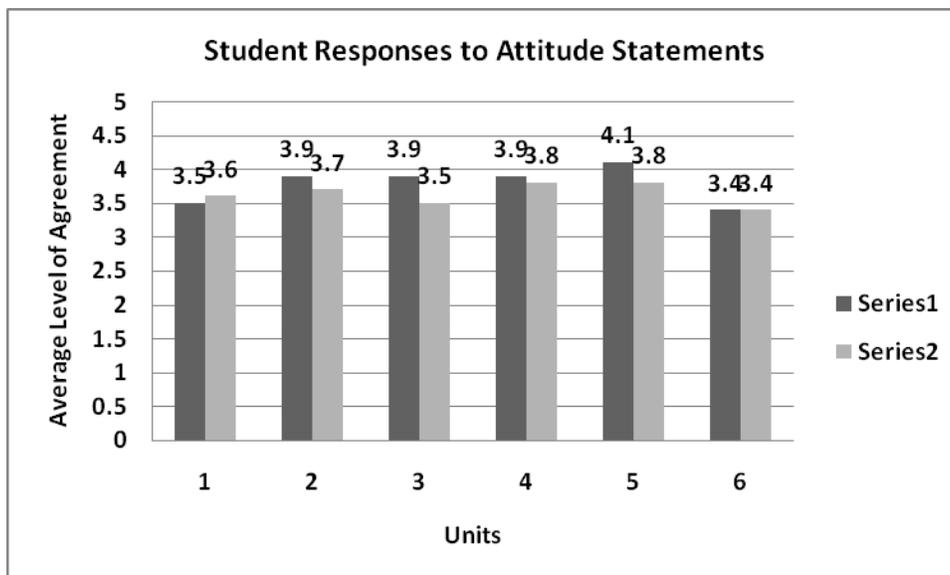
The first unit--"To Gloss or Not to Gloss?"-- asked *participants to search and read* online news by using online dictionaries and writing summaries in blogs. Before the course began, eleven students had never read online English news, and only eight had owned blogs. As indicated by the

quotes below, students who had prior online searching and reading experiences found the task “fun,” “meaningful,” and “interesting.”

**Table 1**  
**Student attitudes towards six learning units**

	SA	A	U	D	SD
I enjoy activities in this unit.					
Unit 1: “To Gloss or Not to Gloss?”	1	14	9	2	0
Unit 2: “Inquiring Minds Want to Know!”	4	16	5	1	0
Unit 3: “Scavenger Hunt!”	5	15	4	2	0
Unit 4: “Multimedia Treasure Hunt!”	4	18	2	2	0
Unit 5: “Full Coverage!”	6	16	4	0	0
Unit 6: “Hot Off the Press!”	2	10	10	4	0
I learn well from this unit.					
Unit 1: “To Gloss or Not to Gloss?”	1	16	6	3	0
Unit 2: “Inquiring Minds Want to Know!”	2	16	6	1	1
Unit 3: “Scavenger Hunt!”	1	13	11	1	0
Unit 4: “Multimedia Treasure Hunt!”	2	17	6	1	0
Unit 5: “Full Coverage!”	1	19	5	1	0
Unit 6: “Hot Off the Press!”	0	13	11	2	0

Note. SA=strongly agree; A=agree; U=undecided; D=disagree; SD=strongly disagree



**Figure 1. Average levels of agreement to statements for six learning units**

Before I take this course, I surfed on the web for movies, comics, and NBA. It's my first time using the Internet to search English news. It is fun.

When you search news on CNN's web, you can find many interesting and deeply meaningful articles to read.

By contrast, students who focused on new words considered the same task *boring or difficult*:

Too many new words! And the article is a little serious and boring.

It is difficult to get the whole meaning of the article because of a lot of new words...

Why I cannot find some new words in the dictionary?! Where were these words created?

In Unit 2—"Inquiring Minds Want to Know!"--individuals searched and read texts by asking "WH" types of questions. While many students linked this question-and-answer activity to their prior test experiences and learned how to use questions to aid comprehension, several respondents thought this task made searching and locating information easier and more difficult at the same time. Here is one,

I am a curious student and always try to find some interesting things! ...It is difficult to answer my questions because my odd questions could not be found in the articles. ..I have learned how to have a full understanding of the article by asking questions. It's like asking questions in a test.

### **Level 2 Interaction: Collaborative strategy use**

The unit--"Scavenger Hunt!"--asked students to read news articles out loud with their partners and record their reading processes. This activity helped students identify reading strategies and problems by communicating with peers in an L2 and most of the students enjoyed the social process:

I browsed the article and tried to find important points. Reading an article out loud helps me concentrate on this article...I said many wrong sentences in 20 minutes....

Although my partner and I speak poor English, we can understand each other. It makes us happy.

Despite the affective support, several student pairs still suffered from reading problems and incompatible thoughts: "My partner cannot help with my reading problems and right ways to read;" "The hardest part is to solve the situation when we have different thoughts."

In Unit 4--"Multimedia Treasure Hunt!" students read news media with partners. Most students reported that their self-selected visual and audio aids made news reading and writing easier, more interesting, and more enjoyable to them. One participant, for example, recounted her online actions and details:

When I saw the introduction about "Chicken Little," I really felt funny. His action and expression were vivid. The picture above the news was so cute. It was really unforgettable...Looking at the pictures and writing down the ideas about it were more easier. Because I liked this movie, so I could write down my opinions.

However, several students discovered that certain multimedia features, such as the presentation style, speed, and length, did not fulfill their reading and learning needs:

The page only has characters' pictures and introduction. If it can offer some animations, I think it will be better...The characters' names are not easy to remember, because they are always too long and I don't know how to pronounce it.

I can't hear what the roles in the video say clearly. Sometimes it was a little fast.

Although videos, movies, comics, and games on the Web might not have strong multimedia qualities to result in substantial reading or learning benefits, several participants sought ways of using interactive and multimedia features to attract audiences.

### ***Level 3 Interaction: Exploratory text production***

Unit 5--“Full Coverage!”--involved students in news sharing through peer response groups in text chat rooms. Most participants enjoyed the social nature of chatting, but they also encountered not only the often-cited challenges, such as overlapping turn-taking and peers’ lurking behaviors, but also ineffective communication due to their limited L2 ability:

I felt sad when others did not respond to my ideas. I thought that they felt bored.

Sometimes maybe our communication ability is not very good, so we can’t understand each other. And it would waste a lot of time. It’s a big problem for me.

The communication strategies of many participants wrote included using simple sentences, ignoring grammar, reading news before chatting, and thinking (or translating) before typing. Such strategies helped them deal with the fast pace of textual interaction, avoid linguistic problems, and generally facilitate their communication in English. One student reported the following,

The English chat is not easy. You have to think before you say anything and have to think when everybody is speaking, You have to keep on thinking and translating...Sometimes I use “mmm..” or “well...” to express that I am thinking when chatting. Thinking avoids grammatical problems.

While some less experienced students had problems executing commands (e.g., changing the font size and scrolling text) or accessing the new Web environment, others viewed English use in unfamiliar Web environments as a barrier. One student, in fact, noted:

I use MSN. Not until my English ability is better will I go to the website [Tapped In] to chat with people around the world.

In the final unit--“Hot Off the Press!”--students edited and published group news summaries through blogs. More than half of the participants felt bored or confused about peer feedback. One student stated,

I learn how to accept others’ comments and make my work better. Maybe there still are some errors in my article after everyone gave me a comment...I don’t understand whether others’ comments will make my article better or worse.

Nevertheless, the participants became able to express themselves with more skillful interactions with technology. “Publishing our selected news summaries on the blog is much easier. We could design the patterns and make them more like a newspaper,” one student stated.

## **Discussions**

This particular study brings textual, social, and technological interactions together and provides six BL scenarios, in which we learn how the choice of online activities serves its specific purpose of connecting and sharing interactive English learning experiences across various language learning settings.

### ***Unique contribution of interaction to BL***

On the Web, English could be learned and used in myriad ways. Our research in general supports previous studies on BL pedagogy (e.g., Leakey & Ranchoux, 2006) that practical applications that accommodate diverse needs and learning styles will engage a wide range of students across a great number of language skills to perform at a high level. Even though students’ perceived learning performance and preference shown in this study may not be a direct result of BL,

students' positive comments suggested that the blended EFL curriculum successfully communicated certain aspects of the interactive design principles.

This initial implementation of online components in EFL classes might bring either “novelty effects” (e.g., Oliver & Trigwell, 2005) or “appropriate redundancy” (Stracke, 2007) to many students. Instructional activities, such as online news searching and reading, blogging, and glossing, were aimed at students' search and comprehension of information. Whereas pre-determined texts with immediate access to glosses were used in FTF classes to facilitate students' reading and learning processes, the online curriculum units that were structured around lower levels of interaction featuring self-selected content and deliberate access to a wide variety of online tools (e.g., online dictionaries and multimedia narrations). Such enhanced learning ownership and opportunity enabled most of the students to experience novelty, choice, and flexibility or to practice newly learned strategies and develop reading and writing skills, such as paraphrasing, summarizing, and manipulating multimedia texts.

As students proceeded to a higher level of interaction, they were also expected to take responsibility to maintain group cohesion or social connection in online written discourse. To participate in online communication, many students in this study reported that they negotiated meaning by using an assortment of new strategies (e.g., thinking and typing, negotiating for lexical assistance), which have been identified in previous studies as important contributions of text-based CMC (e.g., Blake, 2000; Negretti 1999; Savignon & Roithmeier, 2004; Smith, 2003).

In the end, as one major reason for using BL (Graham, 2006), increased access to learning by getting familiar with interactive technologies (e.g., blogs, chats, and interactive news media) engaged students in collaborative text construction through embellished and revised texts online. In sum, any thoughtful integration of an array of planned BL activities based on the concepts of interaction has made the EFL engineering students as characterized by a higher level of academic achievement become aware of the benefits and problems of online reading, writing, and communication.

### ***Challenges to BL and their implications***

Concerning different blends of interaction implemented in the curriculum units, students showed varying degrees of perceived learning and enjoyment. From students' reported frustrations and difficulties, several challenges to BL and their practical implications are discussed below.

The first challenge concerns discourse quality. Several students expressed their disappointment about ineffective communication in collaborative activities, such as group discussion and peer revision activities. As researchers (e.g., Angeli et al., 2003; Murday et al., 2008) have pointed out, students often failed to sustain interest or engage in critical discourse, even though instructional guidelines and discourse strategies in general involve certain expert thinking and group procedures. In particular, students who lacked communicative goals and skills were easily lost and drifted off from social learning. In order to help students express themselves more clearly and maintain effective peer interaction, timely communication of online learning strategies as well as follow-up class discussions and evaluation of skills and strategy use are important.

The second challenge deals with task priority. Certain students felt it boring or difficult, if not impossible, to look up multimedia glosses or online dictionaries, while attempting to engage in other aspects of textual interaction, such as deriving meanings, synthesizing multiple presentations of information, and evaluating the usefulness of multimedia reading strategies. Besides limited English knowledge, we also notice “the pedagogical problem of choice” (Beatty & Nunan, 2004), resulting from multiple pathways to learning. In effect, not only are language instructors sometimes overwhelmed with the instructional opportunities that Web-based learning technologies offer, but so too are those whom they are attempting to teach. To support effective pedagogy, teachers' reviews and students' reflections on task priority are necessary. Additional

job aids, guidelines, think sheets, examples, and other learning scaffolds might also prove beneficial.

The third challenge is about orientation to BL media and technologies. In our study, less experienced Web users could not decide how to react or even how to join the activities in Web environments. This finding is not dissimilar to previous hypertext studies that students who lacked exposure to Web environments faced orientation and navigation difficulties (e.g., Chun, 2001). In addition to orientation time outside the classroom and practice sessions in CALL laboratories, teachers might also demonstrate certain tools and commands in FTF classes to help students become more accommodated.

## Conclusions

This paper suggests general principles of interaction and pedagogical practices of blends augmented by EFL university students' perspectives. A series of BL scenarios in this paper would help us take advantages of BL and learn from its challenges. There are few existing studies which attempt to combine these three features using emerging technologies. The BL curriculum reported here provides a concrete example of the development of instructional strategies, training plans, and evaluation schemes for EFL students. Although this framework is context-specific, it is our hope that other teachers can use this interaction-driven approach to experiment with BL.

CALL researchers have called for a pragmatic and integrative pedagogy (e.g., Bax, 2003; Beatty & Nunan, 2004; Brandl, 2002; Leakey & Ranchoux, 2006; Stracke, 2007). We believe that this is not attainable without a scholarly and practical look at different blends of text-based, social-based, and Web-based learning in BL contexts. Without a doubt, BL is a complex phenomenon that will take many years of research to better understand and take advantage of. There are multiple levels and dimensions of interaction to consider and monitor. These choices can lead to confusion and frustration as well as enriching online experiences of novelty, flexibility, and personalized learning rich with choice. Language instructors benefit from a wealth of learning and communication strategies added to their arsenal. Their students benefit from a more personally empowering and scaffolded learning curriculum. Perhaps someday online learning technologies offering text-based and social-based interaction will be more familiar and expected within language instruction. Our experimentations here shed some light on what is possible today to empower student online language learning.

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## Appendix A

### Learning units, activities, and supporting technologies

Unit Title and Focus	Learning Activities	Supporting Technologies
1. “To Gloss or Not to Gloss?”	Visit an instructional news website— <a href="#">CNN Interactive</a> . Read one news article and try out the language exercises. Note 10 new words and find their definitions using an online dictionary.	Blogs News sites Online dictionaries
2. “Inquiring Minds Want to Know!”	Think of a news topic and five questions about this topic. Search for the news topic on <a href="#">Google News</a> or <a href="#">Yahoo! News</a> and choose a news article to read. Write down the search word(s) and questions.	Blogs News sites Web search engines
3. “Scavenger Hunt!”	In pairs, browse <a href="#">The New York Times</a> and <a href="#">USA Today Online</a> . Choose a news article from one of these news sites. Record online reading strategies.	Blogs News sites
4. “Multimedia Treasure Hunt!”	In pairs, read online news from two news media— <a href="#">MSNBC Headline News</a> and <a href="#">CNN.com International</a> . Try multimedia features and record online reading strategies.	Blogs News sites
5. “Full Coverage!”	Review news articles and discuss news summaries with group members online at <a href="#">Tapped In</a> . Write a synopsis of all group members’ news summaries.	Chat rooms Blogs
6. “Hot Off the Press!”	Revise and edit group members’ news summaries and synopses. Present and publish the group news project.	Blogs

**Editor's Note:** *Facebook*, the web-based Socratic dialog, deserves intense and critical analysis. What forms of knowledge and awareness will evolve from this ubiquitous sharing of a learning canvas?

## Facebook in the Language Classroom: Promises and Possibilities

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### Abstract

The recent outburst of students and educators becoming active members of social networking communities (Stutzman, 2006; Tufekci, 2008), drew attention to the potential of such a web resource to foster positive relationships among students, to enhance the credibility of teachers engaged in contemporary student culture (Garrison & Kanuka, 2004), and to provide constructive educational outcomes, and immediate, individualized opportunities to interact with peers, instructors and native speakers of a variety of foreign languages. Little is known about how online social networks such as Facebook can develop a sense of community in language classrooms or how they can impact the development of socio-pragmatic competence in language learners. In this article we highlight how this website can provide language learners with opportunities to enhance both aspects by observing and participating in '*Groups*' discussions from various regions of the world where the target language is spoken natively.

**Keywords:** Facebook, language learning and technology, socio-pragmatic awareness, social networks, sense of community, Computer Assisted Language Learning

### Introduction

Computer use has become increasingly embedded in everyday life. Today's students rely on technology for information gathering, to stay updated on social concerns and national issues, for inter-personal communication, and as a way to learn. It is not surprising to find a similar trend in the academic world; in the last decade research has illustrated how the Internet and various communication technology support meaningful educational experiences (Belz & Kinginger, 2002, 2003; Garrison & Anderson, 2003; Sykes, 2005; Arnold & Ducate, 2006; O'Bryan & Hegelmeier, 2007; Lord, 2008; among others) to learners deemed Digital Natives (Prensky 2001; 2006). There is a general consensus that Digital Natives enjoy computer- and Internet- based resources in their classes (Luke, 2006). Consequently, e-learning tools are more prominent than ever in higher education as they have been acknowledged to meet the connectivity demands that today's students expect. It is imperative that second language (L2) classes plug into the network, and the student body that operates it, to capitalize on the social and academic opportunities that high-tech learning has to offer. Unfortunately, e-learning tools have yet to be viewed as a mainstream component of foreign language teaching and have yet to become a foundational element used in L2 classes.

Much L2 classroom use is of the *low tech* variety (Ertmer, 2005). While basic applications such as Word, Excel, or Power Point are accepted and adopted by most educators, and while educators appreciate that *high tech* applications (i.e.: synchronous chat, discussion forums, social networking websites) have transformed the way students approach, manage and complete assignments (Windham, 2005), much of what has been adopted in L2 classrooms remains *low tech*. In addition, educators have come to recognize that internet-based activities can involve quality learning experiences through specific communication technologies that are transforming society (Garrison & Kanuka, 2004; Luke, 2006). Nonetheless, skepticism and resistance to classroom integration of the *high tech* tools remain important even though these tools can

facilitate lifelong learning (Garrison & Kanuka, 2004). From a pedagogical perspective, Ertmer (2005) pointed out that low level technology uses are generally associated with teacher-centered classrooms, whereas high-level technology usually promote constructivist practices in which the students have to collaborate. Thus, *High tech* e-learning technologies require professors to adapt to a new way of communicating with students and to modify classroom methodologies (Dillon and Walsh, 1992; Smith et. al, 2000). Administrators, faculty, and policy makers need to acknowledge and accept this significant evolution in societal communication norms because the technological innovations that underlie these changes cannot be ignored. Educators need to adapt their pedagogical posture to incorporate useful and versatile e-tools that will enhance the quality of their classrooms, guide learners to utilizing various e-tools for academic purposes, create a dynamic learning environment, and promote critical thinking, authentic second language (L2) learning opportunities and deeper connections with the culture of the native L2 speakers. High-tech e-learning technologies are the way of the present and the future and, as Prensky (2007) noted, the twenty-first century will be characterized by even more enormous, exponential technological change.

First, this article situates today's Social Network Communities within the broader context of Computer Mediated Communication and community building with the intention of shedding new light on the importance of implementing *high-tech* e-learning tools such as Facebook into the L2 classroom. Next, it addresses the powerful resources and learning opportunities that this social network has to offer when implemented in a pedagogically meaningful way. Effective didactic practices are discussed, because, as Prensky (2006) accurately pointed out: "it's time for education leaders to raise their heads above the daily grind and observe the new landscape that's emerging". We also address the importance of student understanding of the societal impact of such a website in this era of ubiquitous computing.

## Computer Mediated Communication & Social Network Communities

In the last decade much research on emerging technological tools in the context of second language acquisition has surfaced. Computer Mediated Communication (CMC) in the form of asynchronous communication<sup>1</sup> (ACMC) and synchronous communication (SCMC)<sup>2</sup> has transformed learning. Pre-CMC assignments, such as hand-written and word-processed work, were limited in audience, scope and communicative purpose, and were approached by learners as permanent, formally written assignments which garnered ideas, analysis and criticisms into a static document meant for a limited readership. ACMC and SCMC transformed coursework by expanding the intended audience and the range of communicative purpose. They placed a new emphasis on swift, concise communication for an expanded readership in a space conducive to development, reflection, and analysis in a dynamic interface either in delayed- or real- time. CMC studies have investigated the linguistic and the affective benefits that such an interactive environment presents. Chun (1994) found that CMC can positively modify teacher-centered models of interaction in L2 classroom, and encourage students to interact with each other and rely on the L1 less as a consequence. In addition, Chun (1994) and Warschauer (1996) reported benefits for shy and introverted students. CMC environments level the playing field and allow shy students a comfortable setting in which to make their contributions. This level playing field not only fosters student-centered learning, but also encourages community building. As Knobel et. al. (1998) state:

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<sup>1</sup> email, discussion boards, blogs, wikis

<sup>2</sup> chat, instant messenger

*“It is important to recognize that learning networks are much more than mere infrastructures: they are also relationships. What makes for a computer-learning network is both the existence of hardware and software wired together, and the “coming together” of people in learning relationships mediated by the network as infrastructure.”*

Today, the learning networks referenced by Knobel and colleagues have taken the form of Social Network Communities (SNC). Facebook is a large SNC that boasts more than 100 million members, and it is one of the fastest-growing and best-known sites on the Internet today (nytimes.com). Established by Zuckerberg in 2004, a network that initially targeted high-school and college students went global and is actively gaining in popularity with adults of all ages (Tufekci, 2008). Two years later, Stuzman (2006) suggested that university students are still the largest users of Facebook. He reported that ninety percent of undergraduates surveyed and twenty-two percent of graduates surveyed use this SNC website. Vander Veer (2008) deems it a “hip, hot and happening site” (p. 158) on which members get to witness life-in-progress with access to viewing and sharing countless quantities of information. Given the variety and types of applications that are embedded into its platform, Facebook is far more sophisticated than many of its SNC counterparts, both social (MySpace<sup>3</sup>, Friendster<sup>4</sup>, etc.) and academic (Blackboard, Angel, WebCT, etc.). Facebook is a powerful learning tool that is not only built off of the synchronous and asynchronous technologies that has transformed learning but has also extended the reach of those communicative tools.

Just like a regular email program, Facebook allows its users to exchange private messages. In addition, Vander Veer (2008) points out that in an effort to imitate the various interaction patterns observed in real life, account holders can: *Poke* other friends, (give a virtual “hey, how ya doing’?” (p. 59); write on virtual message boards, which is commonly used for performing various social tasks, such as wishing happy birthdays or making light-hearted remarks; and can send cyber gifts. Staying in touch with the *friends*-network is also facilitated by a series of notifications that users can receive informing them for instance of friends’ status or profile changes, new wall postings, new pictures, or new link to stream video from around the world, to name a few. Another popular application is *The Marketplace*. This sort of forum where students can find jobs, roommates or even text books for their classes emphasizes even more dramatically that our students are increasingly living their lives online. Facebook also offers an application named *Courses* that directly targets university students. Students or instructors can create a course link and invite fellow students to join a particular *course* at any institution. This application offers several attractive opportunities to collaborate, exchange knowledge with its members, and help guide the class in the engagement of the material and key concepts addressed in class. Students can set up video conferences, sign up for study groups, and post comments for the rest of the class to see. The instructor can list a variety of official data such as the place and time of the class, office hours, email address, assignments, announcements, and can post documents and discussion topics. These applications join students to each other, and faculty to students, in an unprecedented way. Finally, joining *Groups* in which users share similar interests is another feature that is extremely popular on this Social Network Community (SNC) and it is the pedagogical potentials of this particular application that is the focus of this article. Vander Veer explains that some groups exist only in cyber space; however, other real-groups utilize Facebook to keep in touch. Any user can create a group which can be open to any users or restricted to a targeted, pre-selected audience. The very nature of the site is rooted in community building, social networking, and inter-personal relationships but the *Group* application can be utilize in language classes in a

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<sup>3</sup> <http://www.myspace.com/>

<sup>4</sup> <http://www.friendster.com/>

varieties of constructive manners. As Garrison & Kanuka (2004) pointed out, a sense of community is necessary to sustain a dynamic and meaningful educational experience over time and is a valuable asset to promote higher level thinking and the construction of knowledge. In addition, socio-pragmatic awareness can be boosted by using the same application in pedagogically meaningful ways. This makes Facebook and its *Group* application a very noteworthy learning tool ripe for introduction into the L2 classroom.

## **Pedagogical Practice**

### ***Community Building via Facebook***

Research identified the importance of creating a community of learners in educational environments a few decades ago and defined the term “sense of community” in a variety of ways (i.e. McMillan & Chavis, 1986): mutual interdependence among members, connectedness, trust, interactivity and shared expectations and goals. Psychologists have argued that these positive characteristics create an intrinsically rewarding reason to continue participation in such a group (Kuo, 2003; Whitworth & De Moor, 2003). Recent investigations have pointed out that Facebook can have a positive effect on the student-to-student and student-to-teacher relationship (Mazer et al, 2007). Mazer and his colleagues noted that by accessing a social networking website, students may see similarities with peers and instructor’s personal interest which can lead to more comfortable communication and learning outcomes. O’Sullivan and his colleagues (2004) discovered that students who have access to teacher websites containing self-disclosed information reported high levels of motivation and demonstrated a boost in affective learning. In addition, the results of the same study suggested that students appeared to develop positive attitudes towards the teacher and the course. These findings pointed out that a Social Network Community (SNC) can be an asset in building a community of learners.

What’s more, students and educators do not simply strengthen their relationship in a community similar to the one envisioned by McMillan & Chavis, but they also develop virtual communities which are not limited to linking people to people they already know. Facebook offers a plethora of opportunities for learners to connect on different levels. Researchers have argued that belonging to virtual communities can amplify involvement within people’s face-to-face communities (Wellman, Haase, Witte, & Hampton, 2001), thus providing empirical evidence of the positive social effects of virtual community participation and highlighting its practical importance in educational environments.

Certain Facebook applications have been specifically designed to build bonds between users that share a common interest or activity. As mentioned in the previous section, users can join *Groups* that already exist or easily create a new ones based on their interests. Therefore, it is extremely simple for an educator to create a *Group* associated with a particular course. This application offers choices in terms of confidentiality settings that must be seriously considered by any instructor. By a click of a button, *Groups* can become private and even secret. Consequently, access to a *Group* can be limited to Facebook members that have been exclusively invited by the course instructor. By tightening the privacy settings of a *Group*, educators can maintain a certain intimacy typically linked to other educational tools like Blackboard or WebCT, that can only be accessed by registered students. Once a Facebook member is part of a *Group*, a variety of options are possible for sharing views, ideas, and topics, and engaging in virtual cyber discussions. Again, the tools that keep them connected socially keep them connected academically via email notifications of *Group* postings of any type (wall postings, audio and video files, event invitations, etc.). In addition, any *Group* member has the ability to contact other classmates in a variety of ways through the *Group* application, or in a more conventional manner by using the *Message* application (if classmates have previously added by choice each other as *Friends*) to write on their wall or to send a private email.

As Prensky (2006) mentioned, students are fully engaged in 21<sup>st</sup> century technology, therefore, it is reasonable to assume that they will rapidly take advantage of such opportunities to collaborate and develop a mutual interdependence if they have not yet done so. Instructors need to capitalize on the fact that Facebook is already an integral part of many students' e-routine. Consequently, if educators decide to provide guidance to the students to use such a site it will be an invaluable asset to their educational and social experience. Recognition of the academic possibilities that a SNC offers is important for faculty and students alike. Students must be aware of the autonomous learning potential and the flexibility of time and place that websites offer and add to their e-routine and learning experience. Garrison et al (2004) noted that learners must accept the technology they are dealing with, recognize the potential in these modalities, and understand the nature and amount of communication with instructors and peers that these networks make possible. For Facebook to become a valuable and constructive tool in language classrooms, students have to make similar realizations. Promoting a community of learners is extremely useful as it often positively impacts affective learning and students' motivation which, according to Gass and Selinker (2008), is a strong predictor of success in language classes. However, this SNC can also impact important aspects of second language development itself. The following sections suggest several approaches to address the issue of pragmatic competence that is often lacking in second language learners by using the *group* application in various ways.

### ***Development of Socio-Pragmatic Competence via Facebook***

Pragmatics can be defined as language use in a sociocultural context. Pragmatic competence includes knowledge of speech acts and speech functions, the ability to use language appropriately in specific contexts (Eslami-Rasekh, 2005) and the study of language from the point of view of users. Kasper and Rose (2003) further elaborated this definition by adding that pragmatics deals with the way speakers and writers achieve goals as social actors who respect social norms in order to attain interpersonal relationships with interlocutors. Despite the lack of clarity in defining this term, it has been recognized as an essential component of communicative competence (Bachman, 1990). Development of pragmatic and sociolinguistics rules of language use is a major aspect of language learning (Eslami-Rasekh, 2005). As Bradovi-Harlig & Dornyei (1998) pointed out, even advanced L2 learners have not developed appropriate pragmatic competence to avoid misunderstanding or conveying L2 messages that are considered too forceful, direct or impolite. More than a decade ago, Kramsch (1985) identified the fact that typical classroom-based language learning is composed of "institutionally asymmetric, non-negotiable, norm-referenced, and teacher-controlled discourse". Similar observations have been postulated by Bradovi-Harlig (2001) who pointed out that textbooks are not reliable sources of pragmatic input for language learners as they usually provide a limited amount of information about conversational norms and may contain language samples that are not authentic. Vellenga (2004) made a similar claim following a pragmatic investigation of specific speech acts in ESL textbooks. Unfortunately, this trend has not particularly evolved, even though some foreign language textbooks attempt to discuss typical ambiguous socio-pragmatic situations, such as the use of appropriate form of address (i.e.: *tu/vous* in French) in order to reduce pragmatic errors or deficiencies that L2 learners often demonstrate. However, as Kasper and Rose (2003) explained the classroom setting is undeniably linked with an absence of social consequences in terms of appropriate pragmatic competence.

In the early stages of technological tool integration, Kinginger (1998) noted that electronic media can force certain dilemmas of authentic interaction into the classroom. This argument was later empirically supported in a telecollaborative study conducted by Belz and Kinginger (2002; 2003) in which they highlighted the potential of developing pragmatic competence as a result of personal relationship building. Subsequently, Thorne (2003), an expert in emerging tools for pedagogical implications, stated that learning outcomes in the area of pragmatics are substantially enhanced when language learners are embedded in a larger context of significant relationships,

such as the various ones provided by Internet-mediated partnerships. These different attempts to integrate technology in language classes were fundamentally successful at establishing meaningful contact across cultures by interacting with individuals of different cultural backgrounds; which is one of the aims of mastering a second language (Dornyei & Csizer, 2005).

Despite the obvious opportunities that electronic tools offer, computer-mediated communication in the context of L2 pragmatic competence is an underexplored area of research. As postulated above, Facebook allows its users to carry out meaningful interaction synchronously or asynchronously with speakers of different languages and also to access an incredible amount of valuable and authentic information on a variety of topics. In other words, this SNC can be seen as an innovative tool to facilitate the development of socio-pragmatic awareness and competence in second language learners through meaningful intervention, and can promote cross-cultural understanding. Similarly to the telecollaboration project (Belz & Kinginger, 2002; 2003), the Facebook website is cost effective and presents L2 learners with opportunities for intercultural communication with authentic native speakers of comparable age. In line with Belz's (2007) telecollaboration work, it is not unreasonable to expect that learners involved in academic applications of SNCs like Facebook will ultimately develop relationships with native speakers who share similar interests and who will interact on a regular basis in the L2.

Various activities can be developed in the language classroom for pragmatic development. Kasper (1997) identified two types of activities. First, activities can focus on raising students' pragmatic awareness, or second, on tasks which provide opportunities for student to actually practice communication. Both can be accomplished via Facebook. Language learners can easily join groups who exclusively interact in the target language and observe written exchanges between the members on the wall or in the discussion forums. Through legitimate peripheral participation (Lave & Wenger, 1991), a learner can use observation as one of the best tools for understanding the practices of any given community. Furthermore, the same tasks will be an eye opening experience for many language learners who usually have had little exposure to language variation. *Groups* on Facebook are often associated with linguistic- geographical pride and also present basic images associated with the main concept introduced, such as flags or landmarks, powerful visual cues for certain types of learners. Consequently, language variation and other important linguistic and cultural issues can effortlessly be presented to L2 learners by consulting groups such as:

- Oui, je parle Suisse et alors (see Figure 1)  
[Yes, I speak Swiss and so what]
- Adieu, t'es vaudois ou bien  
[Hi, are you from the canton Vaud<sup>5</sup> or what]
- Tu es un vrai marseillais quand...  
[You are a real inhabitant of Marseilles when...]
- Seulement les vrais Québécois  
[Only the real Québécois]
- *Tu sais que tu viens de Mont-tremblant quand ...*  
[You know that you are from Mont-Tremblant when...]
- Pour l'union de la Belgique francophone à la France !  
[For the union of the French speaking part of Belgium to France]
- República Argentina  
[Argentine Republic]

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<sup>5</sup> South West part of Switzerland, where French is the official language



This language variation is of particular interest for intermediate and advanced language learners as it illustrates the richness of the L2 and introduces them to more authentic and colloquial language. In fact, Matthey (2003) pointed out that this variety of French differs at several levels from standard French which is typically associated with the Parisian region (Ayres-Benett, 2001). Differences in prosody, phonology, morpho-syntax have been identified in Swiss French, but the most common type of variations are lexically based. This Swiss group established a clear list of a few words and expressions that are further discussed by Swiss natives; therefore, students have the opportunity to encounter realistic and authentic language through discussion forums associated with the same *Group*. Scholars (Auger & Valdman, 1999; Auger, 2003) claimed that it was necessary for French learners to be introduced to different varieties aside from standard Parisian French to develop their receptive skills at an early stage of L2 acquisition. They argued that students should be made aware of the extra-hexagonal varieties of that language as early as possible so that they develop abilities to recognize certain local particularities and acknowledge the functional effectiveness of non-standard French.

In a similar vein, the language varieties exhibited by members of *Groups* from various Spanish-speaking countries exposes learners to linguistic varieties and colloquialisms that language departments and textbooks cannot match. Many higher education language programs recommend that their students spend time abroad; therefore, putting them in contact with authentic language and making them aware of variations is essential to ease the transition which is currently lacking in most curriculums. For instance, Spanish Language text books fail to address the use and application of the subject pronoun “vos” and the verb forms that accompany it, although it is used throughout Spanish-speaking America as an alternative to tú (familiar, singular, you), and alongside both tú and Ud. (formal, singular, you) in some countries. But, where textbooks fall short, Facebook can bridge the gap, helping students to gain insight on a culture prior to spending time abroad:

“viva argentina!!! ... y la forma "voceo" ... porque "Vos sos mi mejor amigasso, che!"  
[Long live Argentina!! ... and the “vos” form... because “you are my best friend,  
(typical Argentine utterance)!], *Not Everyone Who Speaks Spanish is a Mexican*.

Information gathering through observations of naturally occurring speech acts in Facebook *Groups* is not only easily accessible, but also is attractive to students and beneficial for their pragmatic development. Awareness-raising activities provide language learners with the necessary analytical tools to be able to draw generalizations about pragmatic aspects inductively (from data to rules) such as apologizing, greeting, formulating requests among other illocutionary acts. Without such activities L2 learners may never realize and understand that languages treat speech acts differently. This initial experience with regional variation increases understanding of actual language use in context. In addition, accessing group discussions on Facebook can help language learners to comprehend how culture and language are interrelated as well as develop their awareness about the fact that certain speech acts are difficult to translate from their native language to the target one for cultural reasons.

These types of activities are theoretically grounded to the Sociocultural Theory that originated from the writings of Vygotsky and his colleagues. This approach to learning states that development processes happen through participation in cultural, linguistic, and historically formed settings (Lantolf & Thorne, 2006). In other words, in educational settings, peer group interaction and collaboration are necessary and in fact precede and shape learning. Lantolf and Thorne explain that: “language is the most pervasive and powerful cultural artifact that humans possess to mediate their connection to the world, to each other and to themselves (p. 205), but the quality of mediation required for learners to grow and gain adequate ability to function in an L2 autonomously vary. This theoretical framework to learning in general also stipulates that humans

have the unique capacity to imitate the intentional activity of other interlocutors and by observing and/or participating in discussion forums, language learners could put this ability to practice.

To conclude, it is important to note that, as Elslami-Rasekh (2005) pointed out, practicing and using speech acts are the next steps for students who have developed the necessary pragmatic awareness of the differences that their L1 and L2 presents in certain illocutionary acts (exposure is insufficient for acquiring pragmatic competence in an L2). In addition, learners cannot be coerced into making choices regarding language choice; however, the knowledge of L2 pragmatic systems empowers them not only in terms of becoming bilingual, but also to appreciate better how their own native language functions.

## Conclusion

Technology is an inherent part of our students' daily activities and as Windham (2005) reported, many students expect technology to be an integral part of Higher Education. Georgina & Olson (2008) pointed out that because of this trend, because more and more research recognizes its importance, and because students have a positive impression of instructors who integrate high-tech e-learning tools in the classroom (Imus et al., 2004) many faculties from a variety of disciplines are discussing how to adjust pedagogical practices to reflect the norms and expectations of today's learners. The popularity of the social networking site Facebook is indisputable. As Prensky (2007) noted the twenty-first century will be characterized by even more enormous, exponential technological change. As educators it is essential to take advantage of such technological tools to enhance autonomous language education and abandon our pre-digital instinct and comfort zones. As Prensky (2008) strongly claimed: "We must get our teachers – hard as it may be in some cases – to stop lecturing, and start allowing students to learn by themselves" (p. 3).

Various usages of this website can be integrated in foreign language courses. In this article we emphasized the *Group* application available on Facebook and highlighted the benefits of authentic language interaction and the development of socio-pragmatic awareness (language use in specific contexts, relationship building, and language awareness through observation and/or experience), which is an aspect of language acquisition that is often omitted in textbooks. In addition, increased motivation and improved performance in language classes have been associated with the feeling of classroom community (Rovai, 2002) and Facebook is undoubtedly a tool that can enhance the sense of belonging. What's more, Facebook has unique features that offer constructive educational experiences while maintaining privacy and safety. The potential of this social website is growing everyday with new applications that we have not discussed in the present article; however, this article provides starting points for the engagement of further investigations in the abundantly promising field of Facebook pedagogical and linguistic research.

Future research should focus on engaging faculty and possibly students in exploring different ways to utilize such a website and other emerging technology possibilities. Additional work is required to refine our understanding of design and support of social network websites not only in language learning, but also in a variety of disciplinary and institutional contexts. Rigorous and systematic research into online learning is needed to enlighten educators as to how to best integrate and utilize tools and applications from Facebook in language curriculum. Ways by which to integrate SNC use with course learning outcomes, the assessment of those outcomes, and the establishment of activities via SNCs which support the achievement of learning activities are ripe for exploration.

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Editor's Note: The editors found this research paper unique and provocative in its analysis of learning activities. It is hoped that the author will continue research in this area.

# Using Wikis in the Teaching of a Short Course on the History and Philosophy of Science

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South Africa

## Abstract

This paper details the impact of using Web 2.0 social software tools (in this case wikis) in a course on the History and Philosophy of Science (HPS). The course is a three-week course offered to Biology postgraduate students. Collaborative work and student engagement was encouraged through the use of collaborative notemaking using wikis. Students worked in the assigned groups and met regularly to complete the wiki pages. They presented their wikis as a final assessment event and also provided feedback on the usefulness of notemaking using the wikis. The wiki construction enabled collaboration, collaborative notemaking and learning in a non-threatening way. Wikis can be extremely effective in enhancing learning. We have now extended the use of wikis to collaborative writing exercises.

**Keywords:** History and Philosophy of Science, socio-scientific issues, wiki, collaborative notemaking, artifact production, learning, evolution, nature of science

## Introduction

This paper details the impact of using Web 2.0 social software tools (in this case wikis) in a course on the History and Philosophy of Science (HPS). The course is a three-week course offered to first-year postgraduate students who have a background in the biological sciences. The course was introduced for two reasons: the instructor saw the value of designing a course which dealt with science but that spoke to the socio-scientific issues; Matthews (1994) advocates the explicit teaching of the history and philosophy of science to students to help them address their misconceptions about science and to get them to understand epistemological aspects of science. Generic skills for BSc degrees (SAUVCA, 2002) include: demonstrate knowledge and understand concepts of the discipline; access, evaluate and generate scientific information, work as a team member in scientific investigation, communicate accurately (oral, written, presentation), and manage their own learning ([http://free.uwc.ac.za/wiki/philosophy\\_of\\_science](http://free.uwc.ac.za/wiki/philosophy_of_science)).

### *The challenges faced teaching the course*

I have grappled with how to get students to learn biology content in a meaningful way and how best to integrate assessment so that it is seamless and authentically measures what students actually learned. Lectures alone were not effective. Feedback from assessment in such short courses is often not available to students in time to gauge their learning as often in modular systems the feedback from assessments are received after the course is done (Lea and Street, 2000). The intention in the History and Philosophy of Science course was to provide the feedback at each discussion session following an assessment task.

The course focuses on biologists and the kinds of contributions they have made in order to change the face of biology. In this case I taught the science of evolution which is an overall principle of biology and I focused on the contributions of various scientists to that particular content. The teaching approach I used was largely socio-scientific. This allowed me to bring in the stories or histories and the contributions people made to science in a way that humanizes science. Group collaborative work and student engagement were encouraged through the use of collaborative notemaking using wikis.

In the course I teach explicitly about the nature of science. The Nature of Science (NOS), including scientific habits of mind, is an important goal of scientific literacy (AAAS, 1993; NRC, 1996; Holtman, 2000; Vhurumuku, Holtman, Mikalsen and Kolstoe, 2006; Holtman, Marshall and Linder, 2006; Vhurumuku and Holtman, in press/2008). A scientifically literate citizenry will be able to participate meaningfully in decision making on science and socio-scientific issues. The NOS ideas were elaborated on during the class discussions, DVDs about biological concepts (e.g. the PBS series on Evolution) and in the notemaking process as guided by the organizing questions.

### **Why wikis**

Wikis allow for collaborative work and allow students to develop their writing skills. It allows team members to check on the team's progress and retains different versions of the "product" (notemaking). This allows team members to check on and edit the product as it is developing. The feedback loop is built into the process of notemaking. The lecturer could also check on progress by accessing the wiki at any time and giving feedback either verbally, by email or within the wiki page. Effective and substantial feedback in terms of an assessment task is central to the learning process and impacts on students' development (Davies, 2006; Black and William, 1998). Feedback and how it is used by students can contribute to achieving Vygotsky's zone of proximal development (Vygotsky, 1978). Students can work collaboratively so that they scaffold for each other with the guidance of the lecturer and achieve the learning outcomes or learn the skill identified.

### **Theoretical Framework**

This project is underpinned by various theoretical perspectives. Activity theory and artefact production are theoretical lenses which assist us in making sense of how students learn and make sense of the content in the process of collaborative notemaking and discussions. The artefact production theory fits well with the fact that these students were producing the wikis through the interaction and negotiation with their peers. The product of the learning, which is the wiki, is something tangible and it provides something tangible where one can measure whether the learning outcomes have been met or not met.

Activity theory provides a lens through which we can look at activities which together contribute to the learning act and takes us therefore beyond the processes of learning which takes place in the mind of the person learning. We know from the literature that there are many activity systems and within those many activities carried out by people in the world. These can all impact on an individual. We will however only focus on the HPS course activity system for this paper and how wikis (product or artefact) enhanced learning. In this research study, the subjects (students in the HPS course) performed certain tasks and activities: attended classes, participated in discussions, watched video and browsed websites and books and journals, answered questions, asked questions, performed assessment tasks and produced a wiki (as artefact of the learning that took place during the course). They operated under the guidance of the lecturer and were curtailed in their activities by certain rules (university rules, class rules, course rules, group rules), access to tools (e.g. internet connectivity, books, journals articles, computers) and time. The time each team member had to do the task was extended in a way if they had off-campus connectivity. This means that individuals could discuss in their teams, divide the task among themselves (division of labour) and go online in their own time. Learning was not switched off but was continuous; it was not space and time bound. Interest in the topic and planning the layout and content meant they had to understand the sequencing of material, had to read, had to agree on what was contained in the wiki pages. Group or team work enhanced collaborative and socialization skills and ensured student engagement with the topic and improved conceptual development (Holtman, 2008/working paper). The outcome or goal of the project was to enhance student learning of

biological concepts in the context of a socio-scientific teaching approach and the use of technology (wikis). The measurable outcome here would be the extent to which students would be able to integrate and synthesis knowledge in the wiki. A subgoal was to integrate assessment and to focus on the formative elements of assessment. Stiggins (1999) warns teachers that using assessment through rewards and punishment to motivate students to learn does not work. Students should be motivated to learn by “involving students deeply in the assessment, record-keeping and communication processes (Stiggins, 1999: 29). Davies (2006) speaks about the peer assessment and how students should be involved in feedback (‘marking’ and ‘commenting’) of each others work. Wikis allow for editing by group members and records and archives changes made to the wiki page; the research project saw the wiki therefore as a tool by which students could become involved in the assessment process. The object of the project was the wiki which we can also refer to as the artifact in terms of artifact production. The detail in terms of conceptual change which occurred during the course is dealt with in another article (Holtman, 2008/working paper).

## Research Questions

The research questions pursued in this article include:

1. How has using wikis in this course enhanced student learning?
2. What is the impact of integrating assessment in this course using wikis?
3. How has the use of wikis contributed to collaborative learning?

## Methodology

The study can be described as an exploratory, descriptive study or a case study. This paper reports on data collected in 2008.

### **Sample**

The study participants comprised 12 postgraduate students registered for an entry level postgraduate degree in the biological sciences (i.e. the BSc Honours degree). The students were all BSc graduates. One student was male and 11 were female. The class was grouped into four groups comprised of 3 students each. One student struggled to express herself in English; she was placed in a group with two other English speaking females who collaborated on a wiki. Three of the four groups were comprised of female students and one group included one male.

### **Data sources and data analysis**

Various data collection instruments and techniques were used. Questionnaires were used largely to assess conceptual development and conceptual change. One of the questionnaires was based on ideas from a number of sources including the research literature on misconceptions regarding evolution, U.S. National Academy of Sciences publications on evolution and creationism, and a SRnet discussion forum comprised of about a dozen science educators. It is framed within the content knowledge of evolutionary theory. The aim was to elicit their prior knowledge on habits of mind associated with science and religion, the history of life on earth and the universe, and the nature of science. Another pre-test was administered at the start of the course in order to gauge students’ prior knowledge of great minds in biology, and their basic knowledge of Nature of Science (NOS) issues. Other data sources include the final objective examination, course evaluations, and observations and discussions conducted during the face-to-face sessions. The wikis of each group was another data source ([http://free.uwc.ac.za/wiki/group\\_1](http://free.uwc.ac.za/wiki/group_1))

Quantitative data (close-ended choices) were analyzed through simple descriptive analyses. Open-ended responses were analyzed qualitatively through content analysis and provided

information for categorizing participants' profiles and conceptual models for evolution. Course evaluations, wikis and observational data were analyzed in the same way.

## Results and Discussion

### ***Wiki pages and presentations***

Students worked in the assigned groups and met regularly to complete the wiki pages. They were not told what to include on the wiki and had to negotiate within their groups with regard to the content of the wikis. Student wikis were not made public. They presented their wikis on the final assessment day and also provided oral feedback on the usefulness of notemaking using the wikis. Most of the study groups used the organizing questions provided by the lecturer as a framework for developing their wikis. As the assessor I was able to give feedback on the product of learning, their wikis and suggest ways in which to improve the content, for example, correcting spelling errors and citing sources. Students felt that developing the wikis helped them to organize their notes and they enjoyed working on the wikis with their peers. Some felt the wikis helped to improve their skills such as digital academic literacy, information literacy and computer literacy skills.

...it made it a lot easier to understand the work and also the class had a discussion on the wiki so everyone brought their own ideas forward (student 1).

I think it helped organize our notes and in doing it we could share information which helped for better understanding (student 2).

By thoroughly understanding the content to upload to onto the wiki made it better in terms of learning (student 4).

The wikis provided the space for students to interact with each other and to close the gap on both conceptual and technological skills.

...not only is it easy to use, it also helped improve my computer/writing skills as well as my language skills, and the fact that I can look at other people's work and which may and will add to my knowledge, it's a useful tool (student 5).

### ***Class discussions***

Integration of assessment is evident when one looks at class discussions and related activities. These will be discussed theme by theme as each theme had its own approach and contributed to developing a feeling of "community" during the course. For the most part class discussions were guided by organizing questions, which guided students' preparation as well as discussion. Students' notes were posted on their wikis after reading the notes. The readings were focused on socio-scientific issues and others focused on biological concepts related to themes. The biological concepts were related to the principle of evolution and included natural selection, the importance of sexual reproduction, misconceptions about natural selection (e.g. Lamarckism).

The themes covered in the course included:

#### ***Nature Of Science & selected "great minds of science"***

The National Research Council publication *Teaching about Evolution & the Nature of Science* (1998) provided the introduction to the course. We followed the lesson plan as suggested but adapted some questions. Each group discussed and presented their answers to class. In the past for this course, students displayed their discussion posters in their lab and it was useful when writing their notes. Discussion points were now summarized on the wiki.

An important part of this section was the pretest survey. It allowed the instructor some insight into what students already knew (or did not know) and to be flexible in her approach to teaching

this course and article selection. Students admitted that at the start of the course, the readings were a little dense and difficult to digest.

### **Science, Religion, Evolution and anti-science**

This also involved a pretest survey, which prepared students further for discussions. They enjoyed the assigned readings and reading was easier than in week 1. Following this discussion session, one student commented that she would like to have more readings like these assigned to expand her understanding of science and the Nature of Science (NOS). Students sought out other articles related to the topic and posted that on their wikis.

([http://free.uwc.ac.za/wiki/group\\_3#references](http://free.uwc.ac.za/wiki/group_3#references)).

### **Women, Race and Science**

The articles assigned highlighted the issue of girls in science classrooms as well as that of women in science (academia/workplace). This contrast allowed for lively discussion and some of the female students acknowledged the importance this topic has for their lives.

*I feel strongly that we are – largely, not exclusively – a product of our upbringing. The 1989 Equitable Treatment of Girls and Boys in the Classroom (AAUW) article reinforces my opinion that the most drastic changes are to be made at a school (preparatory through to college-entry) level. The most vital evidence gained from these readings is that there exists no evidence for a difference in scientific ability between a male and female mind (Women in Science article), yet these gender differences are instilled in children by parents, teachers and their peers and are internalized (AAUW 1989).[Female Student 6]*

### **Assessment**

Examination questions were stated around the themes that were highlighted during lectures and this allowed students to integrate lecture discussions and their readings in order to answer the questions. The wikis provided a collaborative authoring environment (Minocha and Thomas, 2007). The course was structured around a largely formative assessment process where the assessment was integrated with the course activities to achieve the learning outcomes of the course. Students got feedback from the lecturer during discussion sessions and gaps in their understanding were filled during these sessions through a whole class feedback and lecturer feedback. Students were allowed to edit their wikis after discussion sessions if new insights had arisen in the session. Knowledge sharing and creation was evident during the class discussions and the development and presentation of the wikis. It appears that the course had an impact on their reasoning skills as can be seen in the way the examination questions were answered (Holtman, 2008/working paper). The impacts of the course are referred to in the examination responses (summative assessment) and course evaluation.

The test at the end, being open book, . . . and the assessment being more informal, made it more comfortable to express what we've learnt (Student 2).

Yes, I think it is better to work hard through the course than at the end with the test. You learn more by working consistently (Student 3).

Think its quite good that its in two parts, you can actually improve in the second part if you did bad in the first part or do good in both and get good marks. The second part also test s your understanding of all work done (Student 5).

## Discussion on General Impact

Student evaluations done at the end of the course indicated that they felt that the course learning outcomes were met, they gave constructive suggestions on how the course could be improved for the future and they were generally happy with their own participation in the course.

The results of the course evaluation at the end of the course indicated that students enjoyed the course and that they did not expect to learn so much in just three weeks. Learning occurred, according to the students, because they discussed and made things clear for each other in the group. Collaboration therefore was effective and feedback was crucial. Students saw formative assessment as used in the major part of the course as seamlessly integrated in the course. Orsmond, Merry and Reiling (2005) assert that feedback should be built into students' overall learning and should not just be added on at the end of a course. Usually students dread summative examinations. Summative examinations are usually viewed by students as something they must do and they move on from it. In universities summative assessments are usually written at the end of a module and students do not get feedback on it other than the final mark or grade. In the case of the History and Philosophy of Science (HPS) course however, students saw it as an opportunity to show how much they had learned and what they had learned was reflected in the way in which students were able to synthesize from the different sources available to them. The development of the wiki provided the practice for students to synthesize their knowledge. What we see in the wiki (the product) is in fact the artefact of their actual learning. Students noted in our final discussion that assessment was integrated. I used a technique called "organizing questions" which allow students to read material with a purpose in mind. The students felt that it provided structure for them as they collaborated on their wikis.

Their information literacy skills were developed and a firmer foundation in this skill was laid in preparation for the even more demanding disciplinary focused modules following my module. Students conducted literature searches and interviewed female or black scientists for one assignment. This was included on the wiki

([http://free.uwc.ac.za/wiki/group\\_1#assignment\\_2gender\\_and\\_race](http://free.uwc.ac.za/wiki/group_1#assignment_2gender_and_race);  
[http://free.uwc.ac.za/wiki/group\\_2#interview\\_with\\_a\\_black\\_female\\_scientist](http://free.uwc.ac.za/wiki/group_2#interview_with_a_black_female_scientist)).

The idea here was that these scientists serve as role models for young scientists and in fact some of these students are currently under the supervision of some of the people they interviewed.

Students took pride in putting together their wikis and claimed authorship by citing their wikis in the final written examination. Producing artifacts such a laboratory reports, scientific reports, popular articles and research articles are expected of scientists and the students were learning the basic skills during the development of the wiki.

There was a seamless integration of ICTs in this course; the wikis (object, product or artefact) and other technology used were tools to enhance learning (learning goal or outcome) and mediate the processes between subject (students) and object (Rizzo, 2003). Rules such as time available to complete the wiki, the wiki (object) as collaborative artifact and group assessment for the final product also mediated these processes. In addition division of labor and the expectation that each team member would contribute to the wiki also played a role.

## Conclusion

Students enjoyed the fact that they could claim authorship of the wikis. We started the wiki pages by asking each student to publish a profile. Students appreciated this and it impacted on their commitment to the course and wiki production. Wiki can be extremely effective in enhancing learning as a tangible measurable outcome of learning and as a product of learning. In this case then integrating assessment had a positive impact on learning. We have now extended the use of wikis to collaborative writing exercises including writing articles for publication.

This course provides the opportunity for students to experience a seminar-like teaching style which is often new to them at the start of the postgraduate level. It also provides students with the opportunity to develop and hone communication and presentation skills early on in the skills year and informs them of their knowledge gaps early enough so that they can invest in remediating these (e.g. by reading, taking a course or two). Wikis allowed students to enhance their learning from peers and the resources available to them (access to the internet, books, online journals, the lecturer and subject experts consulted). It would appear therefore that artefact production, learning, becoming knowledgeable and developing or refining skills (e.g. technical and information and digital literacy skills) were happening seamlessly (Julie, 1998) during the three week period.

The few negatives such as internet downtime and team members not contributing equally until the group addressed the issue did not impact significantly on the wiki production.

The instructor also has the opportunity to inform new students about the fields of interest of the department in an informal way. Furthermore, the course enabled discussion around issues that students needed to get to grips with (discipline specific knowledge) as well as issues that were relevant to society at large (race and science, women in science, religion and science, under-representation of women and non-whites in science). The wiki construction enabled collaboration and collaborative notemaking in a non-threatening way.

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**Editor's Note:** An overwhelming majority of students have equipment to download and play digital audio files. The researchers achieved favorable results from audio podcasts to supplement traditional instruction for distance learning students. They found podcasts have the capacity to enhance course perceptions and some aspects of student motivation and performance.

## **Podcasting: A Method of Enhancing Course Perceptions and Performance in Music Appreciation**

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USA

### **Abstract**

The overall goal of this research is to examine the effects of auditory learning in podcasting on cognitive engagement. We tested the hypothesis that the addition of weekly audio podcast episodes will enhance academic performance, musical preference, and intrinsic motivation in distance education music appreciation courses. Standard distance learning course materials are predominantly visual. Podcasts reinforce sensory learning and accommodate learning styles. In each of two experiments, we compared two college level on-line music appreciation classes. In experiment 1, students in both classes utilized traditional hard copy texts and received standard visual teacher-made course materials and one class received additional weekly podcast episodes. In experiment 2, both classes utilized online course texts and materials and one class received additional weekly audio podcast episodes. In both experiments, additional episodes contributed to learner perceptions and intrinsic motivation levels.

**Keywords:** Distance education, distance learning, music, music appreciation, podcast, auditory learning, motivation, performance

### **Introduction**

Distance education refers to “a system of methods, specific tools and forms by means of which the content of the education is transmitted and the goal directed implementation of the aggregate set of pedagogical procedures” (Andreev, 1999, pg. 139). Although pedagogical procedures may vary according to course content, the delivery system can influence overall learning. Course delivery refers to specific methods of accomplishing an integral pedagogical process that have the capacity to facilitate interaction between student and instructor. The purpose of this research is to examine the effects of podcasting on course performance, course perceptions, and intrinsic motivation as an integral part of a course delivery system in an on-line music appreciation course.

Technological advances such as the iPod are shaping the way young adults access auditory information. Audio podcast episodes refer to digital audio files that are downloaded, not as individual MP3s, but as part of a method of delivery for audio files. Audio files are then accessed and available for listening at the user's convenience. Recent data show that one in four Americans currently owns an iPod or another brand of portable digital music player (Ferguson, et al., 2007). Eighty percent of college students in the United States own at least one device capable of downloading and playing digital audio files. As technology offers increased possibilities for course delivery, educators must evaluate distance education technologies to determine which technologies adequately address the needs of the learner. Evaluation of new technologies on learner-content interactions, learner-instructor interactions, and learner-learner interactions will provide educators with much needed information as to the most effective methods for content delivery. Perceptions of course content and course technology will serve to impact learner-content interactions. Intrinsic motivation levels measure learner-learner outcomes. Perceptions of the instructor will be measured to examine learner-instructor outcomes. Academic success will also provide a measure of the usefulness of the podcasts for music appreciation students.

Most college level distance education courses contain a diverse group of students, traditional and non-traditional. Music appreciation is no exception. One key challenge is to create and maintain course content that accommodates the needs of a diverse group of learners. According to Chickering and Gamson (1991), respecting diverse talents and ways of learning is included as one of the seven principles recommended for good practice in higher education. One way of accommodating learning styles is to present information in multiple formats. This practice is consistent with previous educational research examining learning styles. According to Fleming and Mills, there are four main styles of learning that include visual, auditory, reading/writing, and kinesthetic (1992). Many distance education programs focus primarily upon the visual learning style. This is a key limitation as learning is an active process in which students rely on sensory input to construct meaning. We hypothesize that podcasts will promote cognitive engagement which contributes to enhancement of academic performance, learner perceptions, and intrinsic motivation by accommodating learning styles and providing a sense of interaction with the instructor.

Audio podcast episodes refer to audio files housed on a server and easily accessed at the user's request. The user has the opportunity to subscribe to specific podcasts or automatically download new podcast episodes. Podcasting has the capacity to accommodate the auditory learner, students with special needs, or those for whom English is a second-language. Sound files can be compressed into MP3 files and uploaded to a server for maximum compatibility. Files are easy to create and inexpensive to distribute. In addition, podcasts containing audio recordings provide the instructor with a record for personal assessment and reflection and can be stored for future use. Students can choose when and where to access podcasts. Technology that offers such convenience combined with a degree of familiarity has the capacity to positively impact learner investment and thus, has the capacity to influence cognitive engagement.

The purpose of this research is to examine the effects of podcasting as a delivery system on cognitive engagement in an on-line music appreciation course. Distance education courses often require students to be cognitively engaged or invested in their own learning (Fredericks et al., 2004). Cognitive engagement is characterized by self-regulation, investment, and motivation (Corno & Mandinah, 1983). Prior research suggests that cognitive engagement is a construct that is examined by student performance and intrinsic motivation levels (Richardson & Newby, 2006). Intrinsic motivation refers to the engagement of an activity for the pure satisfaction of the activity itself. Intrinsic motivation levels are typically higher in students who attribute educational outcomes to internal factors for which they have control, pursue a topic with a level of interest, and believe in the potential to reach a particular goal. Prior research suggests that intrinsic motivation levels and course attitudes in distance education have a direct effect upon overall course performance (Richardson, 2007). This view, often referred to as self-regulated learning, accounts for differences in higher education course performance through differential study strategies and controlled processes. A general theoretical model proposed by Richardson implicates student motives and attitudes as having the most dramatic impact upon study behaviors (2007). This research focuses upon the evaluation of podcasting on course attitudes and motivation levels. We hypothesize that the experimental group who has access to course podcast episodes will indicate a more positive view of the course, demonstrate higher course performance, and indicate higher levels of intrinsic motivation compared to the control group that does not have access to course podcast episodes.

## **Methods**

### ***Experiment 1:***

A quasi-experimental design was used to examine the effects of auditory learning in podcasting on academic achievement, learner perceptions, and musical preferences of college students in a

music appreciation distance education course. Two sections of distance education music appreciation courses taught by the same instructor were recruited for research participation. All participants consented to participate in accordance with the procedures established by the East Carolina Institutional Review Board.

One music appreciation class was assigned to the experimental group, receiving weekly audio podcast episodes in addition to standard music appreciation lecture presentations, and the other class was assigned to the control group that did not receive the podcast episodes. Both groups received standard music appreciation course content presented in Blackboard 6.0, a course management system. Prior to the presentation of course content, participants completed a short preliminary questionnaire to collect data regarding musical preference and demographic information. To examine course perceptions and motivations, a modified Intrinsic Motivation Inventory (IMI; McCauley, Duncan, & Tammen, 1989) was administered electronically in Blackboard using password protected access at three time points throughout the course: prior to course participation, mid-way through the course, and upon course completion. The modified IMI consisted of 90 questions administered at each time point to assess motivation, preferences, and attitudes regarding course content and delivery. The IMI consists of statements, such as “I am satisfied with my performance on this task,” and corresponding response choices on a Likert scale 1-7 with three strong categories (not at all true, somewhat true, and very true). The IMI items serve as part of a multidimensional measurement tool that can be modified without effecting reliability or validity (Ryan, Koestner, & Deci, 1991). The IMI is a multidimensional inventory commonly used to measure motivation and self-regulation. Research on the validity of the measure shows strong content validity (McAuley, Duncan, & Tammen, 1989).

### **Course Description and Course Content**

The music appreciation course provides an introduction to basic materials of music for the understanding and enjoyment of music. The course focused predominantly on Western art music from the Medieval Era to the present, and utilized *The Enjoyment of Music*, 9<sup>th</sup> brief edition (Machlis & Forney, 2003). This edition presents Western art music chronologically, with brief supplementary material on vernacular and world music traditions. Students were expected to use an interactive CD-ROM and four enhanced multimedia CDs that accompany the text. Each week's assignments consisted of course readings, short-answer assignments, discussion board postings, five quizzes, and a concert report. Quizzes were multiple-choice objective, and the concert reports were two to three-page papers on a required attendance to a live concert. Discussion board postings gave online learners an opportunity to interact with their classmates. Interaction between students and the community was encouraged through concert attendance resulting in a concert report. An example of a Discussion Board Posting topic is, “Which genre, style or composer that you've learned about in this course will you seek out and listen to after the course is over, and why?” An example of a response: “I will definitely listen to more Classical and Romantic era instrumental music in the future. I always thought this type of music was beautiful, but didn't understand anything about its form or how varied and complex it really is. I used to feel that understanding much of anything about music was beyond me, so learning about the multi-movement cycle, and all of the different composers was challenging. I went to a Classical concert when I did my concert report, so knowing something about form really helped me identify the organization of the music I heard. It is an awesome experience to watch 70 musicians in a live performance!”

Facilitation of interaction between students and the instructor occurred through short-answer questions. Short-answer questions assessed writing ability as well as the students' own personal experience with the course material. Students were required to respond to questions such as, “How does Haydn “surprise” his listeners in the second movement of Symphony No. 94? Be sure to listen closely to this musical example and answer in your own words.” An example of a

response is, “I read in the book that it was a loud part that was used to startle folks who were perhaps asleep. Then I listened to the CD. It sounded lighthearted, very soft and simple. I couldn't hear it very well, so I turned the volume up. Just as I had done that, I heard the extremely loud sound that shocked me so bad that I jumped back in my chair. It definitely caught me off guard.” The instructor provided weekly visual lecture slides in Blackboard that further explained specific chapters of the text. Students in both classes viewed twenty-five PowerPoint presentations (one for each of twenty-five units of the Machlis text). The experimental group listened to accompanying podcast episodes with each PowerPoint presentation. With the PowerPoint presentations, the instructor sought to add interesting material not found in the text, but with reinforced and integrated musical elements taught in the course. With the podcast episodes, the instructor avoided any additional information other than audio examples.

### **Podcasts**

Students in the experimental group were provided access to weekly course auditory lectures delivered in the form of a podcast. Information in the lectures was exactly the same as that found in the visually presented lecture slides, accessible to both sections. Each lecture lasted up to 26 minutes in length. Podcast episodes were posted to a server where students could subscribe to lectures via iTunes. For members of the experimental group, each podcast contained the password embedded in the auditory file to access the upcoming quiz. This helped researchers to ensure that students in the experimental group were receiving and listening to the podcast.

### **Results**

Thirty-four participants (17 experimental; 17 control) completed all research protocols. Results of a t-test on group variables indicate significant ( $p < .05$ ) differences in age between groups

**Table 1**  
**Mean Demographic Data for Experiment 1**

	<b>Experimental (n=17)</b>	<b>Control (n=17)</b>
Age	31.2 (10.4)	22.8 (4.4)
Gender M/F	10/7	4/13
Education	14.8 (.9)	14.4 (1.5)
Ethnicity C/AA/O	14/2/1	13/3/1

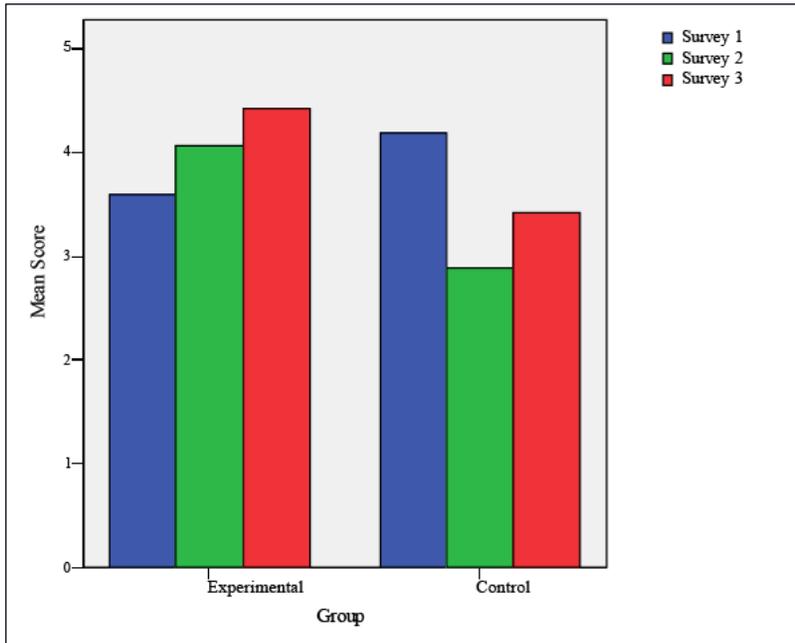
Note: Ethnicity: C: Caucasian; AA: African American; O: Other

No differences were found for education levels. Results of a Group (experimental, control) X Time pre-instruction, mid-point, and post-instruction) Analysis of Variance on IMI course perception factors related to course enjoyment indicate significantly ( $p < .05$ ) higher ratings from the experimental or podcast group compared to controls,  $F(2,31)=4.1$ ;  $p=.02$  (Figure 1.). Follow-up questions on the IMI related to levels of enjoyment indicate a similar pattern of results with the experimental group reporting higher degrees of satisfaction with course materials than controls,  $F(2,31)=2.57$ ,  $p=.08$ . In addition, members of the experimental group reported feeling less distant from the course instructor than controls.

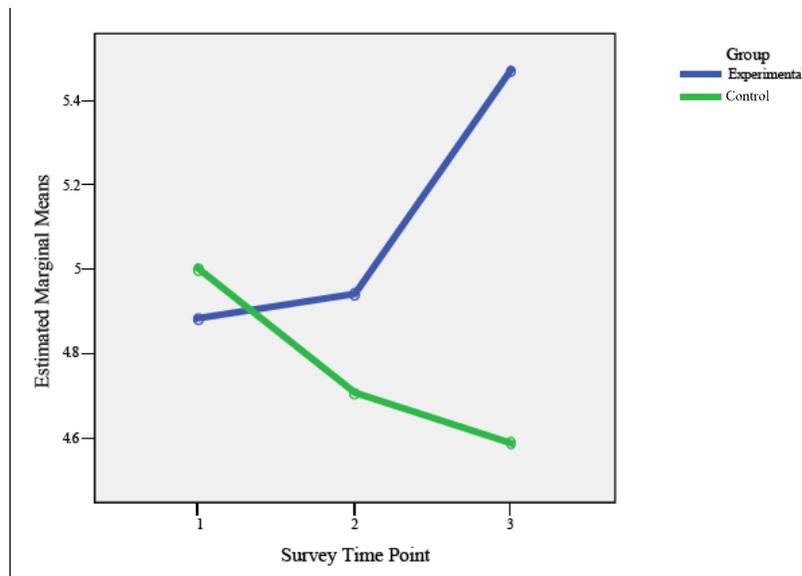
A Group X Time Analysis of Variance conducted on Intrinsic Motivation Inventory (IMI) questions pertaining to course competence indicate significantly higher reported levels of understanding by the experimental group compared to controls,  $F(2,31)=4.85$ ,  $p=.02$  (Figure 2.).

Follow-up questions reveal a trend indicating that the experimental group reported feeling overall more competent on course activities than controls,  $F(2,31)=2.76$ ;  $p=.07$ . Despite differences

related to perceptions of competency, no significant differences were found questions pertaining to musical preference, and neither group reported changes in musical preference over all time points.



**Figure 1. Results of a Repeated Measures ANOVA indicate significantly different group perceptions related to enjoyment of course materials.**



**Figure 2. Group X Time Analysis of Variance**

Overall academic performance between groups differed, although not significantly. Mean quiz scores were compared between groups. The experimental group scored 10% higher than controls on Quiz 1; 3% higher on Quiz 2; and .02% higher for Quiz 4; and .03% higher for Quiz 5. Groups averaged the same quiz score for Quiz 3. Over the 15-week course, experimental group participation increased by 40% compared to controls as suggested by class discussions, survey and preliminary questionnaire participation.

### **Discussion**

The experimental group reported higher levels of course enjoyment, more interaction with the instructor, and higher levels of comfort with course materials and distance education technologies than the control group. The students in the experimental group demonstrated higher response rates, quiz performance, and overall course grades than those who did not receive the podcast episodes. Additional qualitative feedback from some students acknowledged the impact of the podcast episodes on levels of understanding and interactions with the course instructor.

Auditory learning reinforces visual content and often provides another connection with the course instructor. Students receiving the podcast episodes reported feeling more competent than those who did not receive the podcast episodes. This phenomenon is consistent with results of other research studies that suggest auditory presentation can lead to enhanced retention of information (Moreno & Mayer, 1999; Thompson & Clayton, 1974). Enhanced memory for course information and the perceived confidence with course content may have influenced overall course performance.

One limitation of this research was significantly different age levels between groups. The experimental group consisted of an older sample of primarily male participants. In contrast, the control group consisted of a younger sample of female participants. In order to fully test the hypothesis that podcasting can enhance course performance and intrinsic motivation levels, we chose to replicate this research using a matched group of participants and standardized curriculum content.

## **Experiment 2**

### **Methods**

This research will further examine the effects of podcasting on course perceptions and academic performance. Ninety research participants were recruited from two large sections of music appreciation taught by the same instructor. Participants were matched into two groups for age (within two years), gender, and previous academic performance. Matching for previous academic performance required examining previous grade point averages. All participants provided informed consent according to the procedures of the East Carolina University Institutional Review Board.

One music appreciation class consisting of matched participants served as the experimental group, receiving weekly podcast episodes in addition to standard music appreciation lecture presentations, and the other music appreciation matched class served as the control group that did not receive the podcast episodes. Both groups received standard music appreciation course content via *On-Music Appreciation* Second Edition (Connect 4Education; 2007), which contains a digital/online textbook and interactive CD-ROM. This text, which features plentiful audio examples and graphics for students, is a fairly traditional music appreciation course similar to the Machlis text in that its focus is Western Art Music, presented chronologically and supplemented as well with information about vernacular and world musical traditions. Prior to the presentation of course content, participants completed an electronic preliminary questionnaire of 18 questions in Blackboard to collect demographic information. To examine course perceptions and motivations, a modified Intrinsic Motivation Inventory (IMI; McCauley, Duncan, & Tammen,

1989) was administered electronically in Blackboard using password protected access at three time points throughout the course: prior to course participation, mid-way through the course, and upon course completion. The IMI for this experiment consisted of 60 questions using a Likert 1-7 scale with three levels (not at all true, somewhat true, and very true). Excessive redundant questions were eliminated from the previous IMI. IMI is reliable and valid measure of intrinsic motivation and can be shortened by reducing redundant questions and still maintain validity (McCauley, Duncan, & Tammen, 1989).

### **Description of Course Content**

In this experiment, we examined the effects of podcasting in a standard site-based course. The goals of the On-Music Appreciation course included enhancing awareness of music from western and non-western cultures, developing listener attentiveness, and gaining knowledge of basic musical elements. The On-Music Appreciation site offered the full text, listening examples, detailed assignments, assessments, and supplemental learning aids. We replicated the interaction components utilized in Experiment 1 such as discussion board postings and instructor created visual lecture presentations.

### **Podcast Episodes**

The experimental group received access to podcast episodes. Podcast episodes were presented in similar format to those prepared in Experiment 1. Episodes provided additional musical examples not found in the On-Music program, to further illustrate basic musical concepts without duplicating site-based materials. Professor-made episodes highlighted important elements in the music.

### **Results**

Sixty-five participants submitted completed questionnaires and surveys for all three time points. We included only completed data sets in the final analysis. Results of a t-test on demographic factors of age and education reveal no significant ( $p < .05$ ) group differences (Table 2). Results of a Repeated Measures ANOVA (Group X Time) for each question on the IMI-60 item questionnaire indicate no significant differences ( $p < .05$ ) between groups. However, results of a One-Way ANOVA on individual time points reveal significant differences in perceived distance from the instructor. Time two data indicate that the experimental group felt significantly less distant from the instructor than controls who did not receive the podcast episodes,  $F(1,64)=5.7$ ,  $p=.02$ . There was a significant difference between control and experimental group responses regarding the need for more instructor interaction on time three ( $F(1,64)=5.6$ ,  $p=.02$ ) and a trend for time three ( $F(1,64)=3.2$ ,  $p=.08$ ). The control group indicates more need for instructor interaction compared to the experimental group.

**Table 2**  
**Mean Demographic Data for Experiment 2**

	Experimental (n=32)	Control (n=33)
Age	24.4 (7.0)	27.6 (9.5)
Gender M/F	11/21	12/21
Education	14.5 (1.3)	14.6 (1.4)
Ethnicity C/AA/O	21/8/3	20/8/5

Note: Ethnicity: C: Caucasian; AA: African American; O: Other

The experimental group indicated significantly higher confidence levels compared to controls with regard to activity competence reports on time two,  $F(1,64)=4.44$ ,  $p=.04$ . Upon completion of the first survey, members of the experimental group indicate significantly higher levels of enjoyment related to course materials,  $F(1,64)=5.6$ ,  $p=.02$ . Additionally during the first time point, the experimental group responses indicate less tension towards inclusion of technology such as podcasts or PowerPoint files compared to controls,  $F(1,64)=6.82$ ,  $p=.01$ . Members of the experimental group report significantly higher confidence levels with regard to technology usage than controls for time one,  $F(1, 64)=3.5$ ,  $p=.02$ . No significant interaction was found between groups for time 2 and time 3 with regard to reported technology usage confidence.

Experimental group members reported higher levels of motivation for completing assignments than the control group. Results of time three data show that motivation levels were significantly higher for the experimental group,  $F(1, 64)=5.7$ ,  $p=.02$ . Although motivation levels differed, results of a t-test examining class performance on quiz scores indicate no significant differences between groups ( $t=1.51$ ;  $p=.14$ ). Mean scores for the experimental group are 82.50 ( $\pm 11.3$ ) and scores for the control group are 78.74 ( $\pm 8.5$ ).

### **Discussion**

Overall results indicate no significant differences between groups over all time points. Individual time point analysis reveals significant differences in confidence levels, motivation levels and perceptions of technology usage. The majority of the differences found occur in time point 1. This suggests that students felt more motivated and confident on the first time point due to potential novelty of podcasting. At the midpoint in the semester, motivation levels, confidence levels, and technology perceptions seem to stabilize. Consistent with previous literature, the addition of podcast episodes did not affect course achievement (Chernish et al., 2005).

Over the course of the semester, students receiving the podcast episodes indicate more interaction and feeling less distant with the course instructor. This outcome is consistent with our hypothesis and prior research on auditory learning and memory. Research suggests that students feel more familiar with information gained in multiple learning domains. Perhaps this degree of familiarity is associated with not only the content, but the instructor. Potential associations help to bridge the feeling of “distance” in a distance learning course.

### **Conclusions**

Examining the effects of podcasting on student outcomes and perceptions is a new area of research that warrants further investigation. Our results indicate that podcasting has the capacity to enhance some aspects of student performance, motivation levels, and course perceptions. The level of impact may depend upon course materials and content delivery. In experiment 1, students receiving standard texts/CDs and podcasts indicate higher levels of enjoyment and motivation. We measured an additional factor in experiment 1, musical preference. No changes occurred in musical preference as a result of the inclusion of podcasting. This is consistent with prior research regarding attitudes toward music following music appreciation courses (Price, 1988). In experiment 1, our results show significantly enhanced course performance for the experimental group compared to controls. In experiment 2, although the experimental group performed higher on the quizzes, it was not significantly higher than controls. We believe this outcome is also related to the differences in course materials. Perhaps, less content was provided in the on-line materials (experiment 2) than with the text/instructor-based materials (experiment 1). Therefore, students may rely more heavily on the auditory content of the podcast episodes. Replication of this research using similar course formats is necessary to fully understand the role of podcasting on academic performance.

Overall, podcasting may serve as an enjoyable technology to supplement distance education learning. For instructors, the technology is easy to use and facilitates a feeling of interaction with students. For students, podcasting seems to enhance course perceptions and overall motivation levels. Assessment of distance education technologies such as podcasting allows educators to make better decisions with regard to course delivery and offers opportunities for auditory learning.

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**Editor's Note:** The course of human history is riddled with questions concerning the quality, value, and intrinsic benefits of change, whether it is social change, organization of political parties, or development of mass transit systems. The teaching-learning arena is no different!

# **A Conceptual Framework for Understanding Use of Information and Communication Technology in Teaching in Universities**

**Reginald Nnazor**

USA

## **Abstract**

Advances in information and communication technology (ICT) have provided unprecedented opportunities for technology-facilitated synchronous and asynchronous teaching and learning on-campus and in distance education environments. Although there is considerable research on the use of ICT in higher education, the approach to understanding the phenomenon has been mainly internalist. The internalist approach typically focuses on how factors within institutions influence the use of ICT in teaching. As a result, there is little systematic understanding of the influence of factors external to institutions, and how these external factors combine with internal factors to shape the use of ICT. This paper proposes a conceptual framework for investigating factors external and internal to universities that facilitate or hinder the use of ICT in teaching. The framework is constructed with factors that emerge from a purposeful review of the literature on the external and internal environments of higher education.

Keywords: technology in education, higher education research, distance education, framework

## **Introduction**

The use of information and communication technology (ICT) in teaching and learning in universities is now almost ubiquitous. There is, however, a paucity of research that provides systematic understanding of factors external and internal to universities that facilitate or hinder the phenomenon. Studies on the use of ICT in higher education typically take an internalist approach – they focus mainly on factors within institutions (Bates, 2000; Cole, 2000; Ransom, Graham & Mott, 2007; Price & Oliver, 2007).

The use of ICT in the teaching and learning process in universities is a social and organizational phenomenon. Social and organizational theories suggest that studies seeking to provide robust and comprehensive understanding of phenomena take approaches that seek explanation of relationships or connections between micro and macro levels of factors. This is because “institutional or structural features of society are intimately interwoven with behaviour and activity” (Layder, 1993, p.55). The implication of this is that attempts to comprehensively understand an organizational phenomenon, such as the use of ICT in teaching and learning, should entail taking into account the influence of relevant factors at individual, organizational, and societal levels (Katz & Kahn, 1966). In higher education research, in particular, this approach receives strong support (Becher & Kogan, 1992; Clark, 1983). Becher and Kogan (1992), while generally examining faculty attitudes and values note that, “academics are amenable to outside influences impinging on their beliefs and values in the normative mode and conditioning their activities and practices in the operational mode. The normative dimension includes professional norms as well as social, economic, and cultural forces” (p.117).

If, as Becher and Kogan (1992) postulate, faculty beliefs, values and occupational practices are susceptible to societal influences – a postulate that is, of course, in consonance with the rationale undergirding the micro-macro approach in social research – then an analytical framework for

investigating the use of ICT in teaching in universities should include the influence of factors external and internal to universities.

### ***External factors***

Theories of organization, such as open systems (Katz & Kahn, 1966), contingency (Lawrence & Lorsch, 1967), ecological (Aldrich, 1979; Hannan & Freeman, 1977), and institutional (Meyer & Scott, 1992) emphasize the relationship between organizations and their external environments. Universities, like other organizations, are susceptible to the shaping influence of elements in their environments. A review of the literature, for instance, (Blackman & Segal, 1992; Neave & Vught, 1994; WGDOL, 2003, 2002) identifies the following key elements in the external environment of universities: information technology, government, industry, and demand for access.

In the paragraphs that follow, the literature on the external environment of higher education is purposefully reviewed to identify external factors that have potential to influence use of ICT in universities. Identified factors are utilized to construct the external component of the framework for research presented in this paper.

### ***Information technology as an influence on the university***

Contemporary society is evidently experiencing information revolution. The single most important factor enabling the revolution is Information and Communication Technology (ICT). Martin (1988) describes ICT as a change agent and observes that “no field of human endeavour remains immune to its influence, no corner of life is left undisturbed by its coming” (p. 11). Increasingly, ICT is used to facilitate teaching and learning in universities because of its potential to facilitate time and place independent access, enhance quality, and reduce costs (Price & Oliver, 2007; WGDOL, 2003). In spite of the strong, if not enthusiastic global interest in the use of technology in education, critics question the notion of technology as a “magic bullet” for addressing the concerns about access, quality, and cost.

Proponents of the use of ICT in education argue that the capability of technology to support time and place independent educational transactions can be harnessed to provide greater access. A claim, such as this, which tends to suggest that technology can be used to expand or democratize access, is challenged by critics, or presented rather gingerly by more cautious proponents on the grounds that not all can afford access to technology (Bates, 2000). The key questions about the access-expanding rationale relate to affordability of technology and possession of appropriate skills by those who need educational access. The capability of ICT to support a variety of educational transactions to a considerable extent is, however, hardly questioned.

With regard to the quality-enhancing rationale, it is often claimed that quality of education can be improved through the use of technology (Beers, 2007; Dabbagh & Bannan-Ritland, 2005; Epper & Bates, 2001). The capability of the Internet, for instance, to afford access to world-wide learning resources is a tremendous potential for improving educational quality. The capability of e-mail to support time and place independent teacher-student and student-student communication is also a quality-improving potential. Furthermore, the capability of computer conferencing to support one-to-one, one-to-many, and many-to-many educational transaction provides opportunities for individualized and collaborative learning. In addition, the quality-enhancing rationale is underscored by what can be referred to as the synchrony thesis – that through the use of technology in the teaching and learning process, learners familiarize themselves with ICT, which has become a key and ubiquitous tool in the workplace.

Critics challenge the quality-enhancing rationale on two key grounds. First, that technology-mediated communication is bereft of authentic human contact. In this regard, critics contend that technology cannot support rich human interaction from which meaningful learning can occur (Brabazon, 2002; Noble, 1998; Postman, 1992; Weizenbaum, 1976). Second, critics hold that the

notion of an education-economy synchrony is motivated more by economic exploitation (Mackay, 1991).

The third rationale for the use of ICT in teaching and learning relates to the cost-reduction potential of the tool. Proponents of the rationale hold that the capability of technology to support distributed learning allows for the reaping of educational benefits that can accrue from economies of scale if large numbers of learners are served. In addition, use of technology in education can save travel time and other transaction costs for instructors and students. The cost-reduction rationale is often presented with caveats that sound problematic. For instance, some hold that for there to be a reasonable reduction in cost, there has to be considerable labor retrenchment (Massey & Zemsky, 1995). Daniel (1997) couches the cost-reduction potential of educational application of technology in a proviso that implies significant structural and process restructuring: “technology can raise productivity, but only through a reorganization of the teaching-learning process based on the development of a technology infrastructure” (p. 16). Nevertheless, the use of ICT in teaching and learning in universities is burgeoning inexorably, putting pressure on institutions to restructure and reinvent themselves in ways that would allow for optimum realization of the potentials of the tool.

### ***Government as an influence on the university***

No study of the educational system “can be separated from the explicit or implicit analysis of the government sector” (Carnoy, 1985, p. 157). Government is a central factor in the political economic analysis of education because, as “power is expressed at least in part through a society’s political system ... any political economy model of educational change has behind it a carefully thought out theory of the functioning of government” (p. 157).

Governments all over the world directly or indirectly influence universities. Altbach (1990) observes that government intervention in universities occurs in rich and poor, totalitarian and democratic nations. A review of the literature indicates that the rationale for governments to influence universities is based on the heightened interest in knowledge and skills as critical national development resources. Government intervention in higher education “may have been inevitable given the growing importance of systematic knowledge for economic growth, for social problem-solving and for the growing training function of higher education” (Teichler, 1991, p. 45). As a result of the accentuated interest in knowledge and skills as crucial national development resources, governments engage in continual development of their educational systems.

A concept central to government intervention in the university and in education generally is “public policy.” Public policy is a basis and an instrument for government intervention in the university. Acting on behalf of society within the context of perennial scarcity of resources and conflict of interests, government directly or indirectly intervenes to regulate, distribute, and redistribute educational opportunities and services; to capitalize universities; and to enable an ethical and safe environment for the conduct of research, public service, and teaching and learning. Adam (2003) observes the pivotal role of government in influencing the use of ICT in universities: “A well-articulated, networked learning environment in higher education requires significant government intervention. Government policy has a real impact on strategic initiatives in universities and often determines the parameters of such initiatives through laws, regulations, and the allocation of funds” (p. 219).

### ***Industry as an influence on the university***

Industry influences the structures and programs of universities, as well as their values (Blackman & Segal, 1992; Buchbinder, 1993; Davies, 1987). University-industry relationship, like the

relationship between government and the university is somewhat controversial because of its potential or real threat to traditional academic ethos and university autonomy.

The nature of modern economy provides the stimulus for contemporary university-industry relationships. It is knowledge which is skill-based and technology intensive. This makes investment in research and development, as well as in human capital imperative. Given the obsolescence of knowledge and skills, the need for continuing commitment to keep these vital resources up-to-date becomes a priority for nations and businesses. It is logical that “firms should seek to establish enduring relationships with HE [higher education] and other institutions, to ensure that they have the knowledge base and more particularly the skill essential ... for economic activities” (Blackman & Segal, 1992, p. 936).

Universities themselves seek partnership with industry for a variety of reasons. The need to augment funding from government or traditional sources motivates universities to partner with industry (Michael & Holdaway, 1992). In addition, universities sometimes interact with industry in order to have access to cutting edge theoretical and practical knowledge that may be available in industry. Blackman and Segal (1992) observe that, in some instances, industry may be ahead of the university with respect to “theory and not just practice” (p. 936). University-industry interaction provides opportunities for university faculty and students to familiarize themselves with state-of-the-art industrial science and technology, as well as management systems. Consistent with the rationales undergirding university-industry collaboration, universities take steps to enhance employment prospects for students by offering programs and courses that respond to the needs of industry.

#### ***Demand for Access as an influence on the university***

Demand for access to higher education, which has been growing since World War II has shaped and continues to shape universities. There is hardly any attempt to account for increasing demand for access that does not significantly attribute the trend to the roles education plays in modern society. Education plays critical roles in economic productivity (Denison, 1962; Schultz, 1961), and in social selection or mobility (Dore, 1976). The value of education goes beyond the instrumental. Modern society has institutionalized education as a citizenship right, as a social virtue, as a public good, and as a stratification process; thus, providing individuals incentives to participate (Carnoy, 1985; Meyer, 1992).

Universities are under pressure to make institutional changes in order to meaningfully respond to the needs of a heterogeneous mass clientele seeking flexible and convenient arrangements. The key changes occurring in universities in response to mass or flexible demand for access include use of ICT for on-campus and distance education (Bates, 2000).

#### ***Funding as an influence on the university***

Funding for universities is identified in the literature as a critical element of the external environment. Funding and sources of funding are implicated as an influence on universities in three elements of the external environment already discussed: government, industry, and demand for access.

Governments utilize a variety of funding opportunities as an instrument for steering both public and private universities. The use of funding to influence universities is generally seen as a very potent tactic and strategy. Neave and Vught (1994) observe that “in any higher education the budgetary process is a powerful instrument in determining institutional behaviour” (p. 312), and Becher and Kogan (1992) state that “resource allocations are a metaphor for allocation of values” (p. 83). Funding from government is understandably a major factor for government-sponsored institutions, and can also be a significant factor for private institutions to the extent that they receive research or special purpose grants from government or government-funded agencies.

Industry is identified in the literature as a source of funding for universities (Buchbinder, 1993). The goal of improving funding in the face of inadequate financial support from traditional funding sources contributes in motivating universities to partner with industry. The pressure of rising student enrollment and the rising costs of running modern libraries, and of installing and maintaining modern laboratories and technology impel universities to look to industry for funding. Funding is also implicated in demand for access since increased enrollments can result in universities recording more revenue from tuition payments.

### ***Internal factors***

In higher education literature, the following are typically considered as key elements of the internal context of the university: leadership, academic work and culture, faculty and their attitudes, technology use (Bates, 2000; Becher, 1989; Becher & Kogan, 1992; Clark, 1983). In the paragraphs that follow, the elements are discussed in the context of their influence. Elements identified to have potential to influence the use of ICT in teaching are utilized to construct the internal component of the conceptual framework presented later in the paper.

### ***University leadership***

Leadership plays a key role in any systematic adoption and institutionalization of innovation in organizations. Integration of ICT in teaching is widely regarded as a challenging innovation for universities mainly because of the loosely coupled nature of the university organization and the tradition of faculty autonomy. Hence, the role of university leadership in creating enabling psychological, structural and policy environment for integrating technology in teaching is emphasized in the literature (Bates, 2000).

Leadership is, of course, not limited to mobilizing and harnessing human and other internal resources needed to facilitate faculty use of technology in teaching. Leadership also entails scanning the external environment of the university in order to secure relevant resources from it, and manage the boundary where the university and its environment interface. Organizational boundary is an important concept in understanding university-environment interface, particularly with regard to the role of university leadership as gatekeepers with responsibility for facilitating innovation, and for responding to societal needs. An organizational boundary is a point of intersection between an organization and its environment. Miles (1980) defines organizational boundary as “a region in which elements of organizations and their environments come together and in which activities are performed of such a nature as to more effectively relate the organizations to the outside world” (p. 317). Analysis of the responsiveness and purposefulness with which university leadership manages the boundary with the environment can be useful in understanding some of the factors that influence the use of technology in teaching.

### ***Academic work, culture, and faculty attitude***

Within universities, academic work is divided and carried out in disciplines or knowledge areas. Usually, disciplines or fields that have close epistemological and methodological relationships are grouped under a department or basic unit (Becher & Kogan, 1992). It is within disciplines and departments that faculty engage in research, teach and provide public service. Faculty have considerable autonomy over curriculum issues and the process of teaching and learning (Altbach, 2005; Bergquist & Pawlak, 2008). The supervisor-subordinate relationship which is a feature of the typical bureaucratic organization is not observed in a regimental fashion in the university. Each academic is simultaneously the expert or boss, as well as the front-line worker. The preponderance of faculty at the “factory-floor” of the academic enterprise accounts for the flat organizational form of the university often referred to as “bottom heavy” (Clark, 1983). Given that authority in the university is diffused, each faculty, discipline, and department tends to be autonomous. As a result, coordination of efforts in pursuit of the goals of the university is

achieved through two main approaches: participation of faculty in making decisions which are binding on each of them, and application of administrative controls.

A significant implication of the relative autonomy of faculty, disciplines, and departments for the implementation of innovations in universities is that externally induced or top-down innovation must take into account the structure of academic work, and diffusion of authority within the university (Becher, 1989; Cerych, 1984; Clark, 1984). Faculty are more likely to adopt an innovation, such as the use of technology in teaching, if they take ownership of it.

The university has multiple cultures and subcultures (Bergquist & Pawlak, 2008). Academic culture is easily regarded as its dominant culture. Academic culture consists of the norms and values common to all academics, irrespective of their disciplines. It encompasses the norms and values that support academic freedom, individual autonomy, collegial governance, and knowledge generation (Kuh & Whitt, 1988). Disciplinary cultures, as subcultures of academic culture are norms and values within individual knowledge areas or disciplines. Disciplinary culture includes “assumptions about what is worth knowing and how knowledge is created, about the task to be performed and standards for effective performance, and about patterns of professional interaction and publication patterns” (Kuh & Whitt, 1988, p. v). There are as many subcultures of academic culture as there are disciplines. “Around distinctive intellectual tasks, each discipline has a knowledge tradition – categories of thought – and related codes of conduct ... There is in each field a way of life into which new members are gradually inducted” (Clark, 1983, p. 76).

The classification of knowledge by Biglan (1973) into “hard”, “soft”, “pure”, and “applied” has provided a framework for a number of studies that have pursued the exploration of academic subcultures (Becher 1989, 1987). Knowledge of the epistemological and cultural properties of disciplines and characteristics of disciplinary communities is important not only for understanding how universities function generally, but also for explaining the dynamics of policy implementation and the adoption of innovations within universities. For instance, at an epistemological level, knowledge of the characteristics of a discipline might be useful in understanding whether the extent to which faculty accept or resist an innovation has to do with the amenability of the discipline to the imperatives of the innovation. At a sociological level for instance, knowledge of a disciplinary community might help in understanding the extent to which cultural orientation or socialization enables or hinders adoption of an innovation.

The nature of the disciplinary community, particularly in terms of its responsiveness to demands from the external environment, and tolerance for individual approaches or experimentation might provide some answers to why a disciplinary group or some members of a group tend to adopt or resist innovation. Disciplinary communities with a tendency to guard the status quo are less likely to enthusiastically adopt an innovation, especially if the innovation does not arise from the developmental needs of the discipline itself (Becher, 1989, 1987). Lewis, Marginson and Snyder (2005) observe noticeable variation in how different disciplinary communities interpret and respond to institutional ICT initiatives. However, in spite of the power of disciplinary cultures, individual faculty members may have their idiosyncratic attitude toward a particular innovation or innovations generally (Rogers, 2003).

### ***Application of Technology***

Case studies on the use of ICT in higher education indicate that availability of technology infrastructure, faculty development, and student support services in college campuses is a critical factor in understanding the use of ICT in teaching, including the structural and cultural changes the use of the tool engenders (Bates, 2007; Dabbagh & Bannan-Ritland, 2005). Institutionalization of the use of ICT in teaching is necessarily enabled by administrative, infrastructural, and organizational support. Institutions that have achieved considerable success in

integrating technology in teaching typically assign technology-integration responsibility to designated units and offices, as part of their efforts to diffuse and institutionalize technology use. They also empower faculty to use technology.

Learning to teach with ICT is almost a paradigm shift. Instructors need support to make the shift (Kelly, 2007). They need support in developing appropriate technological skills and instructional design capabilities. Faculty workload and reward are also issues campuses typically grapple with as they encourage and motivate faculty to use technology in teaching. The extent to which institutions integrate technology in instructional delivery depends significantly on the effectiveness of their support systems for faculty and students (Bates, 2007).

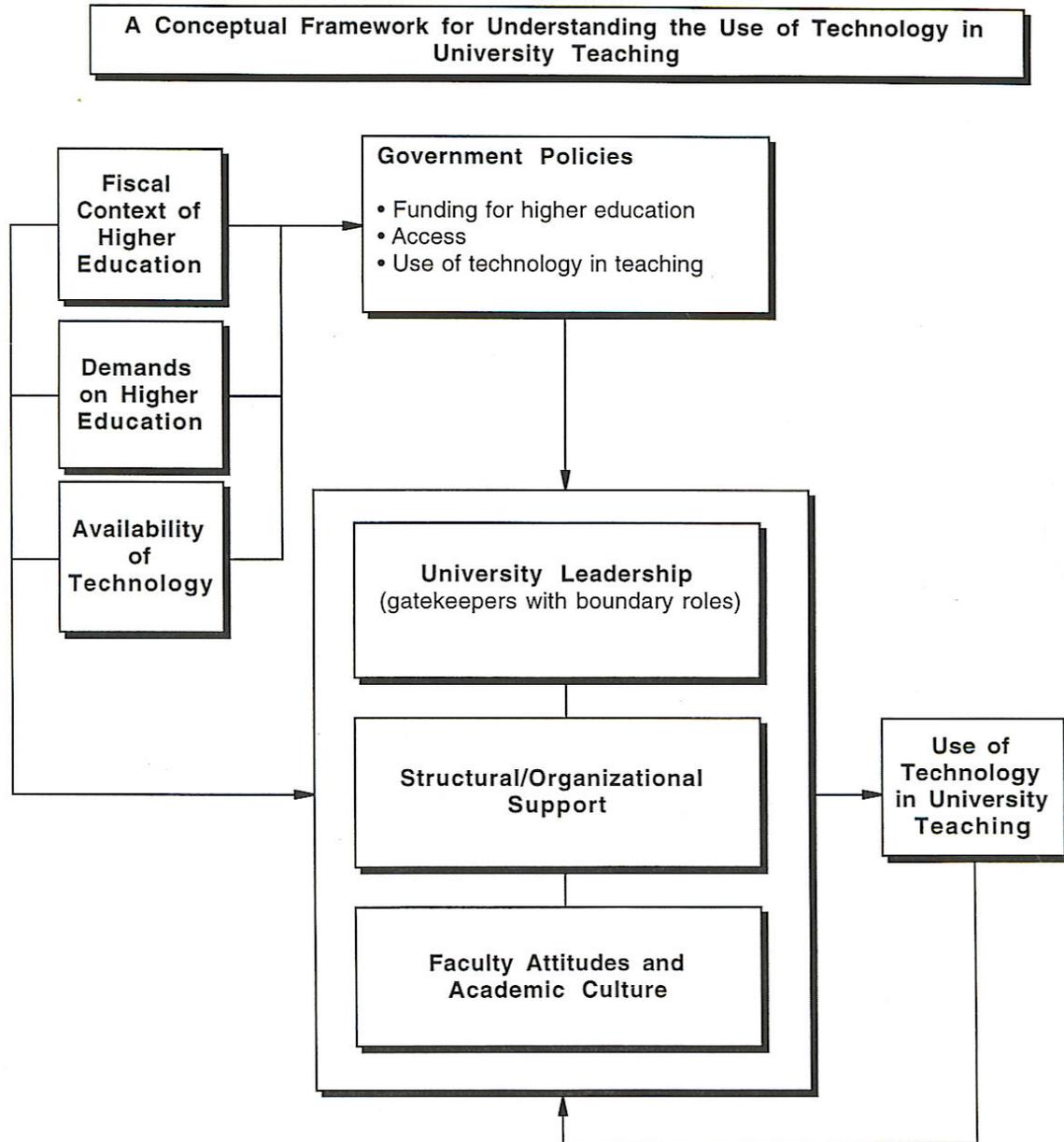
### **A Framework**

Guided by the foregoing review of the literature, a framework for researching use of technology in universities is proposed. The framework focuses on societal and organizational context of universities. The factors used in building the framework, emerged from the literature reviewed. The factors, which are disparately identified in the literature, are used to constitute a coherent framework delineating influences from the external and internal environments of universities (see diagram below).

The external environment consists of four factors: fiscal context of higher education, demands on higher education, range of technology available in the locale or region a university is located, and government policies on higher education. The internal environment consists of three factors: university leadership, structural or organizational support for technology use available for faculty and students, and faculty attitudes toward use of technology, and academic culture. Each of the factors, as the literature reviewed suggests, has potential to directly or indirectly facilitate or hinder use of ICT. It is conceptualized, as delineated in the diagram that while the use of ICT in teaching results from the influence of the external and internal factors, the use of technology itself, in turn induces changes in the structures and processes of the university.

### ***Policy and practical value***

The external and internal approach of the framework has potential to guide research to generate findings with policy and practical implications for use of ICT in universities. Studies guided by the framework can operationalize the external and internal factors of the framework to explore the following systematically: the kinds of ICT available in the locale or region a university is located; demand for on-campus and distance access; how or why a university utilizes ICT in response to demand for access; national or state ICT policy, especially as it relates to education; private sector or industry funding for ICT in education; government funding initiatives for use of ICT in education; university leadership's ICT fund-raising efforts; leadership's technology, structural, and administrative initiatives to encourage use of ICT. Also, studies utilizing the framework can operationalize factors of the framework to investigate the kinds of ICT used in teaching and learning at a university; the extent to which each technology is used; the extent disciplinary structure, and the ethos of disciplinary communities enhance or hinder use of technology; faculty perceptions and attitudes toward use of technology in teaching; faculty development initiatives related to technology use; and other kinds of support universities provide to enable faculty and students to use technology.



## Conclusion

Guided by the external-internal approach to social and organizational research, this paper presents a conceptual framework for researching use of ICT in universities. The framework is designed to focus research on the external and internal factors driving and shaping use of ICT in universities. The framework is constructed with factors that emerge from a purposeful review of the literature on the external and internal environments of higher education. Research-based knowledge of societal and organizational context of ICT is a very important resource for planning, implementing, and evaluating ICT initiatives. The external-internal approach of the framework has potential for guiding research to generate knowledge that can better inform ICT policy in higher education at system levels, as well as policy and operational mechanisms within individual universities.

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**Editor's Note:** Internal and external influences that affect distance learning may not be recognized or understood. Distance learning has the potential to change the educational paradigm. Some consider it a threat; others see it as an opportunity. It is important to identify the forces involved to successfully introduce and make effective use of distance education.

## The Organizational, Governmental and External Political Forces Shaping Distance Education.

George D. Konetes

USA

**Keywords:** Distance learning, distance education, politics, educational technology, government, administration, educator, faculty, culture, policy, human capital

### Introduction

Distance education is being shaped and impacted by a variety of forces that function within institutions, in governing bodies, and from external sources. In organizations there are political tensions involving administration, faculty and finances which have latent effects as to how programs are carried out. Within governing bodies there are policies and initiatives taken to advance distance education for the sake of increasing human capital for economic gain. Externally there are cultural, industrial and global forces that act to influence the field of distance learning and how programs develop.

### Problem Statement

#### **Definition of Terms**

The following terms are defined to unify the concepts and research presented hereafter.

**Distance Education.** Education taking place with the student physically or geographically removed from the instructor using some form of technology to facilitate learning and contact (Valentine, 2002).

**Distance Learning.** Used synonymously with distance education (Valentine, 2002).

**Intellectual property rights.** Refers to educators' legal right of ownership over academic and scholarly material they have created and use (Oravec, 2003b).

**Open source software.** Usually free software that is often in the public domain (Fuggetta, 2003).

#### **Currency of Issues**

The dynamic forces impacting distance education are evolving within the field itself. The development and controlling factors within institutions are changing and pioneering new models of distributing power (Larreamendy, 2006). Government bodies are bringing new laws and amendments to the table concerning issues that affect distance programs and institutions (Larreamendy, 2006). Also, national efforts are being undertaken to develop better technology and capabilities for access and programs (Baggaley, 2005).

#### **Controversial Topics**

The nature of political influence of any level on education is controversial. A government intervening to control and manipulate education through more than funding and assistance is sometimes seen as an inappropriate use of power (Leslie, 2003). Whether it is intended or not, cultural imperialism through distance learning is often seen as a negative or even confrontational

issue (Larreameydy, 2006). In addition to these topics within the field itself there are still a number of instructors in higher academic circles who feel that distance learning is inferior to traditional education (Yang, 2005).

### ***Special Interests***

The technology industry has a significant interest in the advancement of distanced education because technology companies provide software, applications and hardware used by distance programs (Saba, 2005). In addition, local and national governments have a vested interest because they are seeking economic and political advancement through the development of intellectual capital (Naidoo, 2003). Faculty, educators and teachers themselves have an interest in how distance education is implemented and what are the opportunities for advancement due to a change in work type and procedures for tenure and promotion (Valentine, 2002).

## **Summary of Literature**

### ***Introduction***

There are visible and unseen political factors that influence and shape the field of distance education through organizational, governmental and external factors. Within organizations there are powers struggles between administration and faculty on how distance learning programs should be carried out. From the top of the administrative level to federal government there are laws, initiatives and desired benefits that alter and advance the state of the field. Externally there are global trends, cultural issues and outside industries that influence and alter the way distances education is applied and advanced.

### ***Influence of organizational factors***

There are various issues in the areas of administration, educators and trends affecting finances that reflect the application of power and influence in the field of distance education at the organizational level. The way power is handled by the leadership in an organization determines not only the effectiveness of that institution but also determines either the synergy or friction between faculty and administration. Likewise, the manner in which faculty obtain and exercise power determines the climate in which distance education operates and educators ability to meet their own goals. Affecting all levels of distance learning within organizations is the component of finances and how trends impact the use and distribution of money.

Power distribution within a distance learning organization can potentially alter the climate and effectiveness of the organization. This is seen through management pushing its directives without concern for the faculty causing internal unrest. This is also demonstrated conversely with faculty attempting to influence the policy and direction of the administration resulting in a wavering and undependable course for the organization. Innovation, change and advancement in distance education within an organization are usually driven from one of two directions, either from the top-down or from the bottom-up (Whitworth, 2005). Top-down direction involves decisions and initiatives coming from administrators and management and filtering downward to staff and faculty while a bottom-up system involves that same direction starting with the staff and faculty and moving up the chain of command (Larreameydy, 2006). In top-down designs, the power is in the hands of the administrators who push programs forward but do not necessary look out for teachers' best interests (Whitworth, 2005). In this type of system conflicts and concerns surface on the part of the educators involving issues such as applicable credit in new types of programs for tenure and promotion, technological support, time to develop new course materials and proper training to operate new distance learning initiatives (Natriello, 2005). In the case of a bottom-up system other political concerns manifest such as pushes for frequent policy and vision change that vary with fluctuating political climates (Coupal, 2004).

Faculty, though their individual influence on their educational organization may not be significant, they make use of the ability to unite and leverage power for furthering their causes and agendas. Faculty members often have requirements imposed upon them by administration in distance education programs to monitor content and competency (Stella, 2004). These requirements are sometimes stringent and given without proper training and support for the educator (Stella, 2004). Because of these and other concerns faculty members are sometimes apprehensive concerning the instituting and advancement of distance education programs and may attempt to influence administration to move away from distance learning (Natriello, 2005). These educators will sometimes band together to form groups in order to optimize their political leverage on the organization and influence leadership (Whitworth, 2005). This tactic of creating groups to maximize influence (Whitworth, 2005) is also done by faculty to further their agenda in the areas of concern such as over intellectual property rights (Oravec, 2003b) and plagiarism (Oravec, 2003a). Intellectual property rights have been significant concerns among distance educators and faculty who often use whatever means are available to them to protect their content and course materials from being stolen (Oravec, 2003b).

Trends of distance education have at times overextended the financial capability of various regions and institutions that desire to institute state of the art distance learning programs, thus creating a vacuum of resources. The costs of distance education both directly and indirectly have functioned as one of the largest influencing factors to successful programs and organizations (Moyo, 2003). These costs are often not all evident at the beginning of programs that are created and implemented too quickly and are revealed as time passes (Dhanarajan, 2001). Subsequently, more recent distance education programs have had their views of price jaded and often perceive the costs to be higher than they actually are, thus some programs and expansions are avoided as the benefits are not alleged to outweigh the investment (Whitworth, 2005). A significant factor influencing the movement of distance education programs and the perceived costs and benefits is that of the global market itself (Ntsheo, 2004). The global influence on distance education has been pushing technology-based learning into areas, regions and institutions that are not yet properly financed to effectively apply it (Dhanarajan, 2001). This push has been affecting the creation of policy and purpose in many organizations (Ntsheo, 2004).

### **Government influence**

Through the creation and management of laws, advancement of learning initiatives, and desire for economic and political growth, governments and governing bodies are influencing and shaping the field of distance education. The writing and changing of policy both internally and at the state and federal levels is advancing resources and capabilities of distance programs. At the same time national and international initiatives have been undertaken to develop distance learning programs, technologies and refine effectiveness. Through both of these actions governments are seeking to bolster intellectual capital and national financial capability to further economic growth and political standing.

The field of distance learning is shaped by internal, local and federal policies which affect areas from standards of learning, to practices, to funding, to the laws which move and influence students abilities to be involved in certain programs. Both at the academic and national level, there are rules and laws which impact distance education from plagiarism (Oravec, 2003a) to intellectual property rights (Oravec, 2003b) to federal mandates (Larreamendy, 2006). Governments have had increasingly active roles in shaping, modifying and even partially controlling higher education and distance learning through laws and policies (Leslie, 2003). Federal and state governments have increasing levels of interest and interactivity in monitoring the quality of distance education modes, made visible by changes in interest rates and taxes to improve program funding in various areas (Stella 2004). However it is not always clear why various levels of government have taken such an active role in pushing reforms and higher

standards of distance learning, although is consistently changing the industry and raising the bar (Leslie, 2003). This trend operates at the national level as well and can be seen by a motion of the U.S. Senate in 2006 to ease the law that limits colleges to enroll no more than fifty percent of their students through distance programs if the students are to be eligible for federal aid (Larreameydy, 2006).

State, national and international endeavors are being taken around the world by governing bodies to further advance the use, saturation and effectiveness of distance education. State governments have begun to more frequently take initiatives in order to push distance learning programs forward (Leslie, 2003). At the same time, the federal government has been altering national policy in order to aid institutions that are highly involved in distance programs (Stella, 2004). Outside of the United States similar trends continue, according to Lee (2004) the Chinese government is focusing on the technological development of higher education, accessibility for distance programs and research networks. European countries have also been involved in similar initiatives pushing students to take courses in other nations within the European Union with the purpose of better solidifying academic structures and technology (Altbach, 2004). There are similar approaches of governments in general moving to further distance education internationally in Africa (Moyo, 2003), Asia (Baggaley, 2005), and Mexico (Potashnik, 1998).

Governments are leveraging resources and laws to maximize their ability to foster growth of human capital and thus advance their economic and political positions. In this evolving technological era many governments have looked at intellectual capital as one of the most important factors of economic success (Naidoo, 2003). Distance learning serves to both further intellectual and human capital through channels of academic, vocational, and medical advancement (Dhanarajan, 2001). Distance education has become a key factor in the developing of knowledge and capability for nations to function in a dynamic information economy (Moyo, 2003). The key to this, however, is building up people, workers and academic professionals able to help push the nation and the commonwealth forward (Naidoo, 2003). Politically, nations have been maneuvering and positioning programs, students and efforts to maximize their growth of human and intellectual capability (Altbach, 2004).

### ***External effects***

Distance education affects and is affected by various external powers such as global trends, technology interests, and unintended transmissions of culture and political ideologies. Many of the positive economic and global effects are often sought out by various nations and institutions. These same nations and organizations are simultaneously and perhaps in an uncorrelated manner, affected by the technology industry in a manner that impacts their technological policy. The nature of distance education itself also carries with it unintended traces of political and cultural information which are transmitted both through material and medium itself.

Globalized trends and economic impacts of distance education and higher education are both being realized by able nations for their own national benefit. With the development of the global marketplace (Dhanarajan, 2001) distance education has begun crossing national, cultural and ethnic borders creating a global learning environment (Vrasidas, 2003). This global setting has become something that has not just impacted various nations and institutions but is something that is being used and leveraged by those same nations and institutions now as well (Altbach, 2004). This global learning environment has economic and social benefits, which many nations such as the United States have begun to purposefully use for national benefit (Altbach, 2004). Jones (2004) states the various generalized attempts of the active state which is a hierarchical and purposeful entity to try and manage without directly controlling the effects of this global market, which is of itself chaotic. These insights lead to the conclusions reached by Naidoo (2003) that lines have been drawn to link higher education to a global industry that can be controlled for

economic and social gains. One demonstration of this is an effort by the United States to draw in as many foreign students as possible in order to increase global competitiveness (Altbach, 2004).

Many institutions and nations involved in distance education are influenced by various industries, governments, and policies affecting what technology they use. The technology industry has both interest and significant influence in the field of distance education (Saba, 2005). Technology is a central force which both facilitates and encourages the spread of many forms of distance learning, often acting as a catalyst for change and advancement (Post, 2004). The writing of distance education technology policy is a politically influenced practice affected by the technology industry, governments and many pre-existing politically infused institutional policies (Coupal, 2004). These policies are influenced by different factors and forces depending on the region. According to Baggaley (2005), eleven Asian countries have governments with written and enforced policy which calls for certain major cities and hubs to be heavily saturated with distance education compatible technology. Moyo (2003) makes mention that in Africa many nations do not have the financial capability for government intervention and outside companies come in and contract technology on the local level. Many third world nations attempt to abstain from the expensive programs and applets of the technology industry and instead implement open source software in order to limit their dependence to hardware only (Baggaley, 2005).

Distance learning sometimes unintentionally carries political, social and cultural messages that are instilled as deeply as the framework in which the content is created and delivered in. A sometimes overlooked and even unintended result of political bias involving culture in distance education is the writing of curricula (Larreamendy, 2006). Curriculum is often written with considerations taken for the local learner and the writer, often incorporating bits of bias and culture that are not intended for the geographically removed distance learner (Dhanarajan, 2001). The manner in which distance education is sometimes conducted in brings with it social, cultural and political undertones (Lee, 2004). For example, online discussions, open ended forums and message boards all transmit elements of westernized democratic learning culture emphasizing personal choice and freedom (Lee, 2004).

## **Critical Evaluation**

### ***Critique of the Literature***

The literature on this topic is sparse yet rich at the same time. There is not much specific literature on political factors as topic. However a significant amount of the literature on distance education discusses political and influencing factors to some degree, either directly or indirectly. Almost all of the information on this topic carries trace elements of useful data; however the task then becomes one of sifting and searching. Overall, there is a large amount of literature involving political influences and impacts on distance learning, however there is little which focuses on this aspect as a topic.

### ***Research Questions***

How can the latent effects of culture transmitted unconsciously through distance education content and even program framework be assessed?

How do the organizational politics of administration and faculty respond to national and international political climate changes?

How much of the advancement in the field of distance education is driven by learning need and positive research opposed to the leveraging of influence and money by governments, the technology industry and other third party variables?

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**Editor's Note:** This carefully articulated research documents change within a profession. Success is directly attributable to understanding and appropriate use of computer technologies in the design process in this complex profession.

## **Interior Designers' Perceptions of the Influence of Technology on Workplace Performance**

**Melinda Lyon, Shiretta Ownbey, Mihyun Kang**

USA

### **Abstract**

The purpose of this study was to determine the expectations that employers have for interior design graduates regarding their two-dimensional and three-dimensional Computer Aided Drafting (CAD) competencies as well as their expectations of general computer technology skills. This study also sought to determine how the design knowledge of interior designers who are users of CAD and other types of technology has increased over time as a result of the amplified use of technology in the workplace. Telephone interviews were conducted with thirty interior design professionals whose firms were chosen at random from Interior Design Magazine's Top 100 Giants (Davidsen, 2004). The interviews were coded and resulting data were analyzed using the Grounded Theory method (Strauss & Corbin, 1998).

The results of this study revealed that employers are expecting new hires to have proficient skills using CAD programs for two-dimensional design, to have an awareness of advanced programs that employ three-dimensional design, as well as having increased expectations of the types of work interior designers perform on a daily basis as a result of technology. Employers expressed the positive influence of technology on production, ease of communication and their understanding of the design process. The results of this study may assist educators in understanding employers' expectations for students entering into the interior design profession. This research also may help profession understand the effect that the increase in technology has had and will continue to have on the profession.

**Keywords:** Interior Design, computer aided design, computer aided drafting, employer expectations, two-dimensional design (2-D design), three-dimensional design (3-D design)

### **Introduction**

Technology in the field of interior design is becoming an increasingly important tool in the day-to-day tasks performed by interior designers (Custer, 1999). The past few years have seen rapid changes in the types of technology available and the influence technology has had on the interior design profession. Skill in using a particular technology or software significantly impact work performance and production. Thus, employers' expectations can be used to ascertaining the types of technology and level of skills to be taught in interior design curriculum.

Interior designers' understanding of the design process due to the increased use of technology is also of interest in this study. Determining if interior design students are graduating with a balanced knowledge of design and technical skills and whether recent graduates are better equipped for the profession upon graduation because of their increased technology skills can serve to inform students preparing to enter the work place. This information can also guide recommendations for interior design curriculum. The purpose of this study was to determine employer expectations for recent interior design graduates regarding technology competencies, and to determine how interior designers' knowledge has changed as a result of increased use of technology.

## Literature Review

Technology is influencing the core understanding of design (Laiserin & Linn, 2000). We not only rely on the internet, word processing, and facsimiles to get us through each day, but we also rely on technology as a means of design implementation, resource generation, and data gathering. Designers are using technology as a tool in problem solving (Taute, 2005). Technology becomes important in design decisions on layout and amenities (Holusha, 1996). Designers may find that technology has the potential to make end solutions easier to determine. Additionally, finalizing presentations in a shorter amount of time can be facilitated through the use of technology.

As recently as ten years ago, although computers were being used as a tool for production, Computer Aided Design (CAD) was still considered cutting edge (Mitton, 2004). Those designers who were working in firms ten years ago or more may have had a hard time difficulty adjusting to the changes that computers brought about regarding the use of hand drafting versus computer drafting. As Taute (2005) points out, there is an age divide in many interior design firms between young designers with knowledge of the latest software and the old guard with colored pencils and sketchbooks. The profession of interior design is continually growing and undergoing changes (Albanese, Hines, & Rainey, 1995) and a large part of this change is attributed to the role that technology plays in interior design. Gradual shift from the hand to the computer has been noticed and designers with digital knowledge were considered to have the potential to be the pioneers of new methods of designing (Catinella, 1999).

Taute (2005) states, "Technology is changing the face of interior design" (p. 24). The work load of the interior designer as well as the type of work designers perform on a daily basis is changing as a result of the influence of technology. It takes less time to complete a project when a project is implemented using computer technology (Senyapili & Basa, 2006). Designers rely on the computer for word processing, time management, and resource generation. Product and material research is simplified as more and more information can be found using the internet (Davidsen, 2000). Communication is faster between employees and clients, greatly reducing turn-around time. The computer has become a powerful tool and has changed designers' concepts of the way they function (Caplan, 2005). Therefore, the impact of technology on the interior design profession suggests the salience of this study. Interior designers, as well as educators, can benefit from an increased understanding of the impact that technology has had on the interior design profession.

## Method

The purpose of this study was to determine employer expectations for recent interior design graduates regarding technology competencies, and to determine how interior designers' knowledge has changed as a result of increased use of technology. To implement this study, telephone interviews were conducted.

The target population of this study was interior design employers in the United States. In order to more comprehensively identify employers who hired recent interior design college graduates, an accessible population was the employer list in Interior Design Magazine's Top 100 Giants (Davidsen, 2004). Directors of interior design firms supervise interior designers and determine what technological expectations are necessary for successful employment in the workplace. Randomly selected directors of interior design of the Top 100 Giant companies were contacted and 15 directors were willing to participate in the study. A snowball sample was then used as each of those directors recommended one interior designer from their firm to be interviewed. The interior designers who had been employed by their firm from two to six years were interviewed to determine if interior designers and their directors have the same or different expectations regarding technological skills of employees.

Data were collected by recording 30-minute semi-structured telephone interviews. An interview schedule was developed and used as a guide for directing questions. From those questions, other questions emerged giving more insight into the expectations of directors and the types of work required of the interior designers. The interviews were transcribed and the Grounded Theory approach (Strauss & Corbin, 1998) was employed for coding and analyzing the resulting data. The data were categorized and simultaneously themes were merged within the categories to identify the patterns of expectations of employers and the changes occurring in the field of interior design in relation to designers' use of technology.

## Findings and Discussion

This study revealed that employers are expecting new hires to have more than basic skills of CAD programs for two-dimensional design, as well as awareness of advanced programs that employ three-dimensional design. They also reported that with the increased use of technology comes an increase in the expectation of the types of work interior designers perform on a daily three-dimensional basis.

### ***Employer expectations for technology competencies***

This study identified employer expectations of recent interior design graduates regarding technology competencies. Significant expectations regarding technology that employers identified as preferred skills and knowledge from recent graduates were a proficient use of CAD programs for two-dimensional design, awareness of advanced programs for three-dimensional design and a basic understanding of technology as it relates to the design process. Additionally, recent graduates were expected to demonstrate the ability to hand draft and possess a basic understanding of design.

First, this study revealed that employers are expecting new hires to have more than basic skills of CAD programs for two-dimensional design. There is little doubt that technology has influenced the field of interior design just as it has almost any profession. The expectation of new hires having the skills to use the computer for more than a drafting tool is a fundamental matter. Most directors reported that they expected recent graduates to be proficient with various types of technology, especially two-dimensional CAD programs. One employer stated the following:

*We generally are going to expect them to have some knowledge of computers when they come in. They absolutely have to have a good understanding of using AutoCAD. We look for a lot of computer skills; they absolutely have to have a good understanding of using CAD. Everyone has their own PC and is expected to know a word processing software, and they are expected to know Excel and at least one drafting software, if not more than one.*

Not only is CAD a requirement, but a general knowledge of various programs such as Adobe Photoshop, Microsoft Office products, and three-dimensional rendering programs is also encouraged if not expected. Employers' comments supporting these expectations include:

*There's a certain expectation for already coming in with knowing how to use Microsoft Word, Excel, Photoshop and understanding AutoCAD or Micro Station...and if they bring more to the table, we'd probably look at them more seriously as opposed to somebody else.*

*I think we have, in the last year or so, become much more interested in knowing that the people we hire have skill in using the 3-D technology and rendering software and things of that nature. It is important that they be exposed to 3-D modeling. I would say that being able to use 3-D software such as Viz is a real asset. We have become much more interested in knowing that the people that we hire have skills in using the 3-D technology and rendering software.*

Ability to use programs for three-dimensional design for presentation is desired for new hires. Knowing how to use the computer for presentation is a typical expectation among the skills desired by most firms. Having an ability to graphically present different phases of the design process using technology is considered a definite desirable quality for a recent graduate.

Second, it was expected that recent interior design graduates have the skill to integrate technology during the design process. The ability of new hires to incorporate technology and process, such as using Excel during the programming phase, or using CAD for design development, was mentioned as a very desirable skill. One employer stated:

*We do a lot of programming and we use a database (Excel) to collect our data. We have some design school graduates who are involved in producing the database information so that they can help coordinate the migration to more process. Some is done in Excel and some is done in PowerPoint in terms of generating charts, adjacency diagrams, organizational charts, things like that; they will start doing CAD in the design development stage.*

Most firms reported that computers were mainly used for support work such as accounting, document generation, specifications, schedules, communication, and timesheets. Employers reported that administrative support staffs typically had their own computers while many designers shared computers. Today it would be unusual to find a designer that did not have his or her own desk top or lap top computer. As a result of this growing use of technology, employers expressed that technology is used in almost every aspect of the interior design profession and the influence of technology has had a positive effect on the profession, particularly in production. This positive influence has resulted in increased production over the past several years, as evidenced by employer comments such as the following:

*CAD has had a positive influence by enabling interior designers to articulate ideas much faster and with greater detail. I am seeing, obviously, an ability to do AutoCAD production drawings. More production to get you geared up on the CAD side and also, at the same time gets you geared up on the construction document side. A skilled use of CAD and the intended technologies enhance the ability to go straight from what you are presenting as a design to what you are producing as a document.*

The computer has greatly enhanced the types of work interior designers perform on a daily basis. Study participants noted that technology has become advanced to the point that most of the work interior designers perform each day is done using some form of technology. For example, one designer stated,

*It took away the old cut and paste of when I was going to college; day-to-day reliance is pretty much on the computers for construction documents. I think one of the biggest changes I've seen in that regard has to do with designers having better understanding of space three dimensionally; to use the computer as a tool; starting to look more at the space in a three dimensional manner by taking advantage of the technology.*

The speed at which designers communicate with others has been influenced by technology through the internet. The designer's ability to send drawings through the internet has allowed for a more prompt turn-around time in file sharing between co-workers, disciplines and clients.

*The use of the computer, as well as being connected via the internet, has allowed us to transfer drawings quicker and it has allowed us to do drawings between offices, which obviously it would have been more difficult 10 years ago and before that.*

Employers consistently pointed out that the rate at which communication has increased has had a positive impact on overall production.

However, the dependency upon technology is not always a trait that employers consider the most important skill for a recent graduate. While there is a big push for having proficient technology skills, many firms still put value on the ability of graduates to have good hand drafting skills. Recent graduates come to the job market with a variety of computer-related skills but directors report that these skills sometimes tend to conceal their knowledge of basic design skills. Other directors mentioned that the hand drafting skills of recent graduates are typically lacking in apparent ability and creativity.

*If the computer crashes and they need to go to a meeting, and someone needs to draw a plan and write the title of the drawing, you have to rely on those that have probably fifteen years experience or more in order to letter in a way that a client won't think that their third-grader did it.*

*In terms of how they sketch out on trace and how they communicated with other people in a team setting, in terms of trying to communicate an idea, those skills are falling behind because they're just not able to sketch.*

The general view that entry-level graduates are coming into the field having a strong ability to present their ideas easily with the use of technology but lacking strong hand-drafting skills was consistent among the majority of directors participating in the study. Additionally, directors revealed that technology enables interior designers to convey a design but their basic understanding of the design is often lost. Employers' comments supporting these claims include:

*They are focusing on that technical skill of, you know, operating computer programs as opposed to design.*

*Our firm is not a big believer in using the computer for designing purposes. It's more limiting because they are focusing on drawing the drawings and their rendering skills as opposed to the idea generation.*

Even though employers suggested new hires may not have a thorough knowledge of design, most of them reported being very satisfied with the overall skills and abilities of recent hires. Taking this into consideration, employers implied good technology skills compensated for employees' lack of knowledge. At the same time, many of the directors agreed that the problem solving skills of recent graduates were hindered as a result of too much reliance on CAD related programs. Directors were not seeing the interior designers' abilities to express concepts or to show an understating of design process. It was pointed out that recent graduates had a tendency to rely too heavily on the computer as a means to an end rather than as a tool. Directors consistently suggested they would like to see students graduate with a balance of different skills, not just technology skills. These employers implied that students graduating with a solid understanding of the design process, the ability to use technology as a tool for developing that basic understanding, and at the same time providing evidence of good hand drafting skills could make for more desirable candidates.

Interior designers, on the other hand, indicated that it is imperative to graduate with above-average knowledge of technology skills to stay competitive in the job market. Many of the participating interior designers noted that the accelerated use of technology actually helped not only with their understanding of the basic concepts of design but also with presentation techniques. None expressed an awareness of weakness of design competence. The interior designers repeated that their problem solving skills were significantly enhanced by the use of CAD related programs.

### **Technology influence**

The study provides insight regarding the increased use of technology in interior design firms, how technology use has changed the workload and type of work designers perform on a regular basis

and the influence technology has had on interior designers' design knowledge. Employers identified positive influence such as their workload and type of work performed on a daily basis; an amplified proficiency and confidence in using different types of technology; an increased understanding of the design process; and their willingness to learn new technology. However, directors' perceptions regarding influence of technology on designers' creativity was not consistent among employers.

First of all, with the increased use of technology comes an increase in the expectations of the types of work interior designers perform on a daily basis. More responsibility, more technical skills, and more ability to express designs are some of the requirements interior designers reported they encounter daily as a result of the influence of technology. One designer indicated the following:

*Things have evolved in terms of a designer's responsibility and role on a project with the architectural team in that we've become a lot more involved in the actual documentation of the work and creating really just about anything from floor plans to details to ceiling plans, et cetera.*

The types of jobs entry level designers are working on vary from firm to firm. Some firms allow these designers to quickly manage small projects, while being checked periodically by a senior designer. Other firms allow new hires to begin with small space planning projects, programming, feasibility studies, and research. According to directors, the responsibilities of new hires have changed with the increased use of technology. The directors implied that these new hires are able to progress more quickly to more technical tasks. Because of their competence in computer skills, some designers can end up moving more quickly to conceptual drawings, space plans, furniture specifications, and detailed installation drawings.

*I've had people here for as little as six months... running a project, now albeit it's a small project, but they're having the client contact, they're doing the drawings, the design work. We have some people who are doing some 3-D work; we have some design school graduates who are involved in producing the database information so that they can help coordinate the migration to more process for some of our large clients and large projects.*

Second, most employers reported that technology has had a positive influence on their growth, such as the increase in production, having more freedom through technology to convey their designs, and an increased understanding of design.

*A skilled use of AutoCAD and the intended technologies enhance the ability to; if you use the process correctly, go straight from what you are presenting as a design to what you are producing as a document.*

Technology presents avenues for which designers have freedom to express themselves as well as develop their understanding of design.

*I've learned a lot of different ways of designing, but I've also learned a great deal about production, construction documentation, how things actually get built, I mean, which leads to a greater understanding of how to design, too.*

As designers perform more skills using the computer and as their skills increase, they become more adept at using technology.

*I think we have an expectation of folks in the office being able to do more than one thing, kind of multi tasking, on one level, but also have multiple skill sets. And I think that technology supports that.*

Third, employers implied that consistent use of technology also enables some designers to have a better grasp of the design process. Many reported their core understanding hasn't changed, but their method of technique has changed and allows for more specific and detailed solutions. Many of the interior designers reported that technology allowed them to get their ideas across to the client more clearly.

*I think it makes you understand what you are doing and that the end results are going to be better.*

*It allows you to take extra steps and study things in further detail. I think that the computer has made it easier to communicate and have better drawings and communicate details better.*

The findings of this study suggest that technology has had and will continue to have a tremendous impact on the profession of interior design. While technology appears to be a positive influence on the profession, there was no clear consensus that it has influenced designers' level of creativity. Some employers even indicated that technology can hinder creativity by suggesting that sometimes designers' focus on drawing and rendering skills is paramount to idea generation.

*One thing I have noticed about the entry-level designer is a lack of freedom to be able to explore and get more creative, more free form. When it comes to just sketching out ideas and things like that I think technology becomes a hindrance.*

Some interior designers, however, seem to have opposing opinions when discussing creativity as implemented through the use of technology.

*They've (computers) helped to create some more creative ideas and ways of solving problems through the design.*

*It helps in the sense of supporting the concept with images and materials and sometimes the ability to pull in imagery sparks ideas.*

There does not seem to be a clear cut determination whether creativity is hindered or assisted by the use of technology. On the other hand, while the creative aspect of conceptual sketching seems to be hindered by technology, the creative aspect of finish selection options seems to be helped by the abundant sources available via the internet.

### **Importance of Technology**

Respondents conveyed understanding of the importance of technology in the design community and indicated that the power of technology is monumental. They reported that it is often through the Information Technology (IT) department that new technology is introduced to designers and their employers, helping companies to stay abreast of the new programs and changes in current technology being used.

*We have an extensive IT department that will do a lot of testing and decide what's best for the firm; they will roll it out and everybody will take classes...*

Others use word-of-mouth or provide seminars and training sessions to inform recent hires of new technology. Some firms set up committees to test and recommend new technology.

*Sometimes we have new people come into the office who know a certain software and then we all witness just how important that one piece of software is to doing the project. They send us to training or they bring somebody into the office to train us all.*

*We kind of play with it (new software) for a couple of weeks or so before we actually decide...this is something that we really need to use.*

Study participants indicated that many companies make training programs available to their employees. Others reported learning new programs or updates through help from a colleague or by hands-on experience when time permits. Both directors and interior designers reported that mentoring is important for new hires for their growth.

## Conclusion

The interior design community as a whole benefits from the findings of this study. Educators may particularly benefit as they are apprised of the expectation employers have for graduates entering the interior design profession. Knowledge of employers' expectations allows educators to craft instruction and curriculum so that student learning outcomes are enhanced.

This study may help the profession understand the ramifications that increased technology has had and will continue to have on the profession. The rapidly changing technology, while expensive, can serve to be a springboard in a firm's ability to launch itself into the increasingly competitive global market.

Employing the method and findings from this study, an instrument may be developed to conduct a national survey that allows generalization to a broader population of the interior design profession. The lack of appropriate data with which to examine the impact of CAD use on the work load and type of work being performed is a barrier to all stakeholders in interior design.

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