INTERNATIONAL JOURNAL OF INSTRUCTIONAL TECHNOLOGY AND DISTANCE LEARNING

April 2009
Volume 6 Number 4

ISSN 1550-6908

PUBLISHER'S DECLARATION

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International Journal of
Instructional Technology & Distance Learning

Vol. 6. No. 4.

ISSN 1550-6908

Table of Contents – April 2009

	Page
Editorial: Publish or Perish **Donald G. Perrin**	1
Design Environments: A Small-Scale Case Study **Ayse Kok**	3
Negotiating Geographical Isolation: Integrating Mobile Technology into Distance Education Programmes at the University of South Pacific **Deepak Prasad**	15
eMentoring - Connecting Teacher Candidates with K-12 Students from Urban Schools **Chris Penny and David L. Bolton**	23
Assessing Student Participation in an Online Graduate Course **Stafford A. Griffith**	35
Undergraduate Millennial Students' Perceptions of Virtual Office Hours **Jennifer T. Edwards**	45
Education: With or Without Internet Resources; If With, to What Extent? **Muhlise COŞGUN ÖGEYİK and Işıl Gamze YILDIZ**	55
Managing Hard Skills: A Tool Set Used in the Software Industry for Associating Projects **D.V. Chandrashekar, J.N. Bhargava ,and B.V.H. Kameswara Sastry**	63

Editorial

Publish or *Perish!!!!!!*

Donald G. Perrin

As a tenured professor, I learned both sides of the academic ladder – recruitment, appointment, retention, tenure, and promotion (RTP) as a faculty member, Department Chair, Personnel Committee Chair, and Dean. I was tenured in several universities during my 50-year career. Only one of these organizations did not require publication in a refereed journal for RTP. Instead, it required research, and research was defined as publication!

There are a large number of refereed academic journals, but very few in each specific discipline. With the global explosion of higher education and doctoral programs, there is intense competition for publication, with less and less opportunity for professional exposure unless the research is innovative and makes a significant contribution to the discipline it represents. Most refereed journals are backlogged for over a year and turn away more articles than they publish.

Over the last decade, most printed journals have been replaced by online journals. Others were initiated online. Online journals are relatively lower in cost, fast to produce, inexpensive to distribute, and globally accessible from the moment of publication. Many are open and free, like this journal (*IJITDL*) and *TOJDE*. Some, as with *Innovate*, require registration of an email address. Others are subscription based, as with the United States Distance Learning Association (*USDLA*) and the American Journal of Distance Education (AJDE). Compared to printed journals, their Internet counterparts have a very large readership, often exceeding 100,000 page-views per month.

The Internet has made information more accessible and instant electronic communication replaces mailing of physical documents. The Internet facilitates rapid transmission of documents between authors, editors and peer reviewers; computer databases provide logistical support for acknowledgement, tracking, and preparing the web-pages. However, substantial amounts of time are required for review, editing, copywriting, and publication. Most refereed Journals are located in a University that provides IT Services (servers, web pages, databases, etc.) and release time for the editor-in-chief. Local faculty and students volunteer support along with scores of reviewers and editors from many nations.

There is a major disconnect between publication schedules and recruiting/appointment and RTP decisions in universities. For this reason, publications need to be submitted more than a year in advance of submission to the personnel committee. Many journals require exclusivity - they only consider papers that are not submitted elsewhere. They may also demand copyright as a condition of publication. Many months are lost if, at the end of the review process, the paper is not considered right for that publication.

In the northern hemisphere, academic personnel procedures (recruiting, appointment, retention, tenure and promotion) are completed in the Spring Semester in readiness for the next academic year. Timely acceptance by a refereed journal may be an important to the future career of the author(s) and may even determine whether or not they get or are continued in a job!

IJITDL is attempting to give better service to authors and readers by increasing the number of reviewers, editors, copywriters, and technical personnel to accelerate publication, and to increase the number of papers published from four to six each month (from about 50 to 70 each year). If you are an author, reviewer or associate that has worked with the editorial team of IJITDL, or if you have worked with us between 1995-2003 for Ed at a Distance and USDLA Journal, expect an invitation to participate with us in this important volunteer enterprise. And other who would like to volunteer, write to editor@itdl.org for an invitiation.

Editor's Note: This is evocative research! Higher levels of learning lead us to analysis and synthesis in the cognitive domain. This includes creative and innovative activities that are often interwoven with the affective and psychomotor domains. This paper is about ways to foster creative social activity.

Creative Design Environments: A Small-Scale Case Study

Ayse Kok
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Abstract

This paper describes how students in the University of Arts in London got involved in a creative design environment to further develop their creative thinking and design problem-solving skills. After providing a brief literature overview of the field of creativity and a definition of creative knowledge environments, the paper presents an exemplar of a creative knowledge environment and presents the critical features of such tools to foster social creativity are being explained.

Introduction

Problems in the Information Age have been mentioned throughout the literature by various researchers. One of the main issues is the lack of creativity and innovation. As Drucker (1994) stated creativity can be considered as an essential capability for working smarter in knowledge societies. Another problem stated very often is that technologies have been used as add-ons to existing practices rather than a catalyst for fundamentally rethinking what education should be about in the next century (Fischer, 1998b). The current mindset about learning is dominated by a view of teaching as telling unknowing learners about something they presumably know nothing about which is a misleading conception (Bruner, 1996). Yet, learning is more than being taught (Illich, 1973b). In order to deal with the complexities of the 21st century-learning, creativity skills especially within the context of online collaboration should be conveyed to learners.

Some Definitions

Creativity

The word "creativity" derives from the same Latin root for creation which was solely used in the context of divine creation and the beginning of the world (Leach, 2001). As this view was integral to the medieval religious belief system, the concept of present or future human-making did not emerge until the beginning of Renaissance (Leach, 2001). Until the twentieth century, creativity was considered to be an attribute to be found only in rare and unusual people.

Creativity can be regarded as not only a quality found in exceptional individuals, but also as an essential life skill through which people can develop their potential to use their imagination to express themselves, and make original and valued choices in their lives (Csikszentmihalyi, 1990a, 1990b, 1996). The national Advisory Committee on Creative and Cultural Education (NACCCE) defines creativity as an imaginative activity fashioned so as to produce outcomes that are both original and of value. So, the main characteristics of creativity are (NACCCE, 1999):

- Using imagination: The process of generating original ideas and providing alternatives to the conventional
- A fashioning process: The active focus of attention and skills to shape an idea
- Pursuing purpose: The application of imagination to produce tangible outcomes from purposeful goals
- Being original: The originality of an outcome that can be at different levels such as: individual originality in relation to one's prior work, relative originality in relation to peer work and historic originality in relation to works that are completely unique

- Judging value: The evaluative mode of thought that is reciprocal to the generative mode of imaginative activity and provides critical, reflective review from peers

From the beginning of the history, the concept of creativity has been gaining a lot of attention. In Plato's Ion; the dialogues between Ion and Socrates emphasize the importance of inspiration from an external source and a state in which the creator is out of his senses. Although the term 'madness' is used, it does not seem to be describing the psychotic condition as currently defined.

"Ion: Then what can be the reason, Socrates, for my behavior? When anyone discusses any other poet, I pay no attention and can offer no remark of any value. I frankly doze. But whenever anyone mentions Homer, immediately I am awake, attentive, and full of things to say.

Socrates: The riddle is not hard to solve, my friend. No, it is plain to everyone that nothing from art and knowledge becomes your power to speak concerning Homer. If it were art that gave you power, then you could speak about all the other poets as well. There is an art of poetry as a whole? Am I not right? […] Since their making is not by art, but is by lot divine…In all the rest, each one of them is poor, for not by art do they utter these, but by power divine, since if it were by art that they knew how to treat one subject finely, they would know how to deal with all the others too. Herein lies the reason why the deity has bereft them of their senses, and uses them as ministers, along with soothsayers and godly seers; it is in order that we listeners may know that it is not they who utter these precious revelations while their mind is not within them, but that it is god himself who speaks and through them becomes articulate to us."

When it comes to individual creativity individuals may have the following concerns related to their voices being heard:

- Being interested enough and willing to make the additional effort and time so one's voice is heard: This relates to what motivates people to participate (Fischer, 1998a).
- Having something relevant to say: The unique expertise and local voices are valuable in a global world.
- Being able to express what one wants to say: Owners of the problems must have a digital fluency and be independent of high-tech scribes (National-Research-Council, 1999).
- Being able and willing to express oneself in a way that others can understand: This is relevant in participatory design processes in which people should express themselves without the use of their own professional jargon (Fischer, 1998a, 1998b).

Similarly, a group or a community may have concerns related to their voices being heard:

- Encouraging the individuals to contribute to the good and progress of all: This is especially relevant in cultures that rely on social capital (Fischer, 2000, 2001).
- Supporting cultural and epistemological pluralism as an advantage to stimulate social creativity: The multiple ways of thinking including the voices of underrepresented groups should be accepted.
- Avoiding that the information got lost: Environments that support the right division between pull and push technologies should be created (Fischer, 2000).
- Avoiding illegitimate voices: This relates to the violation of privacy and spam mail (Fischer, 2001).
- Avoiding getting stuck in group think: Controversy should be seen as an asset rather than as a limitation (Turkle & Papert, 1991).
- Eliminating sources of exclusion: This relates to making minorities reluctant to join in (Fischer, 2001).

Creative Design Environments

Creative Design Environments (CDE s) are those environments, contexts, surroundings, the characteristics of which are such that they exert a positive influence on human beings engaged in creative work aiming to produce new designs whether they work individually or in teams within a single organisation or in collaboration with others.

CDE s can be considered at different scales. At the micro-level is the environment surrounding an individual or a small team where personal interactions may stimulate creativity. At the other extreme is the macro-level at which a research institution operates and whose creative activities may be hindered or promoted by other institutions (Kasperson, 1978). So, CDE s can be considered as nested layers of environmental factors surrounding the unit in which creative activities are undertaken (Kasperson, 1978). The unit of analysis can be as small as one person or as large as a whole institution. In between are other levels of creative units such as a university department seeking creative ways of performing research. Characteristics at one level are influenced by properties and events at other level such as the culture and goals of the institution.

The main components of CDE s are:

Creativity: As articulated above, creativity can be defined as a novel and imaginative product which is useful and of good quality. The evaluation of a product as 'creative' is often a matter of social negotiation. Not every creative process might lead to a creative product as the context, knowledge, ideas also influence the creativity. Combining different frames of reference, the transfer of a methodological approach from one field to another or the tension between divergent and convergent thinking may further foster creative thinking.

Design environment: The design environment depends on a wide range of conditions and circumstances that overlap and intersect (Kasperson, 1978). Its components are:

- **Task characteristics**: Tasks may vary in terms of their being short/long-term, simple/complex, routine/novel and modularised/integrated.
- **Discipline/field**: The disciplines might entail single/multiple paradigms, reductionist/holistic, discipline-based/inter/multi-disciplinary, theoretical/experimental/modeling.
- **Individuals**: Every one possesses different knowledge, skills, abilities, motivation, interests, values, beliefs and cognitive styles.
- **Group characteristics**: Groups may vary in terms of their size, being integrated/loosely coupled, being inward/outward looking, the heterogeneity/ homogeneity of members, and the underlying assumptions
- **General work situation for individuals**: These entail the number of different work tasks, job ambiguity and features of time available for design (sparse/abundant, fragmented/concentrated).
- **Organisation**: This relates to the organisational structure, culture, leadership style and the degree of organisational tension/harmony.
- **Extra-organisational environment**: This relates to the information availability and cultural characteristics (Kasperson, 1978)

The different scales, at which CDE s can be analysed, might be grouped into the following categories: macro (global, national, inter-organisational); meso (related institution) and micro (teams and individuals). Besides, each of these components has social and cognitive aspects. Social aspects are openness to new ideas or innovation and relations between individuals. Cognitive aspects are cognitive work style, thinking style (adopting an experimental or 'trial and

error' approach) (Kasperson, 1978). These two aspects are closely integrated and affect each other. While group characteristics and work situations are more social tuned task characteristics and field are more cognitively tuned.

An element of change should also be considered when thinking about CDE s as over time the relevant tasks might alter because their preconditions have changed. It is also important to distinguish the main types of CDE s depending on whether they are related to academe, industry or government. Besides, different disciplines might have different cognitive and social styles (Kasperson, 1978).

Design and Learning

Current theories in educational theory make the following assumptions about learning:

- Learning is a process of knowledge construction rather than knowledge absorption so that environments in which learners can be contributors are required (Harel & Papert, 1991). Learners should create new artifacts through interaction with software tools (Repenning et al. 1998; Eisenber & Eisenberg, 1998; Nardi, 1993).
- Learning is highly tuned to the situation in which it takes place. So, environments which are domain-oriented and which support human problem-domain interaction are required (Fischer, 1999a). When working or playing, individuals act until they encounter a breakdown (Fischer, 1999a). By getting involved in 'reflection-in-action' (Schon, 1983) or an experiential mode (Norman, 1993) they can reflect about these breakdowns which are key to situated learning.
- Learning is knowledge dependent meaning that people use their existing knowledge to construct new knowledge that support user-tailored information presentation (Ritter et al., 1998)
- Learning needs to account for distributed cognition by which knowledge required to solve a problem is distributed among various participants (Norman, 1993). This distribution of knowledge is based on the asymmetry of knowledge between different stakeholders in problem-solving (Rittel, 1984). A reformulation of the misleading conception that the teacher should explicitly tell about something that the learners presumably know nothing about is misleading (Bruner, 1996).

To bring the design mode into the academic curriculum, the "learning by design" approach can be adopted (Bereiter, 2002, Scardamalia, 2002). In this type of learning, the physical environment is the physical workbench where something is being built. Holbrook & Kolodner (2002) describe this type of learning as being achieved through a major design challenge where learners develop designs, build prototypes and use various resources to provide justification for refining their designs. So, this approach is explicitly focused on building concrete things (Holbrook & Kolodner, 2002). Ideas enter the process as they are relevant to producing an artefact (Holbrook & Kolodner, 2002).

Similarly, Bereiter et al. (1997) asserts that this constructivist approach entails the following characteristics:

- **A focus on idea improvement**: Working together on improving ideas by using the available strategies and resources
- **Problems versus questions**: Although problems are often expressed as questions pursuing solutions to problems rather than answers encourages knowledge building. In contrast to answers, problem solutions are continually improvable.

- **Knowledge of value to the community**: In knowledge building, artifacts whether conceptual or physical are used by other community members as tools for further knowledge advancements.
- **Emergent goals and products**: Products may emerge at any point in the iterative cycle of knowledge building and may serve various purposes such as highlighting a problem or disseminating results.
- **Constructive use of authoritative sources:** Apart from authoritative resources such as textbooks all ideas are treated with respect and judged according to their contribution to the current problem-solving effort.

To create different mindsets, learning environments should be facilitated in which knowledge is collaboratively created, externalized and shared (Arias et al., 2000). Impacting mindsets is a socio-technical design problem (Fischer, 1999b) (Figure 1.0) that requires making consumers become active contributors to the solutions of the problems (Schon, 1983; Fischer, 1998a; Arias et al, 2000) and allowing learners to engage in design activities by creating environments supporting them in making artifacts that they can share with others .

The Context of the Study

Sketchbook is a digital tool for art and design students to support them to showcase their work through portfolios and collaborate on projects through posting images. It has been developed by the University of the Arts in London which is one of the oldest art universities in the world. In addition to displaying their sample work, users can also use a variety of creative thinking tools, do exercises for inspirational thinking as well as utilize online resources related to the areas of art, design and research methodologies.

Sketchbook is an image-sharing site aimed specifically at artists, designers or anyone who works in a visual medium. It allows the users to upload and show one's work, offer descriptions of the process, and have friends and colleagues comment upon each other's ideas. Students are also provided with the opportunity to create their online portfolios and to collaborate on projects through posting images or articles. Besides, creative thinking tools, exercises and research methods are also presented. Sketchbook's structured environment supports the students in their learning process (Figure 1.0).

The content of Sketchbook is divided into the following seven areas that can be accessed through the top frame of the page layout.

- Gallery
- Sketch
- My Portfolio
- Groups
- Inspiration
- Books
- Links

Based on the constructivist theory of learning, Sketchbook provides a rich context for learning through its activities that involve the building of a work of art. By establishing a strong connection between design and learning, Sketchbook facilitates a meaning construction whereas the users are engaged in building sharable artifacts.

Sketchbook's constructivist learning environment aims at the achievement of the following pedagogical goals:

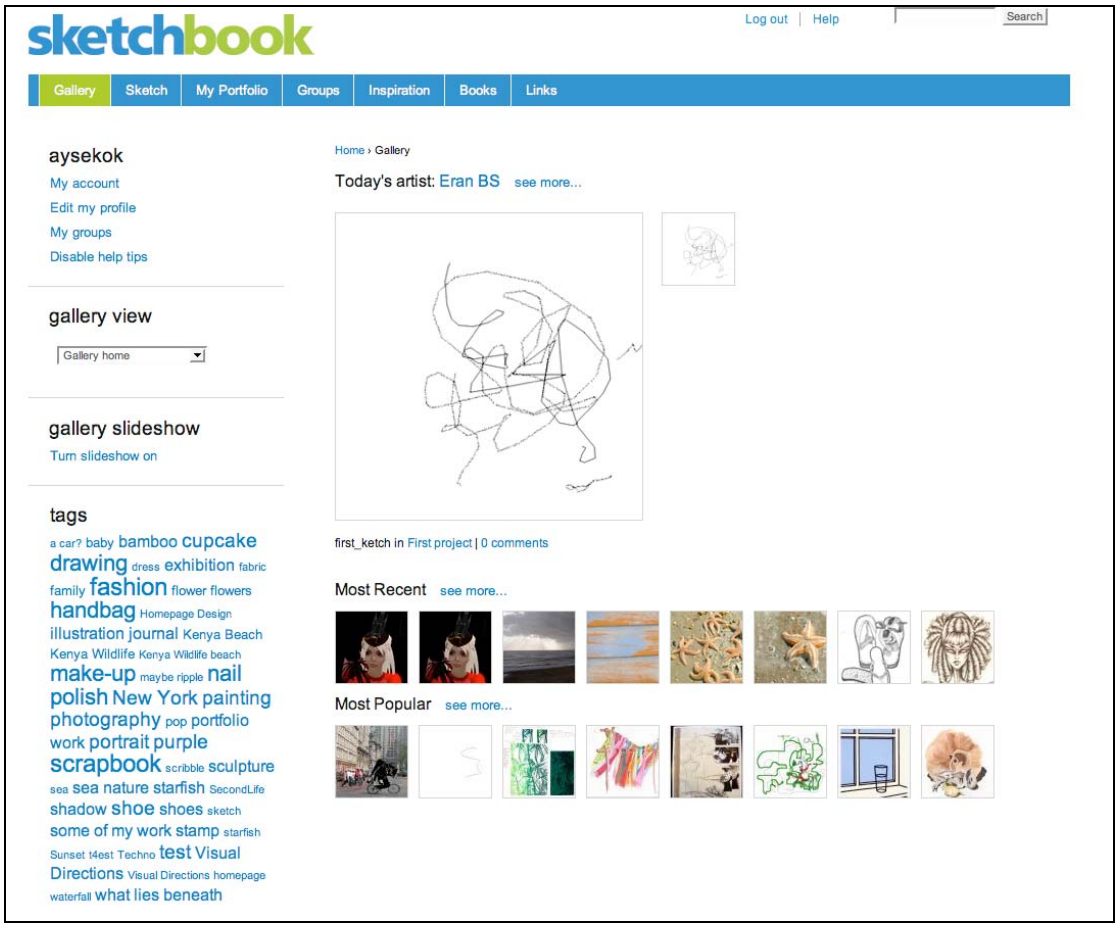

Figure 1.0 A Screen Layout of Sketchbook

- **Providing experience with knowledge construction process**: Sketchbook users take the responsibility for strategies or methods for solving problems in the "Inspire" section once the process is facilitated by the tutor.
- **Providing experience in multiple perspectives**: Students are engaged in activities that enable them to evaluate alternative solution to these activities so that they can eventually enrich their understanding.
- **Embedding learning in realistic and relevant contexts**: As most of the activities in Sketchbook are grounded within the complexity of the real life the ability of students to transfer what they learn to everyday life may be increased.
- **Encouraging ownership and voice in the learning process**: As Sketchbook users play around with their illustrations they can identify their own directions and objectives. The tutors may act as a coach by helping the students frame their learning objectives rather than determining what they will learn.
- **Embedding learning in social experience**: Sketchbook facilitates collaboration between both teachers and students, and students and students, hence it increases social interactions as well.
- **Encouraging the use of multiple modes of representation**: Sketchbook facilitates learning with photographs and videos in addition to written communication.
- **Encouraging self awareness of the knowledge construction process**: Sketchbook users are provide with activities in the 'Inspire' section that allow them to develop an awareness about their own knowledge construction process.

Moreover, Sketchbook provides the user with the opportunity to gather and organize artefacts regarding one's professional development as well as their collaborative work. It is a reflective tool that demonstrates growth over time.

Sketchbook's underlying learning theory stresses the active involvement of learners in building their own knowledge. As learners structure and organize their work of art they correct themselves and their works are constantly being refined. Reflection on one's own work also makes learners get informed about their own learning goals and strategies. As the learners further explore the drawing space they are actively engaged in imposing meaning upon their works.

The teachers can also create meaningful experiences in their classrooms by using Sketchbook. They can use Sketchbook as a domain oriented design environment by showing exemplary work or by evaluating their students' individual or collaborative work. Sketchbook users can also meet with others sharing the same interests and competencies to further improve their skills through exchanging ideas and collaborative work. So, Sketchbook fosters reflective practice and critical thinking by offering the opportunity for one's work to be reviewed by their peers.

Another main feature of Sketchbook as a domain oriented design environment is that it is a medium of expressing one's authenticity. Due to the fact that Sketchbook users can showcase their work a culture of digital documentation can also be fostered.

A list of possible tasks for collaborating on Sketchbook are as follows:

Table 1.0
A list of possible collaborative projects on domain oriented design environments

Strategy	*Rationale*
The teacher may initiate a work of art to be further modified by the students. Students are expected to make a collaborative drawing and post their contributions at least twice a week. Participation points may be calculated based on these online contributions.	Because of the nature of the evolving drawing, students can be constantly engaged in the course, without any lengthy absences from the collaborative work. They can be provoked to critically analyze, explain and propose new meanings among objects of their study.
Students can be expected to take part in regular peer reviews by critically evaluating each other's works of art.	It is important to develop a critical eye towards other community members' works of art.
Students can be divided into 3-4 small groups for providing answers for the `Exercises` in `Inspiration' section. They can even get into an exchange of ideas with students from other colleges.	Small groups facilitate better discussion for learner-material interaction.
Instructors may require high-quality online interactions with peers and discussions of readings suggested by Sketchbook making a portion of the grade dependent on it. (At least 25% is recommended).	Effective learning environments should provide frequent and meaningful interactions among learners. Good practice encourages cooperation among students.
Teachers can point out various mindmapping tools in the "Inspire" section to continually promote good interaction.	Good practice encourages prompt feedback so that faculty-learner interaction may be improved.

Methodology

Research Design

Taking into account the complexity of factors that simultaneously influence creative thinking skills, the practice of controlling for factors utilizing an experimental study would limit understanding of educational issues. Creativity is a construct, an aspect of consciousness that is difficult to measure. In addition, an individual's creative and complex thinking skills may differ based on the specific educational situation the learner is experiencing. As it has been argued by some theorists, analyses of "person-situation" interactions using rich situational descriptions may facilitate more understanding about individual difference constructs. Besides, as various theorists state, generalizations about learning cannot be validated without studying the personal differences along with the situational differences. Deriving from these theoretical and practical reasons, a hermeneutic phenomenological approach would be used to explore the construct of creativity in online learning situations. Understanding the phenomenon of the learner's creative and complex thinking skills by observing, questioning and gathering stories from students who attempt to learn online would be the focus of these phenomenological observations.

Participants

Participants will be those students of the University of Arts in London willing to reflect about the relationship between their use of Sketchbook and their creative and complex thinking skills. To this end, students currently enrolled in a program will be e-mailed and asked whether they will be willing to participate in such a study. The justification of this sampling method is rather than making generalisations concerning the relationship between the development of creative thinking skills and the use of Sketchbook, the aim is to investigate the value and function of Sketchbook as a mediating tool through this case study. Twenty-four art and design student participated in the small-scale study undertaken in the University of the Arts in London.

Data Collection

To look more closely at the process of portfolio development, a qualitative study investigating the experiences of these 24 students was conducted. Data was collected via student interviews and field observations. Students enrolled in the introductory course participated in a focus group interview after completing their initial draft of the portfolio. The focus group interview lasted 45 minutes and centered on the decision-making process. A second group interview was also conducted by the researcher at the conclusion of the class, asking open-ended questions related to choice of media, and possible future revisions. These interviews focused on the process of developing the portfolio, reasons for developing the portfolio beyond the requirements, and changes they would like to make in their portfolio over time.

Semi-structured interviews with students and observation of the learners' online art and design products will be used as data collection methods. The students will be asked about their use of Sketchbook and their perception of the potential advantages pertaining to the development of creative thinking skills.

According to Patton (1982), the fundamental principle of qualitative interviewing is providing a framework within which respondents can express their own understandings in their own terms and therefore for which open-ended, rather than closed, questions should be used as far as possible (Patton, M., 1982). Patton's style of qualitative interviewing is referred to as the standardized open-ended interview', through which questions are asked in the same way and order, with a minimum of probing by the interviewer (Patton, M., 1982). Use of probes were preferred by the researcher in order to allow the informants to answer more on their own terms (Patton, M., 1982), so the interviewer seeking at the same time both clarification and elaboration on given answers was more free to probe beyond answers (Patton, M., 1982).

Results

Student responses covered a range of opinions, with the diversity illustrated by the qualitative feedback from the open-ended questions:

> *"In my opinion, we should not be expected to be creative with computers, that will be unfair in some instances."*

This response was typically related students from the developing world with notably lower ICT literacy skills than the other students. Yet, with guidance and training, all students were able to produce e-portfolios readily in the weeks following the initial assessment.

Another challenge for these students was their different opinions with regard to whether they should only include the sketches relevant to their own field (fashion and design) or any other drawings not particularly related to fashion and design.

> *"It was quite fun to put together the e-portfolio. The assessment of this course also makes things less stressful on us."*

Once the requisite publishing skills had been mastered, students enjoyed the capacity to individualize their drawings, and in general, invested disproportionate time in their sketches, despite the fact that it was not rewarded in assessment. Moreover, those students having used digital media admitted that the digital media made indeed a difference for them since it resulted in robust learning experiences.

> *"I think it is an amazing way for preparing job applications in the future. Learning about my personal strengths and weaknesses via this online portfolio, I can work now on my weaknesses."*

Similarly, one student mentioned that by being encouraged to identify their own strengths they will take responsibility to develop them further and hence got engaged in genuine life-long learning.

> Moreover, one student stated that *"the good thing about Sketchbook is that it is collaborative so that we can further develop the drawings of others."*

One of the challenges was how to sketch online when using Sketchbook. One student stated that

> *"It was difficult how to translate your ideas about your thoughts into the right drawings on the web page, but once you get used to it you can put your real life examples which may be helpful for your other colleagues"*. Yet, despite this challenge of selecting the right drawing, one student stated that *"once you start to reflect and record your drawings you think that you feel motivated to enter a new creative experience into your portfolio."*

Furthermore, three of the e-portfolios included some mindmaps of the art students' interaction with others and these students believed these figures to be the most important component of the idea generation.

Depending on how much the students got involved in preparing their e-portfolios they pursued different paths. To exemplify, those students who were just beginning the process often included simple drawings they were using throughout their lessons. One third grade student mentioned: "As I continued to work on my e-portfolio, I wanted to reflect my own style as a design student." As participants continued to revise and refine their work, they felt more motivated by the desire to reflect their personal style with regard to art and design.

Although at the beginning of the online sketching process the students would like to know exactly how their drawings should look as if the contents were set in stone they eventually got

accustomed to the unpredictable nature of this collaborative development process. After the initial evaluation of their drawings participants were told that they should think about the use of the tool as an ongoing process as well as revise the content frequently via utilizing the flexibility of the digital media.

Conclusions

As Fischer (1991) stated, a "gift-wrapping" approach, technology is merely wrapped around old frameworks for education. To move from "gift-wrapping" into richer contextual frameworks computational environments, effort has been made that Sketchbook fulfils the following conditions:

- Being simultaneously user-directed and supportive: The choice of tasks must be under the control of the learner whereas the support provided by the system must be contextualized to the user's task.
- Being sufficiently open-ended and complex so that users will encounter breakdowns: The system must provide means for allowing users to understand and learn from breakdowns.
- Supporting a range of expertise: Systems must be able to accommodate users at different levels of expertise.
- Promoting collaboration: When users are supported to overcome the symmetry of ignorance they can learn from each other.

In this way, a synergy for social creativity can be created. As the Renaissance scholar does no longer exist due to the rapid increase of information social creativity becomes more and more crucial (Fischer, 1998b). CKE s such as Sketchbook can empower individuals in the following ways:

- letting them articulate a partial description of their tasks
- supporting the creation of an artefact with a construction component
- using a catalogue of previous designs supporting design by modification
- supporting the exploration of argumentation
- providing additional feedback

As computers can be utilized for such complex tasks more social creativity can be unleashed.

ACKNOWLEDGEMENTS

The author contacted the University of the Arts in London to further her research interest and would like to thank to Dr Julia Gaimster of University of the Arts for the information and support she provided.

References

Arias, E. G., Eden, H., Fischer, G., Gorman, A., & Scharff, E. (2000) Transcending the individual human mind—creating shared understanding through collaborative design. *Transactions on Computer Human Interaction*, 3, (4), pp. 45-49.

Bennis, W., & Biederman, P. W. (1997) *Organizing genius: the secrets of creative collaboration.* Cambridge: Perseus Books.

Bereiter, C. (2002) *Education and mind in the knowledge age.* Mahwah: Lawrence Erlbaum Associates.

Bereiter, C., Scardamalia, M., Cassels, C. & Hewitt, J. (1997) Postmodernism, knowledge building, and elementary science. *Elementary School Journal*, 97, (1), pp. 329-340.

Brown, J. S., Duguid, P. (1992) Enacting Design for the Workplace. In P. S. Adler & T. Winograd (eds.), *Usability: Turning Technologies into Tools*. Oxford: Oxford University Press, pp. 164-197.

Bruner, J. S. (1996) *The culture of education.* Cambridge: Harvard University Press.

Campbell, D. T. (1969) Ethnocentrism of disciplines and the fish-scale model of omniscience. In M. Sherif, & C. W. Sherif (eds.), *Interdisciplinary relationships in the social sciences,* Chicago: Aldine Publishing Company, pp. 328-348.

Carroll, J. M., & Rosson, M. B. (1987) Paradox of the active user. In J. M. Carroll (ed.), *Interfacing thought: cognitive aspects of human-computer interaction.* Cambridge: The MIT Press, pp. 80-111.

Csikszentmihalyi, M (1990a) The domain of creativity. In M.A. Runco & R. Albert (eds.) *Theories of creativity*. London: Sage Publications, pp. 70-85.

Csikszentmihalyi, M. (1990b) *Flow: The psychology of optimal experience*. New York: HarperCollins Publishers.

Csikszentmihalyi, M. (1996) *Creativity: flow and the psychology of discovery and invention*. New York: HarperCollins.

Drucker, P. F. (1994) The Age of Social Transformation. *The Atlantic Monthly*, 11, (3), pp. 53-80.

Fischer, G. (1991) Supporting learning on demand with design environments. *Learning Sciences*, 1, (3), pp. 165-172.

Fischer, G. (1994a) Domain-oriented design environments. *Automated Software Engineering*, 1, (2), pp. 177-203.

Fischer, G. (1994b) Turning breakdowns into opportunities for creativity. *Knowledge-Based Systems, Special Issue on Creativity and Cognition*, 7, (4), pp. 221-232.

Fischer, G. (1998a) Beyond 'couch potatoes': from consumers to designers," *Computer Human Interaction*, 2, (4), pp. 2-9.

Fischer, G. (1998b) Making learning a part of life—beyond the 'gift-wrapping' approach of technology. In P. Alheit & E. Kammler (eds.), *Lifelong learning and its impact on social and regional development.* Bremen: Donat Verlag, pp. 435-462.

Fischer, G. (1999a) Social creativity: Bringing different points of view together [Online], Colarado: KBS. Available from: <http://l3d.cs.colorado.edu/gerhard/papers/cc99.pdf> (Accessed Dec 08, 2008).

Fischer, G. (1999b) Lifelong learning: changing mindsets. In G. Cumming, T. Okamoto, & L. Gomez (eds.), *7th International Conference on Computers in Education on "New Human Abilities for the Networked Society"*. Chiba, Japan, 18-21 April, 1999.

Fischer, G. (2000) Social creativity, symmetry of ignorance and meta-design. *Knowledge-Based Systems Journal (Special Issue on Creativity & Cognition)*, 13, (8), Oxford, UK: Elsevier Science, pp. 527-537.

Fischer, G. (2001) Communities of interest: Learning through the interaction of multiple knowledge systems. *24th Annual Information Systems Research Seminar (IRIS'24)*, Bergen, Norway, 11-14 August, 2001.

Greenbaum, J., Kyng, M. (1991) *Design at work: cooperative design of computer systems*. Hillsdale: Lawrence Erlbaum Associates, Inc.

Grudin, J. (1987) Social evaluation of the user interface: who does the work and who gets the benefit? In H. Bullinger & B. Shackel (eds.), *Proceedings of INTERACT'87, 2nd IFIP Conference on Human-ComputerInteraction.* Amsterdam: JC Publications, pp. 805-811.

Hamilton, E., Cairns, H. (eds.) (2006) *Plato: the collected dialogues.* New York: Pantheon Books, pp. 218-221.

Holbrook, J. & Kolodner, J.L. (2002) Scaffolding the development of an inquiry-based (science) classroom. In B. Fishman & S.O' Connor- Divelbiss (eds.), *Fourth international conference of the learning sciences.* Mahwah: Lawrence- Erlbaum Associates, pp. 221-227.

Illich, I. (1973a) *Tools for conviviality*. New York: Harper and Row.

Illich, I. (1973b) *Deschooling society.* Harmondsworth: Penguin Books.

Leach, J. (2001) A hundred possibilities: creativity, community and ICT. In A., Craft, B., Jeffrey, M., Leibling (eds.) *Creativity in education*. London: Continuum, pp. 176-185.

Kasperson, C.J. (1978) An analysis of the relationship between information sources and creativity in scientists and engineers, *Human Communication Research*, 4, (2), pp. 111-19.

Levy, F., & Murnane, R. J. (2004) *The new division of labor: how computers are creating the next job market*. Princeton*:* Princeton University Press.

Nakakoji, K., Aoki, A., & Reeves, B. N. (1996) Knowledge-based cognitive support for multimedia information design. *Information and Software Technology*, 38, (3), pp. 191-200.

National Endowment for Science, Technology and the Arts (NESTA), (2006) *The innovation gap: why policy needs to reflect the reality of innovation in the UK*. London: NESTA Publications.

Norman, D. A. (1993) *Things that make us smart*. Reading: Addison-Wesley Publishing.

Patton, M. (1982) *Practical Evaluation.* Newbury Park:Calif. Sage

Repenning, A., Ioannidou, A. and Ambach, J. (1998) *Learn to communicate and communicate to learn.* Journal of Interactive Media in Education, 98, (7), pp. 40-50.

Resnick, M. (2006) Computer as paintbrush: technology, play and the creative society. In D., Singer, R., Golikoff, K., Hirsh-Pasek (eds.), *Play=Learning: how play motivates and enhances children's cognitive and socio-emotional growth.* Oxford: Oxford University Press, pp. 30-37.

Rittel, H. (1984) Second-generation design methods. In N. Cross (eds.) *Developments in Design Methodology*. New York: John Wiley & Sons, pp. 317-327.

Schon, D. A. (1983) *The reflective practitioner: How Professionals Think in Action*. New York: Basic Books.

Shneiderman, B. (2003) Leonardo's Laptop: Human Needs and the New Computing Technologies. Cambridge: MIT Press.

Simon, H. A. (1996) *The Sciences of the Artificial, 3rd edition*. Cambridge: The MIT Press.

Turkle, S., & Papert, S. (1991) Epistemological pluralism and the revaluation of the concrete. In I. Harel & S. Papert (eds.), *Constructionism.* Norwood: Ablex Publishing Corporation, pp. 161-191.

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Editor's Note: Technology offers many solutions for distributed learners. In 1998, PREL used satellite television to distribute lessons to the widely distributed islands in the Pacific region. In 2001, the Ohana Foundation offered a combination of DVD and internet technologies for this purpose. Today, with mobile phones as a ubiquitous source of interactive multimedia, it is adopted by the University of South Pacific for distance and flexible learning. TAFE in Australia are also experimenting with mobile phone technologies.

Negotiating Geographical Isolation:
Integrating Mobile Technology into Distance Education Programmes at the University of South Pacific

Deepak Prasad
Fiji Islands

Abstract

The catchment area for the University of the South Pacific (USP) is enormous, stretching across 33 million square kilometres of ocean; communications of all kinds remain knotty even in the 21st century. Of the approximate 22,000 students currently enrolled at USP, more than half choose to study by distance and flexible learning (DFL). For these students, USP's distance education network based satellite communications, USPNet, serves as a gateway for internet, phone and data links, audio and video conferencing, and video broadcasting, providing links with the University's campuses. Even with this capacity, negotiating geographical isolation is not easy: not every DFL student can travel to the campus to use the USPNet facilities since many of them are studying in remote locations, and sometimes there is no electricity.

This paper focuses on finding cost-effective ways of linking with these students. Connecting via a mobile device appears to be an obvious answer. Following a review of mobile devices used by Mohamad and Woollard (2008), Kukulska-Hulme (2007), and Caudill (2007), this paper proposes the most accessible, cheap, and easy to use portable mobile device that can pave the USP region's vast geographic spaces with new bridges of distance learning. The paper then considers strategies for using the indentified mobile device and presents a DFL communication model. The paper concludes that USP should not wait for the technology to improve in the USP region but rather use the currently available technologies to communicate with the remote DFL students.

Keywords: University of the South Pacific, USPNet, ICT, SMS, Vmail, Moodle, distance education, internet, mobile technology, m-learning, satellite, telecommunication.

University of the South Pacific, distance education, and distance students

USP is a regional university serving 12 island countries: Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Solomon Islands, Tokelau, Tonga, Tuvalu, Vanuatu and Samoa and offers almost 400 educational programmes via Distance and Flexible Learning (DFL) in a variety of modes and technologies throughout USP's 15 campuses. At the time of writing, 52% of USP's 22,000 students are DFL scattered across 12 member countries. The USP member island nations are geographically dispersed extending from the Solomon Islands in the West to the Cook Islands in the East, spanning 33 million square kilometres with five time zones (Figure 1). Delivery of DFL courses across the vast area of the Pacific Ocean poses its own problems, challenges and barriers that are unique to its nature.

The University delivers DFL courses with a mix of printed materials, CDROMs and DVDs, audio and video tapes, online learning management system (Moodle), and audio and video conferencing offered through USPNet. The majority of DFL courses use live satellite-based audio tutorials and printed materials such as study guides, introduction and assignments booklets, readers and commercial readers as the most common form of delivery. In 2008, 396 of 402 DFL courses delivered live audio tutorials via USPNet.

Figure 1. University of the South Pacific region

USPNet is a USP owned Wide Area Network incorporating a 5MHz IP Satellite based technology (Figure 2). For USP's distant students and staff, USPNet provides for the opportunity to participate in interactive audio tutorials, (conducted from any campus), communicate by e-mail with a lecturer/tutor or another student, access the World Wide Web, access online MIS and banner applications, watch a live Video multicast, access multimedia material via Server downloads and live video conferences (and tutoring) with the Laucala Campus in Suva.

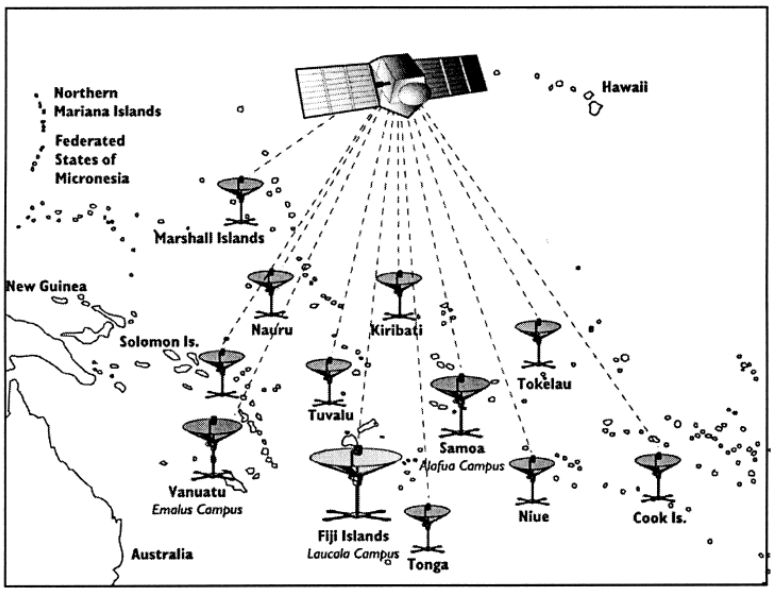

Figure 2. USPNet serving USP campuses

USPNet is expected to help remove "the tyranny of distance" between the twelve geographically distributed USP member countries. Unfortunately, USPNet only connects to campuses, centres, and not to individual students in the region, "in effect limiting the power of the USPNet distance education model" (Chandra, 2002, p.86). Thus, only those students who can travel to campus or centres can use the study facilities provided by USP's campus or centres. While other students' study independently using print-based course materials. It is estimated that 20-30% of distance students do not have access to USPNet facilities (Wah & Tuisawau, 2000).

This paper aims to nominate a mobile device that could be utilised to communicate with distance students who can not travel to campus to use USPNet facilities, particularly due to distance or

cost of transport. In doing so, the paper first provides readers with the review of literature on uses of mobile devices in education. Next, the paper identifies the most widely used ICT mobile device in the USP region. This will be followed by discussions on possible uses of the selected mobile device in the University's context, conclusion, and possible directions for future research.

Literature Review

Mobile devices are pocket-sized computing devices that characteristically have a display screen with miniature keyboard or touch input. Mobile phones, pocket computers and PDAs (Personal Digital Assistants) offer web access, text messaging and voice options for Mobile Learning. M-learning is defined as learning that takes place with the help of mobile devices. Mobile devices offer suitable educational environment to support learning activities both inside and outside the classroom (Fleischman, 2001). ICT (Information and Communications Technology) is the term, which functions as an umbrella for this paper, and beneath ICT lays the term m-learning.

Until now, no studies have been carried out to realize the potential of using mobile devices at the University of the South Pacific. Nonetheless, there are several studies that address the use of mobile devices in learning that can illuminate the potential of using mobile devices for the USP context. One study by Mohamad and Woollard (2008) investigated issues surrounding the realization of mobile learning in Malaysia. This study asserts that a user's positive attitude is one of the factors that determine the success of employing mobile devices in education. Mohamad and Woollard suggest that teachers negative attitudes towards ICT can be replaced with a positive attitude if barriers in adopting ICT among teachers can be eliminated. They further state no significant difference in positive attitude towards ICT among students who own ICT and those who do not. Mohamad and Woollard (2008), conclude that similar to developed countries, mobile technology can be successfully implemented in the education system in the developing countries. However, the technology needs to be reformulated so that it is both suitable and sustainable in the situation of developing countries.

A study, by Kukulska-Hulme (2007), found that testing usability of mobile devices in education should not be just done once or twice during the life of the project but tracked from the inception use to the state of relative experience. Kukulska-Hulme observed that usability issues were often reported where PDAs were used and suggested that PDAs may have more usability problems than mobile phones. The Kukulska-Hulme study agreed with the Mohamad and Woollard (2008) conclusion about how the choice of the technology should be scenario-based. Where the Hulme study differed is that he pointed out that the owners' familiarity with mobile devices avoids many potential usability problems for mobile learning.

Caudill conducted a study (2007) that explored the major mobile devices currently in use: PDAs, mobile phone, and MP3 players. Caudill's findings aligned with Kukulska-Hulme's study in that both say that ownership and access to mobile devices is paramount for the success of m-learning system. Caudill's study found that it is critical for m-learning designers to be aware of the kind of device their intended audiences are working on, and apply specific pedagogical theories connected to the devices

The main concept that all three educational researchers supported was that mobile technology has the potential to support learners anywhere and at anytime. All studies revealed that every technology does not work for every student and situation. In addition, the educational researchers found that the success of m-learning depends on the student's ownership and familiarity with the mobile technology. As Okamura and Higa (2000) note, the use of various technologies is required for effective distance learning in the Pacific.

Selecting Mobile Devices

A large proportion of the Pacific region population is ICT-savvy (Williams, 2007). They have a positive attitude towards ICT knowing that ICT can link them to the global world. This is very encouraging. Mohamad and Woollard (2008) assert that people should have positive attitudes towards ICT for its successful implementation in the m-learning system. Success of m-learning also depends on factors like ownership and access to mobile devices (Caudill, 2007; Kukulska-Hulme, 2007). Hence, it is very important to choose technology that is available to majority population of the USP region. Williams (2007), claim that a large part of the Pacific region have access to internet and 3GSM phones. This indicates that out of all possible mobile devices, mobile phones are most dispersed in the Pacific. Thus, USP should adopt mobile phones for its m-learning system.

It is also vital to note the penetration of the internet in the USP region as it has implications for the type of activities that can be facilitated via mobile phones. Penetration of mobile phones in Fiji, Samoa, Tonga and other Pacific countries is higher than the penetration of the internet as the following statistics show:

Country	Mobile Phone Per 100 inhabitants 2007	Internet Per 100 inhabitants 2007
Fiji	63.20	9.36
Kiribati	0.75	not available
Solomon Islands	2.20	1.63
Tonga	46.37	8.37
Vanuatu	11.50	7.52
Samoa	45.98	4.46

Data source: International Telecommunication Union (ITU)

If one looks at the comparative figures of users on internet and mobile phone, it can be safely assumed that an activity that may be facilitated via mobile phones has to be internet independent. At this point, it is important to understand that "mobile learning has lot of potential for quick and wide reaching out to the geographically wide-spread learners, even though they have no internet connectivity" (Dharankar, 2008, p.2)

Fitness for purpose

Mobile phones "are not designed with the education market in mind" (Peters, 2007). However, many educational researchers and educational providers recognize the benefits of mobile phones in education (Mohamad & Woollard, 2008; Kukulska-Hulme, 2007; Caudill, 2007). The mobile phone fits perfectly with USP context as it is most accessible mobile device that does not depend on the electricity since it can be charged using solar chargers or cigarette lighter socket in cars. Mobile phones have host of tools that can support distance education. Tools that are available on phones differ according to their model and manufacturer. For USP's purpose, only basic tools available on 3GSM phones will be considered that are internet independent. These features are as follows:

- Calling and receiving calls;
- Voice messaging: allows the phone to act as an answering machine;
- SMS (Short Message System): support for text messaging – limited to 160 characters;

- Audio recording: may record an audio while user is communicating with another party on the mobile phone - dependent on the phone's memory capacity; and
- Conference call: support for small conference – up to five people at once.

Common problems of DFL students

American philosopher John Dewey once said, "A problem well stated is a problem half solved". Thus, it is only proper to state the problems of distance learners at USP before making recommendations. The most salient problems of distance learners at USP due to geographical isolation can be summarized as follows:

1. Tutors do not show up for the audio tutorial. Students may have come a long way to attend. (Suzuki, 2004);
2. Isolation: no one to talk to (Mugler & Landbeck, 1998; Chand, 2007; Suzuki, 2004; Deo & Nabobo, 2003; Agassi, 2003);
3. Delay in receiving feedback on assignments (Wah & Tuisawau, 2000; Suzuki, 2004);
4. Limited access to available support – students can not travel to campus to attend audio tutorials (Chand, 2007; Bolobola & Wah, 1995); and
5. Lack of administrative support – lack of sufficient academic advisors (Bolobola & Wah, 1995; Suzuki, 2004)

How mobile phones can help: Closing the distance

Problems identified above can be solved with the use of mobile phones by carrying out the following activities:

1. SMS message can be used to inform the students about the cancellation of audio tutorials.
2. Students could communicate with their peers by either using SMS or by calling each other. In addition, students can make conference calls on the mobile phones and have group discussions.
3. Assignment marks and feedback can be given out either by calling individual students or by using SMS.
4. Students can either call or SMS directly to tutors for advice. Students can also call their local campus and participate in the live audio tutorials. Audio tutorials can be recorded by the campuses and these can be made available to students. Students can access these tutorials by calling their local campuses, whereby campus staff can play the pre-recorded tutorials. Students can listen and record these tutorials by using the audio recording tool on the mobile phones.
5. SMS message can be sent reminding students about fees arrears, exam date and venue.

Mobile phones provide a viable avenue for initiating contact or sending out reminders. SMS is very reliable method of communication and it is less expensive to send an SMS than to mail a reminder through regular postal mail. A mobile phone is portable hence; people always carry it with them. Therefore, individuals are likely to receive and respond to SMS messages more quickly and probably more reliably than they are to email.

Putting into practice: Distance and Flexible Learning communication model

Myriad of factors and processes will be involved, depending on the type of interaction and the type of mobile phone tool used to establish communication.

The following figure 3 demonstrates a proposed DFL communication model.

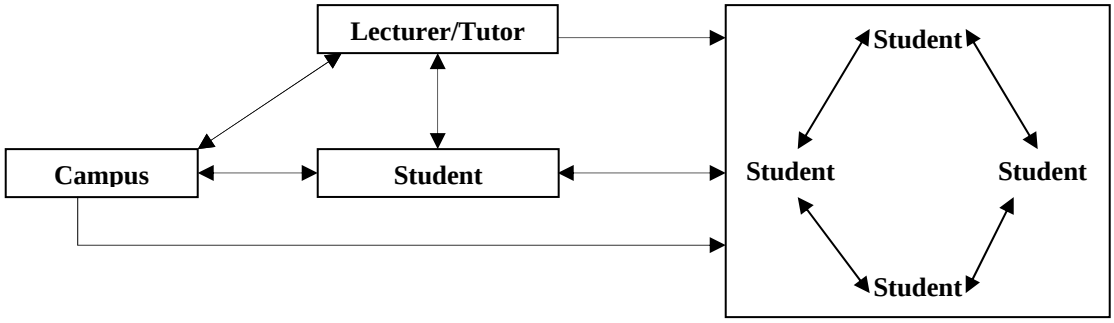

Figure 3. Proposed DFL Communication Model

The model above depicts that students can establish: (i) student-student interaction, (ii) student-campus interaction, (iii) student- lecturer/tutor interaction and (iv) student-peer group interaction. Different factors and processes will be involved in all the 4 types of interaction. The purpose of the communication will determine the process and function of the mobile phone used. For interactions (i), (ii), and (iii) students can either call or use Small Message System (SMS) functions. As for interaction (iv) conference call function can be used. Students have only the mobile phone to send and receive communication. However, use of mobile phones is not practical to use SMS from the lecturer/tutor and campus end. Mobile phone is not practical in terms of high cost that will arise by communicating with many students. For example, if a lecturer sends SMS to 250 students at a cost of .20 cents per SMS, the total cost will be $50.00.

Figure 4. Vmail interface

Figure 3 show that lecturer/tutor and campus will be making 1-many communications: lecturer/tutor-peer group and campus-peer group. Therefore, it is proposed to make use of free SMS services provided by the mobile companies operating in the USP region. For instance, Vodafone is one of the 2 mobile phone companies in Fiji and provides free SMS service known as Vmail (Figure 4).

One obvious problem with Vmail service is that messages may be delivered late. For USP's situation, Vmail service could be even more useful if it had the ability to send bulk messages. Bulk messages means sending 1 message to many recipients. With the Vmail's current capacity, lecturers/tutors together with the campus staff will spend a lot of time if they would want to send messages to many students. This may discourage the lecturers/tutors from using the Vmail system. To solve this problem USP will need to collaborate with Vodafone and reach some form

memorandum of understanding so that Vodafone gives special access to USP staff to send bulk messages. Therefore, for successful implementation of the proposed model, USP needs to work with the mobile telecommunication companies of each of the USP member countries.

Conclusion

The complexities and constraints involved in enabling effective m-learning are being researched with in both developed and developing countries. The general development of ICT in the Pacific provides a context in which "the diverse characteristics of the islands themselves compound the challenges" (Williams, 2005, p.2). While some USP member countries have support from their governments others face the limitations of telecommunication monopolies, lack of infrastructure and resources that cause hindrance in the "the rapid development and use of ICT" (Williams, 2005, p.2). Assuming that ICT is a bridge too far for the Pacific and that other kinds of development must come first will further delay in negotiating geographical isolations for USP distance students. The Deputy Vice Chancellor of USP has rightly pointed out:

> *The Pacific Islands simply cannot sit back and wait but must find ways to catch up. Or they will risk being left even further behind, perhaps by a minimum of 50 years, with their people perpetually ICT-illiterate and their economy restrained by a Third World straitjacket. (Williams, 2005, p.3)*

In an effort to catch up with the developed countries and primarily to provide a means of communication for remote distance students of USP, it is suggested that USP should resort to mobile phones to communicate with the DFL students who are widely dispersed over vast oceanic spaces. Mobile phones have a few weaknesses such as: added cost to the students, limited storage space, and limited SMS length. However, USP should not wait for the technology to become more affordable and accessible, and expect USPNet provision to improve in the anticipation of taking education to more remote students. Rather, USP should explore further the possibility of using mobile devices that are broadly available to the Pacific Islanders today.

Future Direction

Beyond the already interesting potential of mobile phones to communicate with distance students in the remote location of the Pacific, several very interesting questions arise in this paper. It would be useful for researchers from USP, to conduct further research to acquire a better understanding of distance students' perspective, strategy use, skills, and lecturers' views about using mobile phones in distance education.

The University of the South Pacific serves a vast region in which making regular contact with distance learners remains a challenge for most students and lecturers. Reflective review of all stakeholders' perspective is therefore essential, so that researchers and educators do not ignore those students who study by distance mode.

References

Agassi, A. (2002). *A Distance Learning Application of the Solomon Islands People First Network (Pfnet): Project Proposal.* Retrieved January 3, 2009 from http://www.idrc.ca/en/ev-61562-201-1-DO_TOPIC.html

Bolobola, C., & Wah, R. (1995). South Pacific women in distance education: studies from countries of The University of the South Pacific: Suva: University Extension, USP.

Brandjes, D. (2002). School networking in a Pacific Island states: An environmental scan and plan for the establishment of schoolnets for the Pacific Island states. The common wealth of learning. Retrieved December 9, 2008 from http://www.col.org/colweb/webdav/site/myjahiasite/shared/docs/02SchoolnetPacific.pdf.

Caudill, J. (2007). The Growth of m-Learning and the Growth of Mobile Computing: Parallel developments. *International review of research in open and distance learning, 8(2).* Retrieved December 12, 2008, from http://www.irrodl.org/index.php/irrodl/article/view/348/873

Chand, R. K. (2007). Same Size Doesn't Fit All: Insights from research on listening skills at the University of the South Pacific (USP). *International review of research in open and distance learning, 8(3).* Retrieved December 12, 2008, from http://www.irrodl.org/index.php/irrodl/article/view/383/978

Chandra, R. (2002). School Networking in the Pacific Island States. Retrieved December 4, 2008 from http://209.85.173.132/search?q=cache:iYffoO7CyqAJ:www.col.org/colweb/webdav/site/myjahiasite/shared/docs/02SchoolnetPacific.pdf+tanna+uspnet&hl=en&ct=clnk&cd=8&gl=fj

Deo, B. & Nabobo, U. (2003). *Reflections on mixed mode and multi-mode teaching: USP case study.* Retrieved December 13, 2008 from http://www.odlaa.org/publications/2003Proceedings/pdfs/deo.pdf

Fleischman, J. (2001), *Going Mobile: New Technologies in Education*, Converge Magazine

Kukulska-Hulme, A. (2007). Mobile usability in educational context: What have we learnt? *International review of research in open and distance learning, 8(2).* Retrieved December 12, 2008, from http://www.irrodl.org/index.php/irrodl/article/view/356/879

Mohamad, M. & Woollard, J. (2008). *Why does Malaysia need to consider mobile technology: Review of current practices to support teaching and learning with school-age children.* Retrieved January 21, 2009 from http://eprints.soton.ac.uk/52455/01/MariamMohamad&JohnWollard.pdf

Mugler, F., & Landbeck, R. (1998). "It's just you and the books": Learning conditions and study strategies of distance learners at the University of the South Pacific. In J.F.J. Forest (Ed.) *University teaching: International perspective* (pp. 113 - 135). New York: Garland.

Okamura, N. H., & Higa, C. (2000). Distance education learning technologies and applications in the Pacific islands: A focus on interactive technologies. In R. Guy, T. Kosuge, and R. Hayakawa (Eds.), *Distance learning in the South Pacific: Nets and voyages* (pp. 183–212). Suva, Fiji: Institute of Pacific Studies, University of the South Pacific, and Pacific Island Nations Fund, Sasakawa Peace Foundation.

Peters, K. (2007). m-Learning: Positioning educators for a mobile, connected future. *International Review of Research in Open and Distance Learning, 8(2)*. Retrieved December 12, 2008 from http://www.irrodl.org/index.php/irrodl/article/view/350/914

Suzuki, K. (2004). *Online instructional design: Workshop for distance and flexible learning.* Retrieved December 18, 2008 from http://www.usp.ac.fj/jica/resources/documents/pdf_files/suzuki_presentation/workshopDay1.pdf

Wah, R. and Tuisawau, P. (2001). *Flexible delivery at University of the South Pacific: No mean feat.* Proceedings of the second Pan Commonwealth Forum on Open Learning, Commonwealth of Learning, South Africa.

Williams, E. B. (2005). Pacific Island States. *Digital Review of Asia Pacific 2005-2006.* Retrieved December 4, 2008 from http://digital-review.org/05_PacificIsland.htm

Williams, E. B. (2007). Pacific Island States. *Digital Review of Asia Pacific 2007-2008.* Retrieved December 4, 2008 from http://www.idrc.ca/fr/ev-127150-201-1-DO_TOPIC.html

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Editor's Note: This is an interesting experiment in teacher-student communication and eMentoring. Results from this preliminary study are an impetus for further research.

eMentoring - Connecting Teacher Candidates with K-12 Students from Urban Schools

Chris Penny and David L. Bolton
USA

Abstract

This program partnered, one-on-one, teacher candidates at a suburban University with K-12 students at urban schools. The paired teacher candidates and students communicated on a weekly basis using a monitored e-mail system. Teacher candidates' perceptions of the program were collected using an online survey. Although results need to be interpreted cautiously given the non-experimental nature of the study, data collected supported the conclusions that the eMentoring project improved teacher candidate attitudes toward teaching in an urban setting, increased awareness of the impact technology can have in the classroom, helped prepare teacher candidates to be teachers, and increased their interest in teaching in an urban school district.

Keywords: teacher preparation, eMentoring, school-university partnerships, pre-service teachers.

Introduction

Teacher candidates bring firmly held beliefs about teaching and learning with them to their teacher education programs (Feiman-Nemser, and Floden, 1986, Zeichner and Gore, 1990). According to Lortie (1975) these beliefs developed through an apprenticeship of observation during elementary and secondary schooling. These beliefs influence and often constrain what our teacher candidates are willing to learn about teaching students from cultures and contexts different from their own. This raises the question about how to better prepare teacher candidates to teach in schools that are different from their own cultural, racial, ethnic, and social class backgrounds (Tiezzi and Cross, 1997).

National and State teacher accrediting agencies have defined teacher standards and certification policies that compel universities and colleges to examine their programs and align them to these standards. National Certification License Board (NCLB) regulations require qualified teachers to demonstrate they are ready to teach **all** students in classrooms, especially in urban school districts. To meet these standards, teacher preparation universities across the nation redesigned their education programs to ensure that graduating teacher candidates have varied field experiences and demonstrate skills and competencies to integrate technology to increase learning.

To make technology integration more successful and meaningful for teacher candidates, teacher-training institutions need to provide experiences that focus on this integration (Thompson, 2000). This can best be achieved when schools and universities collaborate, implementing the concept of *simultaneous renewal* (Hartshorne, Ferdig, & Dawson, 2005). Goodlad (1994) summarizes this potential school-university collaboration:

> *There must be a continuous process of educational renewal in which colleges and universities, the traditional producers of teachers, join schools, the recipients of these products, as equal partners in the simultaneous renewal of school and the education of educators. (p. 2)*

School-university partnerships provide opportunities to assess pedagogical practices in an authentic context, which is especially important in the area of technology integration (Hartshorne et al., 2005). The necessity to provide early field experiences for teacher candidates in urban

schools is fully understood (Tiezzi and Cross, 1997). The project described in this paper grew out of a need for highly qualified teachers who are able to integrate technology and who are ready to teach all students, especially students in urban school districts. Through a school-university partnership, teacher candidates at West Chester University were provided opportunities to visit urban schools, work one-on-one with K-12 students and witness first-hand the relevance of technology in the classroom. This paper will attempt to answer the research question: Is such an eMentoring project a valuable experience for our teacher candidate mentors?

eMentoring

Mentoring is a not a new term or concept. The word 'mentor' can be traced all the way back to Homer's Odyssey. Before leaving on his voyage Odysseus asks his friend Mentor to oversee the upbringing of his son Telemachus. Subsequently, mentoring has become synonymous for referring to any relationship in which a more experienced person helps a less experienced person to grow personally and professionally (Mueller, 2004).

The use of electronic communication has significant implications for mentoring. This is because, as Bierema and Merriam (2002) assert, "successful mentoring involves frequent and regular interaction … [but] barriers such as time, work responsibilities, geographical distance and lack of trust often reduce, if not halt, interaction" (p. 214). The authors of this papers assert that eMentoring has potential to mitigate some of these barriers. eMentoring merges traditional mentoring with technology and, because of its ease of use, is increasingly used as the preferred choice of communication (Stokes, Garrett-Harris, & Hunt, 2003). It comes as no surprise that eMentoring, also referred to as telementoring or online mentoring, has been carried out in various K-12 environments and continues to grow in popularity (O'Neill & Harris, 2004).

The Project

This study grew from a concerted effort to provide an authentic technology integration and urban teaching experience to teacher candidates, the majority of whom come to West Chester University having graduated from suburban or rural high schools. This project was set in motion by convergence of need for urban experiences, goals of the educational technology course, available technology to connect classroom-to-classroom, and support of a partnership between West Chester University, the Philadelphia School District and IBM

Email has supported mentoring relationships since the late 1980's (Bull, Harris, Lloyd, & Short, 1989), and according to O'Neill & Harris (2004) most eMentoring projects currently use e-mail as the medium for communication. For this project we used a monitored e-mail system, IBM's MentorPlace at www.mentorplace.org. The MentorPlace system was selected because of its ease of use, and through our partnership with IBM was provide at no cost to West Chester University and the Philadelphia School District. The use of eMentoring facilitated the interaction of West Chester University teacher candidates with K-12 students.

After an initial visit and tour of the K-12 schools at the beginning of the semester, our pre-service teachers engaged in eMentoring of K-12 students individually. The project paired teacher candidates with students from urban classrooms through an electronic interface for one semester. The pairing was done in MentorPlace by IBM employees with input from the West Chester University professors and Philadelphia School District teachers. Every week K-12 students sent a message to the mentor. The West Chester University teacher candidates responded in kind.

As Mueller (2004) writes "most mentoring relationships share at least three stages: getting acquainted, maintenance and closure"(p.54). The first messages posted between teacher candidate mentors and Philadelphia K-12 students were autobiographical, to establish the relationship

between teacher candidate and student. Subsequent communication was based on what the K-12 students were learning in science class.

The teacher candidate mentors and Philadelphia K-12 students were supported using direct facilitation, a process in which a third party closely follows and participates, as necessary, in the eMentoring dialogue. The best facilitators are those with Internet-based communication experience and K-12 teaching experience (O'Neill & Harris, 2004). However, for the purpose of this research study, the content of the messages was not analyzed. The University professor leading each class and the corresponding K-12 classroom teacher assumed the shared role of facilitator, serving as playground monitors of sorts. The professors kept track of the frequency of messages, making sure there were weekly exchanges between the teacher candidate and K-12 student. The K-12 teachers reviewed the content of each K-12 student message before it was sent. This was done primarily to help each student with their writing skills, but ultimately the teacher candidate and K-12 student were responsible for the success of the exchange. Partnered one-on-one, the teacher candidates and K-12 students communicated regularly using the MentorPlace e-mail system.

Originally developed by Bernie Dodge and Tom March, a WebQuest is an inquire-oriented activity in which most or all of the information used by learners is drawn from the Web (Dodge, 1998). Creating a webquest was already part of the EDM 300 Introduction to Educational Technology Integration course taken by the teacher candidates. In an attempt to make the webquest project more authentic and provide each K-12 school with new online curriculum, teacher candidates developed a WebQuest for the class they were partnered with.

The content of the WebQuest that the teacher candidate developed was the same content that was being addressed in the classroom of the student being mentored, namely pollution. Thus, the WebQuest served as a way of helping the teacher candidate understand what was being taught and made the candidate better able to address questions the student might have. The focus of the interactions was the science curriculum, with the K-12 students asking the teacher candidates questions pertaining to a specific science topic.

At the end of the semester, a 'Final Celebration' was held at West Chester University. The Philadelphia students and teachers took a forty-five minute bus ride to the University campus. This event included brief remarks from IBM, West Chester University and Philadelphia School District representatives, presentations of Webquest projects by Philadelphia students, and a luncheon in the University dining hall. This event brought closure to the project and provided another opportunity for the teacher candidate mentors and K-12 mentees to meet face-to-face.

Methods

The purpose of this survey was to evaluate the effectiveness of the eMentoring program for our teacher candidates. In order to assess the effectiveness of the program, it is important to understand the objectives of the program. The objectives were to:

1. Provide opportunities for teacher candidates to interact with K-12 students one-on-one
2. Provide authentic opportunities for pre-service teachers to use technology and see its impact first-hand.
3. Provide an urban experience for pre-service teachers at West Chester University.
4. Improve attitudes toward teaching in an urban school district.
5. Increase teacher candidate interest in teaching in an urban setting such as the Philadelphia School District.

In order to address these objectives, the following questions/issues were used as the basis for developing the survey that teacher candidates were asked to fill out:

1. Did participation in eMentoring result in a more favorable attitude toward teaching in an urban setting? If so, in what way did it create a more favorable attitude?
2. Did participation in eMentoring result in a significant improvement of perceptions of the Philadelphia School District?
3. Did participation in eMentoring result in a greater awareness of the impact technology can make in the classroom?
4. Did participation in eMentoring help teacher candidates prepare to become teachers? If so, in what way did it do so?
5. Did participation in eMentoring result in an increased likelihood that teacher candidates would consider working in the Philadelphia School District?

The participants for this eMentoring project were teacher candidates enrolled in the class "EDM 300 - Introduction to Educational Technology Integration," during the spring semester. This was a class designed to prepare teacher candidates to use technology in their classrooms. The data were collected using an online survey administered at the end of the semester. (The surveys used in this study are included in the appendices.) While candidates were encouraged to respond to the survey, their participation was voluntary. The survey was anonymous; teacher candidates were not asked to identify themselves specifically. They were, however, asked to provide demographic information about themselves, as well as their perceptions of the effect of participation in the eMentoring experience. This was done using a structured survey, which also provided an "other" option for some questions, allowing candidates to provide alternative responses. The data were collected from 86 teacher candidates from five sections of the EDM 300 class.

Table 1
Response Rates by Professors' Sections

Professor	Number of Sections	Total Students in Section(s)	N (%) Responding
Professor A	3	79	52 (66)
Professor B	1	26	19 (73)
Professor C	1	27	13 (48)

Of the five sections of the class that participated in the study, three sections, taught by the same professor, had been assigned to one school, while the other two sections, taught by two different professors, were assigned to a different school. Both schools were located in Philadelphia. The number and percent of students responding to the survey is provided in Table 1, broken down by professor. Response rates were not equal across all professors. In the case of Professor C, the low response rate was due to the fact that filling out the survey was given as an out-of-class assignment, while Professors A and B required students to complete the survey in class.

The majority of the teacher candidates, 85%, were female. Of the total teacher candidates, 56% were sophomores and 29% were juniors. There were a smaller number of freshmen or seniors, 8% and 7% respectively. Fifty-six percent of the candidates indicated that they were either solely elementary education majors, or were dual majors, combining elementary education, early childhood or special education. Thirty-one percent indicated they were secondary education majors. Other majors included early childhood or special education, with three teacher candidates indicating they were liberal arts majors or undeclared. Seventy percent of the teacher candidates came from a suburban school district, with only 7% coming from an urban school district and 21% coming from a rural district. The large majority reported that they were Caucasian, non-Hispanic, 95.3%. Of the remaining four candidates, three indicated that they were a mix of White/non-Hispanic and either Hispanic or Indian. One responded she was African-American.

In developing the survey, it was decided that it was important to provide teacher candidates with preset, rather than open-ended responses, to ensure uniformity of responses that would aid in our analyses. Responses from a previous semester were used to generate this response set. In this previous survey, teacher candidates had been asked the following open-ended questions: "How did participation in eMentoring change your perceptions of teaching in an urban setting?" and "How did participation in eMentoring help you to prepare to be a teacher?" The responses to this survey were sorted into categories and each category was then consolidated into one response, which was used on the final survey. A list of the response options is provided in Tables 1 and 3. Candidates were also provided with an "Other" category for those who wished to write their own responses. For the question pertaining to perception of the impact of eMentoring participation on teaching in an urban setting, candidates were required to choose only one response, while for the question dealing with the effect on helping them prepare to be a teacher, candidates were allowed to choose multiple responses.

The response options for two other questions were rating scales; a five-point rating scale was used for the attitude toward the Philadelphia School District, and a seven-point scale was used for the likelihood of considering working in the Philadelphia School District. The possible responses to these questions are provided in Tables 2 and 4. The response to the questions about whether eMentoring made the candidates aware of the impact of technology in the classroom were dichotomous, with either a "Yes," or "No" response.

Results

Once the survey was administered, percentages were calculated for the responses. The percentages are provided in the subsequent sections.

The Effect of eMentoring on Perceptions of Teaching in an Urban Setting

Possible responses regarding the effect of participation in eMentoring upon candidates' views of teaching in an urban setting are provided in Table 2, along with the frequency that each response was chosen. Candidates could choose only one answer.

Table2
Responses to Perceptions of eMentoring upon Views of Teaching in an Urban Setting Items

Response	N (%)
I realize I could enjoy teaching in an urban setting and make an impact.	19 (22.1)
It made me aware that teaching in an urban setting would challenge me as a teacher, but ultimately make me a better teacher.	17 (19.8)
My perceptions didn't change because I had limited interactions with my student.	13 (15.1)
I am more aware of the difficulties of teaching in an urban setting.	11 (12.8)
I understand the unique challenges of teaching in an urban setting.	10 (11.6)
My perceptions didn't change because I was already familiar with the issues related to teaching in an urban setting.	7 (8.1)
I feel a greater sense of responsibility for students in urban settings.	5 (5.8)
I now realize that urban schools are similar to all other schools.	3 (3.5)
I realize that teaching in an urban setting is safer than I thought.	1 (1.2)

The most frequent response was that the teacher candidate realized that he or she could enjoy teaching in an urban setting and that he/she could actually make an impact. Over one fifth of the teacher candidates chose this response after participating in the eMentoring program.

As stated previously, teacher candidates were only instructed to choose only one option on this portion of the questionnaire. It is likely that, if given the opportunity, candidates might have chosen more than one option. For example, the nineteen candidates who indicated that they realized they could enjoy teaching in an urban setting and make an impact may also have felt a greater sense of responsibility as well.

The Effect of eMentoring upon Perceptions of the Philadelphia School District

The teacher candidates' views regarding their perceptions of the Philadelphia School District after participating in the eMentoring project are provided in Table 3. Teacher candidates were asked whether participation in eMentoring had caused their perception of the Philadelphia School District to improve a lot, improve a little, stay the same, worsen a little, or worsen a lot.

Table3
Frequency of Responses to Change in Perceptions of the Philadelphia School District

Response	N (%)
Improved a lot	16 (18.6)
Improved a little	33 (38.4)
Stayed the same	36 (41.9)
Worsened a little	1 (1.2)
Worsened a lot	0 (0)

Of the 86 who responded, 57% indicated that their perceptions of the Philadelphia School District had improved, with 16, or 18.6%, indicating that it had improved a lot. Only one candidate indicated that his or her perceptions had worsened, and only a little. The perceptions of 36 candidates stayed the same.

How eMentoring Made Candidates Aware of the Impact Technology Can Have

Teacher candidates were asked whether participation in eMentoring made them aware of the impact technology can have in the classroom. Of the 86 candidates, 57, or 66.3%, indicated that eMentoring made them aware of the impact technology can have.

How eMentoring Helped Candidates Prepare to be Teachers

Possible responses to the question pertaining to the impact of participation in eMentoring in helping one prepare to be a teacher are provided in Table 4, along with the percentages of those who answered "yes" to each of the questions. Candidates could choose more than one answer.

At least 50% of the teacher candidates indicated that participation in eMentoring made them aware of the diversity of students that existed, helped them feel good about their decision to be a teacher, made them aware of students and their interests, behaviors, knowledge and abilities, gave them a sense that they could have a positive impact on students, made them aware of what students are learning in school, and helped them learn how to interact with students who are different than they are.

Table 4
Frequencies of Responses to How eMentoring Helped Prepare Teacher Candidates for Teaching

Response	N (%)
It has made me aware of the diversity of students.	54 (62.8)
It made me feel good about my decision to be a teacher.	52 (60.5)
It has made me aware of students' interests, behaviors, knowledge and abilities.	49 (57)
It showed me that I am able to have a positive impact on students.	46 (53.5)
It made me aware of what students are learning in schools.	44 (51.2)
It helped me learn to interact with students who are different than I am	43 (50)
It helped me learn how to communicate with students at their level.	39 (45.3)
It gave me confidence in my abilities as a prospective teacher.	35 (40.7)
It let me experience and understand urban education and its challenges.	34 (39.5)
It helped me to better understand what it is like to be a teacher.	34 (39.5)
It made me aware of the special needs of students in urban settings.	22 (25.6)
It helped me improve my teaching skills.	20 (23.5)
It did not help me because my student didn't respond or responded very little.	13 (15.1)
It made me question my decision to be a teacher.	7 (8.1)
It did not help me because I've already participated in an e-Mentoring program.	1 (1.2)

Whether eMentoring Increased the Likelihood that Teacher Candidates Consider Working in the Philadelphia School District

Teacher candidates were asked whether, as a result of participation in eMentoring, their likelihood to consider working in the Philadelphia School District had changed. The responses are provided in Table 5.

Table 5
Frequencies of Responses to How Likely To Consider Working in the Philadelphia School District

Likelihood	N (%)
Much more likely	10 (11.6)
Somewhat more likely	12 (14.0)
A little more likely	23 (26.7)
As likely as before	36 (41.9)
A little less likely	3 (3.5)
Somewhat less likely	2 (2.3)
A lot less likely	0 (0)

Over fifty percent of the respondents indicated that it made them more likely to consider working in the Philadelphia School District. Ten candidates, or 11.6%, indicated that it made them much more likely to consider working in Philadelphia. Only five or 5.8% were less likely to consider working in Philadelphia.

Whether Candidates from Demographic Groups Benefited Differently from eMentoring

To address the question of whether teacher candidates from different demographic groups benefited differentially from eMentoring, a frequency count was conducted to assess differences in frequencies between groups. If sufficient variability were present, a formal chi-square analysis would be conducted.

For the demographic variables race, gender, and level of education, it was not possible to conduct a chi-square analysis due to insufficient variability; the sample was very homogenous. Type of District showed some variability as there were a significant number of students from both suburban and rural districts in the sample. However, due to the fact that there were only six students from urban districts, it was not possible to conduct a chi-square analysis to test for differences in frequencies, as chi-square requires at least five cases in each cell. Although no formal analysis was possible, the data suggests that there may be differences between responses by district. More data would need to be collected to confirm these results.

There were two variables where differences were suggestive. The distribution of responses to the statement, *It made me aware of the diversity of students,* are provided in Table 6 broken down by district. It would appear that those teacher candidates coming from suburban or rural districts are more likely to become aware of the diversity of students through eMentoring than those coming from an urban district. This would be expected since candidates from urban districts are more likely to have already been exposed to the types of students encountered in this eMentoring experience than those in the other districts. However, although this is a logical conclusion, it should again be stressed that these results are based upon only six students from urban districts. More data is needed.

Table 6
Frequency of Whether eMentoring Made Candidates More Aware of Diversity of Students Broken Down by District

Type of District	Experience did not make them more aware of the diversity of students	Experience did make them more aware of the diversity of students
Urban	5 (83.3)	1 (16.7)
Suburban	19 (31.7)	41 (68.3)
Rural	7 (38.9)	11 (61.1)

A similar relationship was found between district and the variable: *It helped me learn to interact with students who are different than I am*. The breakdown is provided in Table 7.

The effect of district seemed to increase going from urban to rural districts. Whereas the vast major of those who came out of an urban setting did not benefit in learning to interact with students who are different than they are, the vast majority of candidates from a rural school district did. Candidates from suburban districts fell in between. Again, these results are just suggestive need to be interpreted cautiously in light of the small number of students from urban districts. More data would need to be collected to verify this conclusion.

Table 7
Frequency of Whether eMentoring Helped Candidates Learn to Interact with Different Students Broken Down by Type of District

Type of District	Experience did not help them	Experience helped them
	N (%)	N (%)
Urban	5 (83.3)	1 (16.7)
Suburban	33 (55.0)	27 (45.0)
Rural	5 (27.8)	13 (72.2)

Description of Those Candidates Whose Perceptions Changed Greatly

A number of teacher candidates appeared to benefit greatly from this eMentoring experience. Sixteen candidates indicated that their perceptions of the Philadelphia School District improved a lot, including 10 candidates who indicated that they were much more likely to consider working at the Philadelphia School District. To better understand who the candidates were who benefited most from the eMentoring experience, their profiles are described below. Because of the small numbers, this analysis was done informally, making any conclusions tentative.

For the most part these groups were similar to the sample as a whole. However, they differed in two distinct ways: 1) there were no freshmen and 2) there were no candidates from urban settings in either group. The lack of candidates from urban backgrounds could be explained by the fact that these candidates had already been exposed to an urban setting, as mentioned previously. That there were no freshmen in these groups might be explained by the fact that freshmen might not be ready for an experience such as eMentoring since they are just beginning to develop as teachers. This conclusion is suggestive, but not definitive, since it is only based upon seven teacher candidates. More research is needed.

Findings And Limitations

The results of the analysis must be interpreted cautiously as the method that is being used is self-report. Assuming that the self-report is accurate, the data do seem to provide evidence to support the conclusion that participation in this project resulted in a more favorable attitude toward teaching in an urban setting, an improvement of perceptions of the Philadelphia School District and an increased interest in teaching there, a greater awareness of the impact technology can make in the classroom, an increased sensitivity and awareness of the diversity of students, as well as in an increased awareness of the needs of students and what they are learning. The eMentoring program seemed to benefit teacher candidates by providing them with an opportunity to interact with students who are different than they are. It appeared to help our teacher candidates learn to interact with students in general, and assisted in either reinforcing or questioning candidates' decisions to become a teacher or helped them question that decision.

Overall the eMentoring program was considered a positive experience. However, teacher candidates from an urban district seemed less likely to benefit from participation than those from suburban or rural districts. It was also suggested that freshmen are less likely to benefit than teacher candidates from other levels.

These conclusions must be tempered by the limitations of the study. For one thing, not all teacher candidates responded to the survey. For example, only about one-half of the candidates in Professor C's class completed the survey. Those who decided not to respond may have had a different attitude toward eMentoring. This could have potentially altered the outcome of this

study. As mentioned above, the self-report nature of the study might have affected the results. There is the potential that students recognized the purpose of the study and responded positively on the follow-up survey as a way of fulfilling the researchers' expectations. Since one of the researchers was their professor, perhaps they might have thought that by giving a positive response it would somehow help their grade, even though the survey was anonymous. And finally, the limited numbers of participants should be noted, particularly when trying to make conclusions about the effect of the type of district the student was from. A subsequent study that looked more closely at this variable is needed.

A significant number of the teacher candidates went to the school during the program and met the students. It is not clear at this point what effect actually interacting with the students in person versus interacting with the students online had upon the results of the study. Clearly, however, many teacher candidates viewed the use of technology as valuable. In future research, it would be important to try to determine whether the visitation of the school had a significant impact as opposed to not visiting the school.

Discussion and Implications

The study suggests that the mentoring of students from a different background helps to begin to break down stereotypes that teacher candidates have acquired, helping them understand the students they are mentoring. Teaching candidates begin to see that it might be possible to teach and make an impact in an urban setting.

It should be noted that eMentoring can be valuable for all candidates, including those raised in an urban setting. It gives candidates experience as a mentor-teacher and makes them aware of what students are like and how to talk to them. Because of this interaction, candidates may be emboldened in their decision to be a teacher, or to call that decision into question.

Based upon the reactions of the teacher candidates, it can be concluded that an eMentoring experience has the potential to be a powerful virtual experience. This way of mentoring may have some advantages over an actual mentoring program. By using an electronic medium, teacher candidates can be exposed to a different culture in a way that is not threatening to them. Whereas they may be less willing to volunteer to physically mentor someone in an urban setting, they may be willing to do so from a computer, which allows them to remain in a familiar setting. While they may not have time to drive into Philadelphia to tutor, teacher candidates may find a few minutes to interact with a student on the computer, responding to the students on their schedule.

One important consideration in any eMentoring program is to assure that both mentors and those being mentored are actually interacting with one another. Mentors can only benefit from the experience if those who they are mentoring respond, and vice versa. Those in charge of an eMentoring program must ensure that all candidates and K-12 students are on task to guarantee the success of the program. However, even those with the best intentions may find that it is not possible to force candidates and students to interact.

The question that was used in the survey regarding working in the Philadelphia School District was phrased as asking whether participation in this eMentoring program increased the likelihood of candidates' considering working in the district. However, even if a candidate were to respond positively to this question, there is no guarantee that this change will actually translate into employment in the Philadelphia School District. Attitudes were being measured, not behavior. Whether the attitude is translated into actual employment is not addressed in this study.

Conclusion

This school-university partnership is providing an opportunity for our teacher candidates to visit urban classrooms, work one-on-one with a K-12 student, and see for themselves the relevance and potential of technology integration. eMentoring enabled us to overcome the time and place constraints that can hamper traditional field placements. Physical proximity and class schedules are often used as the criteria for selecting field placements. This can have a very limiting effect on the kind of field experiences teacher education programs can provide.

Providing teacher candidates with an initial urban field experience through electronic mentoring has been a relative success. It would be very beneficial to expand such a program so that all West Chester University teacher candidates can experience this. Ultimately our goal is to prepare quality teachers ready to teach ALL students. This article provides some evidence for the benefits of eMentoring, although more research needs to be done. Other teacher preparation programs may be encouraged by the possibilities of eMentoring, and may wish to take a closer look at developing such a program. eMentoring allowed us to provide a valuable authentic urban experience for our teacher candidates, while supporting the development of traditionally disadvantaged K-12 urban classrooms.

References

Beane, J. (1997). *Curriculum integration: Designing the core of democratic education.* New York and London: Teachers College Press, Columbia University.

Bierema, L. L. & Merriam, S. B. (2002). E-mentoring: Using computer mediated communication to enhance the mentoring process. *Innovative Higher Education*, 26 (3), 211-227.

Bull, G., Harris, J., Lloyd, J., & Short, J. (1989). The Electronic Academic Village. *Journal of Teacher Education*, 40(4), 27-32.

Dodge, B. (1998). The WebQuest page. Retrieved September, 2006, from http://webquest.sdsu.edu/

Ensher, E., Heun, C. & Blanchard, A. (2003). Online Mentoring and Computer-Mediated Communication: New Directions in Research. *Journal of Vocational Behavior*, 63, 264-288.

Feiman-Nemser, S. & Floden, R. (1986). The Cultures of Teaching. In M. C. Wittrock (Ed.), *Handbook of Research on Teaching*, 3rd ed., p.505-526, New York, NY: Macmillan.

Goodlad, John I. (1994). *Educational Renewal: better teachers, better schools*. San Francisco, CA: Jossey-Bass.

Hansen, Carlo. (2000, April). Virtual Mentoring: A Real-World Case Study. Retrieved September 18, 2006, from University of Saskatchewan Web site: http://www.usask.ca/education/coursework/802papers/hansen/hansen.htm.

Hartshorne, Richard, Ferdig, R.E., & Dawson, K. (2005). Preparing current and future teachers to teach with technology: an examination of school-university collaborations. *Journal of Computing in Teacher Education,* 21, 77-85.

Mueller, S. (2004). Electronic Mentoring as an Example for the Information and Communications Technology in Engineering Education. *European Journal of Engineering Education*, 29(1), 53-63.

O'Neill, D. K., & Harris, J. B. (2004). Bridging the perspectives and developmental needs of all participants in curriculum-based telementoring programs. *Journal of Research on Technology in Education*, 37(2), 111-128.

Papert, Seymour. (1980). *Mindstorms: children, computers and powerful ideas*. New York, NY: Basic Books.

Stokes, Paul, Garrett-Harris, R. & Hunt, K. (2003). An evaluation of electronic mentoring. Retrieved September 18, 2006, from Circle Squared Website: http://www.circle-squared.com/download/EMCC%20Mentoring%20V4.doc.

Thompson, A.D. (2000). Technology in teacher education and pre-K-12 schools: Simultaneous renewal. *Journal of Computing in Teacher Education,* 16, 2-3.

Tiezzi, L.J., & Cross, B.E. (1997). Utilizing Research on Prospective Teachers' Beliefs to Inform Urban Field Experiences. *The Urban Review*, 29(2), 113-125.

Zeichner, K.M., & Gore, J.M. (1990). Teacher Socialization. In W.R. Housten (Ed.), *Handbook on Research on Teacher Education*, p. 329-348. New York, NY: Macmillan.

ACKNOWLEDGEMENT

The authors would like to express our appreciation to The School District of Philadelphia for its support, without which this eMentoring program could not have happened. In particular, we wish to thank Diane Maguire, educational technologist for the southwest region of the School District of Philadelphia, Anibal Soler, the principal of Patterson Elementary School, Veronica Alston, principal of Turner Middle School, Maury Hutlemyer and Carrie Duarte, lead teachers at Patterson Elementary School, and all the classroom teachers who have participated in this eMentoring project. We also want to thank IBM for their continued financial and logistic support. Specifically, we acknowledge Diane Melley and Trap Jervay for their help in maintaining the MentorPlace interface. Finally, we wish to thank Dr. Marlene Goss for initiating and supervising this eMentoring program over the last three years, as well as Dr. John Kinslow for his participation in this eMentoring program.

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Editor's Note: Interaction and collaborative learning play an important role in distance education. This study correlates partifipation scores with student achievement in a graduate research seminar.

Assessing Student Participation in an Online Graduate Course

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Abstract

This article is concerned primarily with assessing student participation as part of the cooperative learning experience in a Research Methods graduate course. It assesses the extent of student participation in online conferences and the relationship between student participation and achievement. Based on the assessment, mean participant scores of students in each of three classes, and the correlation between participation scores and achievement on a final assignment requiring students to prepare a research proposal, the author concludes that evidence reinforces the view that when students are assigned specific roles, are carefully monitored and are rewarded for their online contribution, a satisfactory level of participation will result. The author further suggests that the low, non-significant as well as negative correlations observed between participation and achievement on the final assignment may need further exploration. It may be due to the ability of students to use computers and the web and accessibility of these resources.

Keywords: cooperative learning, participation, achievement, online, correlation, graduate course, assessment, internet, group work, research methods.

Introduction

Li (2002) notes that the use of computer-mediated communication as a teaching and learning tool has increased dramatically in recent years as a result of the increased number of schools and educational institutions that are able to access the Internet. This has led to what Patel and Patel (2006) characterize as a "radical innovation" which has seen a proliferation of online distance education initiatives in Higher Education. Patel and Patel cite estimates indicating that nearly half of all U.S. colleges and universities provided online educational offerings and served nearly two million students in 2002. Growth is projected to be five million students by 2006 (Wechsler, 2002). A 2006 Sloan Consortium report revealed that in the United States alone, almost 3.5 million students were taking at least one online course during the fall 2006 term (Allen & Seaman, 2006) while the 2008 report put that number at 3.9 million for the fall of that year (Allen & Seaman, 2008).

With the rapid growth in the number of online course offerings, issues about the quality of these offerings are increasingly raised (Muirhead, 2000, 2001). Among those issues is the level of interactivity between students and between teachers and students (McNabb, 1994; Sherry, 1996).

Participation is an important dimension of that interactivity. Lam (2004) pointed out that while online discussion forums are potentially excellent for peer learning, one of the problems is that these online forums can suffer from lack of student participation. Further, Moallem (2003) expressed the view that if interaction is not an integrated, essential and graded aspect of the online learning environment, the anticipated benefit of such interaction will not be realized.

For the Research Methods graduate course with which this article is concerned, student participation was considered an important element of student learning. Marks were also awarded for participation and these marks contributed to the overall grade of the student.

Purpose

This article is concerned primarily with assessing student participation as part of the cooperative learning experience in a Research Methods graduate course. It seeks to assess:

1. the extent of student participation in online conferences; and
2. the relationship between student participation and achievement.

Sample

This study used data from participants in the three separate offerings of the Research Methods course in the School of Education, Mona Campus. The first course, offered in the January to May 2007 semester, was completed by 33 graduate students; the second course, offered in the January to May 2008 semester, was completed by 21 graduate students; the third course, offered in the August to December 2008 Semester, was likewise completed by 21 graduate students.

Organization and delivery of the Course

The Research Methods course was delivered through a web-based course management and online conferencing facility used by the University of the West Indies (UWI), Mona Campus, Jamaica. Course Delivery was entirely online using asynchronous communication. Materials and other items were made available over the web to students connected from remote locations in a number of countries, mainly in the Caribbean.

The course was delivered over a 13 week period. The topics covered included:

1. Ways of knowing: the characteristics and value of research.
2. Overview of educational research, including ethics in research.
3. Selection and definition of a research topic, including research questions, hypotheses and variables.
4. Review of the literature, including in-text citation and references.
5. Quantitative and qualitative research – the differences.
6. Sampling: quantitative and qualitative.
7. Data collection methods: questionnaire, interviews, scales, reliability and validity.
8. Survey/Descriptive research, correlational research and ex post facto/causal-comparative research.
9. Experimental research, including single subject experiments.
10. Narrative research, ethnographic research and mixed method research.
11. Descriptive statistics.
12. Selected inferential statistics.
13. Selected techniques in qualitative data analysis.

Students registered for the course were divided into three groups of approximately equal numbers. Johnson, Johnson and Smith (1991) classified groups involved in group work into three general types: informal cooperative learning groups, formal cooperative learning groups and cooperative base groups. *Informal learning groups* involve the ad hoc or temporary assignment of students together, within a single class session. These groups are used to help focus students' attention on materials to be learned, set a mood conducive to learning, help organize in advance

the material to be covered in a class session, ensure that students cognitively process the material being taught, and provide closure to a class sessions. *Formal learning groups* are teams established to complete a specific task. In these groups, students work together for one or several class sessions to achieve shared learning goals and complete, jointly, specific tasks and assignments. *Base Groups* are long-term groups, usually existing over the course of a semester. The responsibility of such groups is primarily to provide members with support, encouragement, and assistance in completing course requirements.

In the case of the online Research Methods course with which this article is concerned, the groups to which students were assigned exemplified the combined attributes of the three types of groups. Although students were assigned to groups for the duration of the course and performed the functions of the base group as previously described, they also served the functions identified for the formal learning group in working together over a period to complete, jointly, specific tasks and assignments. Additionally, they engaged in activities associated with the informal group by working within specific class sessions to focus on materials to be learned and to undertake the other related activities of the informal learning group.

Student participation, which involved working cooperatively online within groups, was an important requirement of the Research Methods course. Palloff and Pratt (2001) provide some guidelines for ensuring that students participate in a way that will optimise their benefit from the online interactions. They point out that the minimum acceptable number of posting to be made, the time period over which the postings should be made and the types of postings that meet the required standard should be specified for students.

Lam (2004) also provided guidelines for the delivery of online courses which included, inter alia:

1. the early setting of expectations and laying the ground rules;
2. the assigning of students to lead the discussion; and
3. the assessment of online participation.

These guidelines were followed in the delivery of the Research Methods course online. The aim was not only to achieve a high level of participation, but also to ensure that the participation was of high quality (Lam, 2004).

As earlier indicated, the course was divided into 13 topics. For the first topic, scheduled for the first week of the course, students were required to undertake individual reading. During that week, they introduced themselves to the rest of the class. The course instructor provided guidance for the individual reading and clarified any issues raised by students.

For the other twelve weeks, students in the three groups into which the class was divided assumed the lead roles. Each of the three groups was assigned the role of Discussant for four separate weeks, covering four separate topics. In addition, each student served once either as a Moderator or as a Researcher for at least one conference. Each conference was served by a Moderator and one or two Researchers, depending on the demands of the topic and the number of students in the class. Moderators and Researchers for a conference were drawn from a group that was different from the one serving as Discussant. Students who were not assigned to any of these roles for a particular conference were required to follow the conference by reading the material posted.

It should be noted that in each of the offerings of the Research Methods course, two to four students dropped out after the first week or two, for a variety of reasons, including inability or failure to complete the registration process, or for other personal reasons.

In keeping with guidelines developed by the Office of the Master of Education Online, School of Education, UWI, Mona, for the various roles, the Moderator was required to lead the discussion for the week on the assigned topic. More specifically, the Moderator was required to:

1. provide guidance on the reading and research for the week, identifying the particular focus to be pursued;
2. pose questions to guide the on-line discussion;
3. initiate and stimulate discussion for the topic under consideration; and
4. guide discussion by (a) logging on daily to integrate and advance the discussion, (b) ensuring that all questions were discussed and (c) encouraging each participant to arrive at some closure.

The Researcher was required to find and post relevant materials, including materials from various websites and to give a summary of the content and its importance to the topic under discussion. More particularly, the Researcher was required to:

1. find materials on the Internet and other sources that that relate to the topic for the week;
2. call attention to relevant UWI, Mona Library resources available online;
3. share understanding and insights derived from the material found; and
4. pose questions that would advance the discussion on the topic.

Discussants were each required to participate fully in the discussions. More specifically, they were required to:

1. read the assigned materials;
2. respond to the Moderator's questions and discussions;
3. respond to comments from other participants; and
4. contribute further insight that would explain and expound on issues under discussion.

As noted earlier, the first week was devoted to introductions, individual readings and clarifications, all guided by the instructor. The instructor monitored the discussions in subsequent conferences and made a number of inputs to provide periodic guidance, to compliment and encourage students and to encourage the correction of any apparent misunderstanding or misconceptions of any aspect of the subject matter under discussion. This type of active involvement of the instructor is held to be important to the maintenance of student interest, motivation and learning satisfaction (Anderson, Rourke, Garrison & Archer, 2001; Russo & Benson, 2005). However, an effort was made to ensure that the discussions in the conferences were not instructor driven. This took into account the research findings about the possible limitations of over-reliance on the instructor in online conferences and the possible impairment of student confidence which an overwhelming instructor presence in such conferences may bring (Light, Nesbitt, Light & White, 2000; Nickel, 2002; Pearson, 1999).

The role of the student Moderator was paramount among student responsibilities. This is clearly highlighted in the definition of the tasks associated with that role. It was the student Moderator and not the instructor who assumed leadership in the conferences, except in the limited instances already specified. The student Moderator provided guidance on the required reading and research for class participants, posed questions to guide the direction of the discussions, stimulated student participation and ensured that the various contributions of students were integrated into the discussions in a way that advanced understanding of the subject matter under discussion.

The assignment of these important functions to the student Moderator is well supported in the literature (Hara, Bonk & Angeli, 2000; Leh, 2000; Poole, 2000; Tagg, 1994; Veen, Lam & Taconis, 1998). As Seo (2007) noted from a review of the research literature: "student moderators can lead discussions more effectively and foster greater student comprehension than the instructor

because student moderators better understand their peers' way of thinking" (p. 22). The assignment of critical responsibilities to student Moderators in the Research Methods course took these findings into account.

Analysis of Participation

Student performance in the Research Methods course was graded as follows: participation was given a weight of 15 percent, a written group assignment scored up to 25 percent, and an individual assignment up to 60 percent.

The group assignment required students to consider a list of 10 issues in education provided by the instructor based on excerpts from a recent Education Task Force Report on Educational Reform in Jamaica. Students were required to define a research topic derived from one of the issues, outline the purpose, justification, research questions and/or hypotheses and define the key variables. Each of the three groups submitted a single report. For this assignment, each student received a group mark out of 20 and an individual mark out of 5 which took into account peer ratings based on the contributions of each student in the group.

The individual assignment required students to develop a comprehensive research proposal suitable for the research project which they would have to complete for the award of the Master of Education degree in their respective specializations. This individual assignment benefitted from the learning that took place through participation in the online conferences and the group assignment. The individual assignment was intended to measure how well students were able to apply the knowledge and skills acquired in the Research Methods course in preparing a research proposal. The research proposal was regarded as an independent measure of individual student achievement and was used as the basis for examining student achievement in relation to participation in the online conferences.

For the online participation component of the course, students earned a maximum of 5 marks for the one time they served either as a Moderator or a Researcher. They received a maximum of 2.5 marks for each of the four times they served as Discussant or a total of 10 marks for that role. These together made up the maximum of 15 marks awarded for participation.

The distribution of marks earned for participation and for the individual assignment for each student in each of the three offerings of the Research Methods course taught online for the periods January to May 2007, January to May 2008 and August to December 2008 are shown in Table 1.

Students' participation level appeared to be very good. Students in the three offerings of the Research Methods course online - in January to May 2007, January to May 2008 and August to December 2008 - scored an average of 12.2, 12.4 and 11.1, respectively, out of 15.0 or 81.3%, 82.7% and 74.0%, respectively, for participation.

The level of participation that these mean and percentage scores reflect may be attributed to the measures taken to ensure optimal online participation of students. As earlier noted, these measures included:

1. the assignment of each student during specified weeks to the role of (a) a Moderator or a Researcher or (b) a member of a team of Discussants;
2. the proper definition of each role;
3. the careful monitoring of levels of participation of each student; and
4. the assessment of student participation.

These measures were in keeping with the advice of both Palloff and Pratt (2001) and Lam (2004).

Table 1
Participation Scores and Individual Assignment Scores of Students in the Research Methods Course Taught Online on Three Different Occasions

Students	Jan – May 2007		Jan – May 2008		Aug – Dec 2008	
	Part.	Indiv. Assign	Part.	Indiv. Assign.	Part.	Indiv. Assign.
1	15.0	35.0	13.0	29.0	6.0	45.0
2	13.0	46.0	12.0	30.0	10.0	36.0
3	11.0	34.0	14.0	49.0	7.0	40.0
4	5.0	42.5	13.0	51.0	12.0	45.0
5	11.0	38.0	13.0	45.0	11.0	48.0
6	13.0	29.5	15.0	49.0	11.0	40.0
7	15.0	45.0	14.0	42.0	13.0	38.5
8	15.0	41.0	9.0	48.0	13.0	52.5
9	7.0	36.5	11.0	47.0	8.0	52.5
10	15.0	41.0	13.0	46.0	11.0	34.0
11	5.0	54.5	13.0	43.0	15.0	55.5
12	15.0	44.0	14.0	30.0	11.0	51.0
13	15.0	44.0	15.0	31.0	10.0	50.0
14	11.0	43.0	15.0	56.0	15.0	31.0
15	15.0	42.0	13.0	27.0	12.0	45.0
16	9.0	33.0	13.0	44.0	13.0	46.5
17	15.0	26.0	13.0	39.0	7.0	49.0
18	12.0	47.0	9.0	47.0	10.0	46.0
19	15.0	47.5	11.0	36.5	9.0	47.0
20	8.0	44.0	12.0	48.0	15.0	40.5
21	5.0	42.5	5.0	41.0	15.0	37.5
22	13.0	30.0				
23	15.0	56.0				
24	13.0	50.0				
25	15.0	44.0				
26	12.0	44.0				
27	8.0	43.5				
28	15.0	50.0				
29	15.0	42.5				
30	15.0	50.0				
31	10.0	41.0				
32	11.0	38.5				
33	15.0	42.0				
Mean	**12.2**	**42.0**	**12.4**	**41.8**	**11.1**	**44.3**
SD	**3.4**	**6.8**	**2.4**	**8.3**	**2.7**	**6.7**
Correlation	**0.01 (p > .05)**		**-0.04 (p > .05)**		**-0.22 (p > .05)**	

In all three instances, the mean participation scores were depressed by a few students who scored poorly on this dimension of course. This was due mainly to the inability of these students to undertake fully in the roles they were assigned because of illness or other emergencies which interfered with their availability at the times that they were scheduled to make their contributions. This information was conveyed to the tutor either during the period of the assigned tasks or immediately thereafter.

Table 1 shows that correlations between scores obtained for participation and scores obtained for the individual assignment were all small and non-significant for the students in each of the three classes ($p > .05$). For the class of January to May 2007, there was a low positive correlation of 0.01; for the class of January to May 2008, there was a low negative correlation of –0.04; and for the class of August to December 2008, there was also a low negative correlation, -0.22.

Davies and Graff (2005), in a study which compared the frequency of online interaction of 122 undergraduate students and their grades at the end of the year, noted that students who interacted and participated more in online discussions in their study did not necessarily achieve higher grades, despite the wealth of research about the benefits of online interaction. More recently, Chang (2008) found mixed results when examining the correlation between participation measured variously and achievement on project work. Weak and negative correlations were obtained in a few instances. Based on the research, Chang concluded that backgrounds of participants, such as "abilities of using a computer and the web, experiences of using a computer and the web, facilities of a computer and an Internet connection, and preference and custom of using the web" (pp. 505-506), may affect participation in an online course.

The varying backgrounds of students in the three classes in this investigation, as well as their varying technological competencies and accessibility to a computer and the Internet may be mediating factors affecting the results. The variation in backgrounds, technological competencies and accessibility to a computer and the internet was evident from the feedback obtained during the orientation programme to familiarise students with the way the course would be delivered. It is likely that a number of students capable of producing high quality work may have had limitations in their technological competencies and accessibility to the equipment and Internet services needed to facilitate a level of participation comparable to that of other student, some of whom may be among those who are less able. This may account for the low, as well as negative correlations that were evident between participation and achievement.

It is worth noting that marks awarded for online participation in the Research Methods course for the three classes in the investigation, were influenced more by the frequency of student participation than by the quality of the participation. It is possible that the correlation between participation and achievement would have been greater, had there been a heavier weighting on the quality of participation rather than the frequency of participation. The importance of quality of online interaction has been raised by both Chong (1998) and Davies and Graff (2005). This is an area that requires further research.

Summary and Conclusions

The articles explains how students in three separate offerings of a Research Methods course taught online were assigned to roles of Moderator, Researcher and Discussant for specified tasks and how these roles were defined to optimise participation. The results indicate that the participation level was high level of participation for students in all three classes. It was found, though, that the correlation between participation and achievement on the individual assignment to develop a research proposal, which was the main measure of student accomplishment in the course, was low and non-significant.

Based on the assessment of the mean participant scores for the three classes and the correlation between participation scores and scores on the individual proposal writing assignment, the author concludes that:

1. The evidence from this study would support the view that when students in an online course are assigned specific roles, are carefully monitored and are rewarded for their online contribution, a satisfactory level of participation will result.
2. Factors such as facility with computers and the web as well as accessibility to both may affect participation and the correlation between participation and achievement.

It is recommended that future studies should give greater attention to:

1. exploration of the variables affecting levels of participation online; and
2. assessment of the quality of online participation.

References

Allen, I. E. & Seaman, J. (2006). *Making the grade: Online education in the United States, 2006*. Needham, MA: Sloan Consortium.

Allen, I. E. & Seaman, J. (2008). *Staying the course: Online education in the United States, 2008*. Needham, MA: Sloan Consortium.

Anderson, T., Rourke, L., Garrison, D. R. & Archer, W. (2001). Assessing teaching presence in a in a computer conferencing context. *Journal of Asynchronous Learning Networks, 5,* 1-17.

Chang, C. (2008). A case study of the relationship between participation in online discussion and achievement of project work. Journal of Educational Multimedia and Hypermedia, 17 (4), 477-509.

Chong, S. (1998). Models of asynchronous computer conferencing for collaborative learning in large college classes. In C.J. Bonk & K.S. King (Eds.), *Electronic collaborators: Learner centred technologies for literacy, apprenticeship and discourse* (pp. 157 – 182). Mahwah, NJ: Lawrence Erlbaum Associates.

Davies, J. & Graff, M. (2005). Performance in e-learning: online participation and student grades. *British Journal of Educational Technology*, 36 (4), 657-663.

Hara, N., Bonk. C.J. & Angeli, C. (2000). Content analysis of online discussion in an applied educational psychology course. *Instructional Science, 28*, 115-152.

Johnson, D., Johnson, R., and Smith, K. (1991). *Cooperative Learning : Increasing College Faculty Instructional Productivity*, ASHE-ERIC Higher Education Report 4, Washington, D. C.: George Washington University.

Lam, W. (2004). Teaching tip: Encouraging online participation. *Journal of Information Systems Education, 15* (4), 343-348.

Leh, A. (2000). Action research on hybrid courses and their online communities. *Educational Media International, 39*, 31-38.

Li, Q. (2002). Exploration of collaborative learning and communication in an educational environment using computer-mediated communication. *Journal of Research on Technology, 34* (4), 503 – 516.

Light, P., Nesbitt, E., Light, V. & White, S. (2000). Variety is the spice of life: Student use of CMC in the context of campus-based study. *Computers and Education, 34*, 257-267.

McNabb, J. (1994). Telecourse effectiveness: Findings in the current literature. *TechTrends, 39* (4), 39-40.

Moallem, M. (2003). An interactive online course: A collaborative design model. *Educational Technology Research and Development, 51*(4), 85–103

Muirhead, B. (2000). Interactivity in a graduate distance education school. Educational Technology & Society, 3 (1). Retrieved November 13, 2007, from http://www.ifets.info/journals/3_1/muirhead.htm

Muirhead, B. (2001). Enhancing social interaction in computer-mediated distance education. *Edat a Distance Journal, 15*(4). Retrieved November 13, 2007, from http://www.usdla.org/html/journal/APR01_Issue/article02.html

Nickel, T. B. (2002). Student-to-student interaction in online discussions: The role of moderator status. *Dissertation Abstracts International, 63 (1),* 152.

Palloff, R. M. & Pratt, K. (2001). *Lessons from the Cyberspace Classroom: The realities of online teaching.* San Francisco, CA:Jossey-Bass.

Patel, C. & Patel, T. (2006). Exploring a Joint Model of Conventional and Online Learning Systems. *e-Service Journal 4*:(2), 27-46.

Pearson, J. (1999). Electronic networking in initial teacher education: Is a virtual faculty of education possible? *Computer and Education, 32*, 221-238.

Poole, D. (2000). Student participation in a discussion-oriented online course: A case study. *Journal of Research on Computing in Education, 33*, 162-177.

Russo, T. & Benson, S. (2005). Learning with invisible others: Perceptions of online presence and their relationship to cognitive and affective learning. *Educational Technology & Society, 8*, 54-62.

Seo, K. K. (2007). Utilizing peer moderation in online discussions: Addressing the controversy between teacher moderation and nonmoderation. *The American Journal of Distance Education 2 (1)*, 21-36.

Sherry, L. (1996). Issues in distance learning. *International Journal of Educational Telecommunication, 1* (4), 337-365.

Tagg, A.C. (1994). Leadership from within: Student moderation of computer conferences. *The American Journal of Distance Education 8, (3)*, 40-50.

Veen, W., Lam, I. & Taconis, R. (1998). A virtual workshop as a tool for collaboration: Towards a model of telematic learning environments. *Computers in Education, 30*, 31-39.

Wechsler, A. 2002. Online Learning Casts an Ever-widening Net. *Times Union*; Albany, NY; March 3, s3.

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Editor's Note: One important aspect of on-campus learning is access to the professor during office hours. In distance learning, synchronous "chat" session can be scheduled. Email provides a practical alternative where questions and responses can be logged in at any time. This study compares the synchronous and asynchronous alternatives among undergraduate distance learning students.

Undergraduate Millennial Students' Perceptions of Virtual Office Hours

Jennifer T. Edwards

USA

Abstract

The purpose of my study was to discover the perceptions of 55 undergraduate millennial students regarding virtual office hours (VOHs). The two research questions studied were: (1) "What are college students' perceptions of virtual office hours?" and (2) "What is undergraduate millennial students' preferred type of computer mediated communication with the professor?" In this study, it seems that undergraduate millennial students preferred virtual communication with their professor over face-to-face communication.

Keywords: distance learning, millennial students, virtual office hours, computer-mediated communication, undergraduate students, instant messaging, yahoo instant messenger, commuter students, generation y, communication studies

Introduction

Office hours are an undergraduate students' primary form of communication with their professors outside of the classroom setting. Office hours are traditionally used to enhance student learning and for academic advising (Wang & Beasley, 2006). Usually, office hours are face-to-face during a specified time, at a specific location (Wallace & Wallace, 2001). These time and location restrictions may conflict with students' commute times, work schedules, or student organization activities. Despite scheduling obstacles, some college students visit their professors during their office hours. However, most students who need a large amount of help are less likely to come to professors' office hours ("Office Hours in a Different Format," 2006).

Research indicates that a link exists between office hours and student success. A study conducted by Doughtery et al, indicated that increased retention and better student performance are evident in students who choose to attend office hours (Dougherty, Bowen, Berger, Rees, Mellon, & Pulliam, 1995). Steinhaus (2001) reported that faculty advising resulted in both students and faculty participating in a positive, active approach to learning.

Virtual office hours (VOHs) may make office hours more convenient for undergraduate students and may result in student success. Atamian and DeMoville (1998) discovered students are more likely to use technology such as e-mail to communicate with their professors rather than visit their professor's office during the professor's specified office hours. Many professors use e-mail or content management systems (i.e. – blackboard.com) to communicate with their students. However, some students prefer instant messenger to communicate with people online. In their study on college students' use of instant messenger to maintain personal relationships, Kindred and Roper (2004) indicated that college students use IM to maintain contact with college peers and friends from home. Many of the college students in their study relied on instant messenger to engage in informal interactions. These informal interactions are usually at the core of many friendships and relationships. As a result, professors may want to consider using instant messenger to communicate with their students. Most instant messaging programs are free (i.e. - Yahoo Instant Messenger, AOL Instant Messenger, Trillian, and MSN Messenger).

Purpose of the Study and Research Questions

Few research studies (Wang & Beasley, 2006) have employed the usage of instant messaging systems to remedy the problems of traditional office hours. One research study (Kindred and Roper, 2004) indicated, "Future research should explore the potential of using IM as a way to maintain "virtual" office hours, and perceptions and acceptance of its use among students and faculty." Through this study, I explore the perceptions and acceptance of VOHs among students enrolled in three sections of an introductory communication course that I taught in the Spring 2008 semester.

The purpose of my study is to discover undergraduate millennial students' perceptions of communicating with their professor during VOHs through instant messaging software. Two research questions were studied: (1) "What are undergraduate millennial students' perceptions of virtual office hours?" and (2) "What is undergraduate millennial students' preferred type of computer mediated communication with their professor?"

Theoretical Framework

The Social Presence Theory (Short, et al, 1976) was essential when conducting the review of the literature and preparing the surveys. Social presence is defined as "[t]he degree of salience of another person in an interaction and the consequent salience of an interpersonal relationship" (65). The social presence theorists also asserted that each communication media differs in their degree of social presence and these variations determine how participants will act. One may postulate the more a person becomes familiar with a particular technology (i.e. – instant messenger), the more likely they are to participate in frequent interactions with others through that technology.

The theorists also concluded that face-to-face communication is the most "socially present" communication media. Most studies of social presence in online environments focus on participants' perceptions (Tu, 2002). This study will follow the path of most social presence studies focused on online technology and will be centered on undergraduate millennial students' perceptions of communicating with their professor during VOHs (through instant messaging software).

Methodology

I utilized a phenomenological research design to identify and compare the perceptions of undergraduate millennial students related to communication with their professor during VOHs (through instant messaging software). The participants in my study included 55 undergraduate millennial students from a mid-sized institution in central Texas.

Lichtman (1996) defined phenomenology as a method that looks at the actual experiences of people who have experienced a certain phenomenon, while Gall, Gall, and Borg (2006) wrote that phenomenology is "the study of the world as it appears to individuals when they place themselves in a state of consciousness that reflects an effort to be free of everyday biases and beliefs" (p. 600). Therefore, phenomenology functions both as a philosophy and as a method. I approached this study from a phenomenological perspective and remained open-minded to the students' experiences as undergraduate millennials.

Context

The participants in this research study were 55 undergraduate millennial students from a mid-sized institution in central Texas. This institution has slightly over 6,500 students and is located in a small town. The student population (in terms of ethnicity) for the 2005-2006 academic year was 6.3% 83.4% Caucasian American, 7.5% Hispanic American, 6.3% African American, 1% Native American, and .9% Asian American. Over 21.3% of students who attend this institution are

enrolled part-time and 35.8% receive Federal Pell Grant funds. This university is classified as a Carnegie Master's Large institution (Educational Trust, 2007). On average, there are 25 or less students in each classroom at this university.

Participants

This study includes participants from three sections of an introductory communication course. This introductory communication course (Fundamentals of Human Communication) is a part of the university core curriculum and has students from various disciplines. Students reported their current letter grades and 10% of the students had an A average, 54.5% had a B average, 32.7% had a C average and 1% had a D average. Participants in this course used blackboard.com to post discussion board responses, complete assignments, and to receive speech grades. Most of the participants in this course were comfortable with using blackboard.com's online technology.

Instrumentation

After gathering research for this study on VOHs, I developed a questionnaire consisting of three survey questions. This questionnaire, "Your Opinion of Virtual Office Hours", featured the following survey questions:

Question 1: Did you use the virtual office hours (via Yahoo Instant Messenger) this semester? Why or Why Not?

Question 2: What other technology (via the internet) would you prefer to use to communicate with your professor?

Question 3: I wish that more professors would use virtual office hours (yahoo instant messenger). *(Answers: (a) strongly agree, (b) agree, (c) neutral, (d) disagree, and (e) strongly agree)*

After developing the questionnaire, I uploaded the survey questions to one of my upper-level courses on blackboard. Students in this upper-level course affirmed the readability of the questionnaire's survey questions. After the readability was affirmed, I uploaded the survey questions to blackboard.com under the assessment section for each of the three introductory communication courses.

Data Collection and Analysis

Students in each of the three introductory communication courses were required to complete the "Your Opinion of Virtual Office Hours" questionnaire for a grade (whether they used the IM technology or not). In addition, the students were given a two-week time frame to complete the questionnaire on blackboard.com.

Most of the questions from the "Your Opinion of Virtual Office Hours" questionnaire were qualitative (survey questions #1, #2) and were analyzed using qualitative research software. The other question (survey questions #3) was quantitative and were analyzed using SPSS 16.0 software.

Analysis involves working with data, organizing them, breaking them into manageable units, synthesizing, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others" (Bodgan and Biklen, 1998, p. 157). Following these researchers' recommendations, I sorted, analyzed, organized, and reorganized the data, searching for patterns and themes. Investigator triangulation (Denzin, 1978), which involves multiple researchers in an investigation, was used as a strategy in my study to make sure that the placement of the participants' responses matched the categories that I determined initially. To triangulate my categorizations, one public school teacher and one retired public school psychological associate categorized the same student responses and created categories based on

their own perceptions of themes and patterns. After the categorization was complete, all of the categories were compared and they were similar to my original categories.

Results and Discussion

Each participant answered the three survey questions. The following categories emerged during the course of the study: student usage of VOHs, students who hope other professors will use VOHs, and students' suggestions regarding additional communication technology.

Student Usage of VOHs

In the semester that the study was conducted, 14 students (25.5%) of the students in this study used VOHs. While some students decided to use the VOHs, 41 students (74.5%) decided not to use this feature. Therefore, it seemed important to discover why some students chose to use VOHs and why some students decided not to use the feature.

Students' comments regarding their usage of VOHs are divided into two categories: (a) students who used VOHs and (b) students who did not use VOHs. The students who used VOHs contributed slightly over 16 responses and students who were not virtual office hour users contributed over 50 responses.

Students who used VOHs. Students who used the VOHs felt that the online communication resource was a good idea and was convenient. Some students felt that VOHs were more convenient than traditional face-to-face office hours. One student found that VOHs were "more convenient than visiting the office and even sending an email." Another student contributed, "[Y]es, there were sometimes when [I] couldn't get to [the professor] during regular normal hours but she was always available at all times [on instant messenger]. [T]his made it [work]…with my work schedule. One of the commuter students stated, "Yes, it was very helpful because I live outside of town and I work a[]lot so it was much easier to contact the professor this way rather than rearrange my schedule to have to actually go to her office."

Other students explained that VOHs helped them with their assignments and with absence notifications. One student stated:

> I liked the way that my question may have been [a] minor one that I did not have to make an appointment with [the professor] I could just chat with her via messenger. I absolutely loved it, I wished more professors would do that. It would be more convenient.

Another student retorted,

> "Yes, I used Yahoo Instant Messenger! I used it for questions about my speech as well as things I missed in class due to absences!"

An additional student contributed:

> I tried to use the virtual office hours during this semester but I had classes when the hours were available. However, it is very nifty and I wish more professors and instructors would utilize technology in this way since a lot of them do not check their email right away. [This professor] is the first professor I have ever had in my academic career to utilize a chat feature for office hours in which a student [does not have] come to her office.

A final student contributed,

> "Yes [I] did. [I] was worried about my speech and the option was very helpful to have." It seems that most of the virtual office hour users like the feature, but one student felt that they were not able to virtually communicate with their professor outside of the VOHs, "I tried [to use virtual office hours] once, but [the professor] was away and I couldn't ever catch her while she was just online."

Overall, it seems that most of the virtual office hour users were satisfied with the feature.

Students who did not use VOHs. Some students decided not to utilize the virtual office hour feature. Many students decided to use e-mail and blackboard to communicate with their professor, while others had access problems (i.e. - did not have internet/computer access). These students' responses are divided into categories and are provided in Table 1.

Table 1

Categories of Responses from Undergraduate millennial Students Did Not Use Virtual Office Hour Users

Categories	Frequency of Responses	Descriptions
Helpful	5	Did not use VOHs, but feels that they are helpful.
Obstacles	11	Never installed instant messaging software.
Obstacles	2	Did not know how to operate software.
Obstacles	7	Did not need to use VOHs.
Obstacles	1	Wanted to figure out problems alone.
Obstacles	3	Did not have time to use VOHs.
Obstacles	4	Did not have access to a compute or the internet at home.
Other Comm.	4	Used another instant messaging system.
Other Comm.	8	Used e-mail to communicate with their professor.
Other Comm.	2	Used blackboard to communicate with professor.
Other Comm.	1	Likes face-to-face communication better.
Other Comm.	1	In class communication was sufficient.
Privacy	1	Wants to separate school and work from personal friendships.

Most of the responses emerged in the obstacles category, which had 28 student responses. Students responding in this category provided responses ranging from never installing the software and not being able to operate the software to lack of time to use the software and not feeling the need to use the VOHs. The least responses emerged in the privacy category, which included a student response about the important of separating work/school and their personal friendships. The response categories are highlighted in the next sections.

Students who did not use VOHs, but think that the feature is helpful. Some students chose not to use VOHs in the Spring 2008 semester, but they believed VOHs were helpful. A few students would have used VOHs if they downloaded Yahoo Instant Messenger and/or if they knew how to use the software. One student contributed, "I do believe [that] [I] would [have] taken advantage of [VOHs] if [I] did have yahoo instant messenger." Another student stated, "I didn't because I do not have Yahoo Instant Messenger [,] but I feel it was very handy for the people who did have it."

Students who encountered personal/technical obstacles. Over 30 students encountered obstacles that prevented the students from interacting with their professor during VOHs. These obstacles ranged from not having a computer or internet access at home to not having time to use or not needing VOHs. Slightly over ten students did not install the software required to use VOHs. One student stated, "I didn't use the virtual office hours via Yahoo simply because I didn't have the software on my computer and with my busy [class schedule] and work, it would have been difficult for me to utilize it." Another student did not use VOHs, because they did not have an

instant messenger account. He stated, "No[,] I did not use the virtual office hours. I think that it is a great idea, but [did] I not have an instant messenger account and never really had to use the messenger to try and get a hold of [the professor]."

A few students did not have access to a computer or internet access. One student who had internet access experienced technical problems with the software, "[The] computer I have access to would not load [Yahoo Instant Messenger] or blackboard." Other students had access to a computer, but they did not have time to use the software. One student stated, "I am usually in a hurry when I get on the computer so I am only on it for a short period of time."

Slightly fewer than ten students felt that they did not need instant messenger or they wanted to figure out class material themselves. One student stated, "No, I never had a question that I couldn't wait until class to get answered. Another student contributed a similar comment, "No, any question that I had I would ask in class or through email.

Students who used other communication methods. Sixteen students chose to communicate with their professor using traditional and online communication methods. One student felt that her questions were answered in class, "I did not use the virtual office hours because I believed the assistance I received in class to be sufficient." Two other students had their questions answered on the class site on blackboard.com. They stated, "No, I don't really know what that is. I would rather just use blackboard" and "I did not use yahoo messenger because I didn't need to. All questions I had were answered through blackboard."

One student felt that VOHs invades a level of her privacy. She stated, "No, I did not. I rarely use my Yahoo IM, and it's nothing personal, but I prefer any IMs to stay between friends and family, and not school or work."

Students Who Hope Other Professors Will Use VOHs

Despite their non-usage of VOHs this semester, some students stated that they would use instant messenger in the future. Undergraduate millennial students in this study answered the survey question #3, "I wish that more professors would use virtual office hours (yahoo instant messenger)" using a Likert scale system. Table 2 indicates the frequency of their responses.

Table 2

Categories of Responses from Undergraduate Millennial Students Who Want Other Professors to Offer VOHs

Rating	Frequency of Responses	Percent
Strongly Agree	13	23.6
Agree	15	27.3
Neutral	20	36.4
Disagree	6	10.9
Strongly Disagree	1	1.8

A majority of responses (20%) were neutral. Approximately 28 responses emerged in the "strongly agree" and "agree" categories, while only seven responses emerged in the "disagree" or "strongly disagree" categories. The categories with the lowest amount of responses were the "disagree" or "strongly disagree" categories. Based on their responses, it seems that most of the students in this study prefer to use VOHs in the future.

Students' Suggestions Regarding Additional Communication Technology

Students offered many comments regarding the question, "What other technology (via the internet) would you prefer to use to communicate with your professor?" Some students offered suggestions ranging from internet technology such as e-mail, text messages, and facebook.com. Other students opted for more traditional communication methods such as regular office hours and communicating with the professor after class.

There were 36 responses from students who preferred e-mail. One student stated, "I liked email best so that way I could ask what [I] wanted and then come back when I needed the answer and I usually had an email back within that time." Another student contributed, "I used email a lot this semester and it is very effective to me because I check my email so much and most professors also check email regularly." Other students experienced problems with messenger and blackboard. One student suggested, "Just plain email address like yahoo. [M]y messenger would not load but [I] could always check my emails on yahoo and blackboard hardly ever worked." Some preferred e-mail communication, while others preferred communicating with their professor on yahoo instant messenger.

Approximately 25 responses were centered on instant messaging (VOHs). Most of the students offered positive comments about the subject of instant messaging. Some students thought that instant messaging (VOHs) was one of the best technologies that professors could use to connect with their students. A few students suggested that more professors should use instant messenger. Some of their responses were: "I wish that more professors would use virtual office hours (yahoo instant messenger)." and "[I liked] the fact that [the professor] had messenger and allowed all students the option to use it was the most help that [I] have EVER had from a professor." Another student liked the concept of chatting online with their professor,

> I think the internet is the best way to communicate with a professor since some professors do not like to talk on the phone. A neat function that could be used as another technology would be to communicate via live chat in which both the professor and student use a web camera (if available) so that the expressions can be seen - this would be better because there is still a face-to-face interaction.

Other students suggested that professors should use software such as MSN (Microsoft-based instant messaging program) or AIM (America Online-based instant messaging program).

There were five responses centered on facebook.com or text messaging to foster communication between professor and student. One student contributed, "I think text messages would be interesting; especially if something were to change at the last minute. Another student offered, "I would say text messaging with [a] cell phone but I doubt [professors] would want to because it would cost extra. [E]verybody would constantly be texting [the professor] and [he or she] probably wouldn't get to talk on the phone because [they would] just be texting all of the time." Some students preferred social networking technology and text messaging, while others preferred traditional communication techniques.

Eight responses were centered on traditional communication methods when communicating with their students. These communication methods were: offering regular office hour sessions, using the telephone, and staying after class. In regards to face-to-face office hours, one student stated, "I prefer to meet at the professor's office better." Another student stated, "[I] would rather just have face to face communication [or] over the phone if absolutely necessary." Five students preferred to use the telephone to communicate with their professors. One of these students stated, "[I think] phone calls in general would be useful when communicating with professors and classmates." Another student assumed professors do not telephone-based communication. He

stated, "[I would like professors to use] [t]he phone but a lot of professors don't like that. They [would rather] communicate through the internet."

Overall, it seems that most of the students are comfortable with technology and they would prefer to communicate with their professor though the internet. More than half of the responses in this category related to professors using instant messenger, e-mail or blackboard to foster communication with their students.

Conclusions

The purpose of my study was to discover the perceptions of 55 undergraduate college students regarding VOHs. The two research questions studied were: (1) "What are college students' perceptions of virtual office hours?" and (2) "What is undergraduate students' preferred type of computer mediated communication with the professor?" This section presents the conclusions for research questions one and two.

Research Question One

Undergraduate millennial students from a mid-sized institution located in central Texas completed a questionnaire consisting of three survey questions. Two survey questions addressed research question one. Survey questions one and three were, "Did you use the virtual office hours (via Yahoo Instant Messenger) this semester? Why or Why Not?" and "I wish that more professors would use virtual office hours (yahoo instant messenger)."

Only 14 students used the VOHs this semester and 41 students decided not to use the feature. Most of the students used the software to notify the professor about absences or to ask questions about their assignment. Many of the users thought that the program was user friendly and convenient. A majority of the students who did not use VOHs encountered obstacles that prevented them from using the software. Most of the obstacles included "never installed the software" or "did not need to use VOHs." One interesting finding was the student's comment regarding their perception of VOHs and their impact on her privacy.

Research Question Two

Research question two was: "What other technology (via the internet) would you prefer to use to communicate with your professor?" There were 35 responses from students who preferred e-mail communication. Other students offered 25 responses related to instant messaging and eight responses related to social networking websites/text messaging. Eight students preferred to communicate with their professor using traditional communication techniques (i.e. – face-to-face, telephone).

It seems that most of the undergraduate millennial students in this study preferred to communicate with their professor though e-mail or instant messenger. Over 61 responses were centered on virtual communication in an asynchronous or synchronous manner. Only eight students preferred to communicate with their professor in a face-to-face environment. Five responses focused on communicating with a professor through facebook.com.com or text messaging.

In this study, it seems that undergraduate millennial students preferred virtual communication with their professor over face-to-face communication. After conducting a literature review and analyzing the undergraduate millennial students' responses, a few implications emerged from the data. The students' responses affirm the Social Presence Theory regarding communication technology. It seems that the more familiar undergraduate students become with a technology, the more likely they are to become comfortable communicating with others through that technology.

Implications

It seems that professors should introduce new communication technologies in their courses. Only 25.5% of the students in these three COMS101 courses used the virtual office hour feature, but a large majority of these students offered positive responses regarding the instant messaging system for office hours. Professors who are uncomfortable with using technology should begin using instant messaging software to communicate with family and friends, then expand their technological knowledge to include their students.

Professors should also caution themselves against becoming a "24 hour professor." This type of professor is available to their students a majority of time and does not have a proper work/life balance. Professors should set specific VOHs and should adhere to their VOH schedule to prevent the "24 hour professor" phenomenon.

Those who are unsure if their students will adopt the technology should administer an informal survey to their students regarding the students' communication technology preferences. This survey might include the elements in the "Student's Suggestions Regarding Additional Communication Technology" section under the "Results and Discussion" section.

Student services-related departments may also want to examine VOHs to communicate with their students. Some students commute to their college or university campus to attend classes. Therefore, these departments should discover other communication methods to reach their diverse student populations.

Implications for Further Study

This research study focuses on the perceptions of undergraduate millennial students who attend a mid-sized university in central Texas. This study was limited to the perceptions of 55 undergraduate millennial students and employed a qualitative research design. Due to the limited nature of this study, in the future, researchers may want to focus on: using a quantitative research design, increasing the population size, focusing on upper-level courses, and expanding the survey to include a larger class size.

References

Atamian, R., & DeMoville, W. (1998). Office hours -- none: An e-mail experiment. *College Teaching*, *46*(1), 31-35

Bogdan, R., & Biklen, S. K. (2006). *Qualitative research for education: An introduction to theories and methods* (5th ed.). Boston: Allyn and Bacon.

Chung, C., & Hsu, L. (2006, Summer). Encouraging students to seek help. *College Teaching*, *54*(3), 253-258. Retrieved September 17, 2008, from Professional Development Collection database.

Denzin, N. K. (1978). The research act: A theoretical introduction to sociological methods (2nd ed.). New York: McGraw-Hill.

Dougherty, R.C., Bowen, C. W., Berger, T., Rees, W., Mellon, E.K. and Pulliam, E. (1995, September). Cooperative learning and enhanced communication: Effects on student performance, retention, and attitudes in general chemistry. *Journal of Chemical Education*, 72(9), 793-797.

The Education Trust. (2007). Graduation Rate Data [Data file]. Available from The Education Trust Web site, http://www.collegeresults.org/

Gall, M. D., Gall, J. P., & Borg, W. R. (2006). *Educational research: An introduction.* (8th ed.). Boston: Pearson, Allyn, & Bacon.

Kindred, J., & Roper, S. L. (2004). Making connections via instant messenger (IM): Student use of IM to maintain personal relationships. *Qualitative Research Reports*, *5*, 48-54.

Lichtman, M. (1996). *Qualitative research in education: A user's guide.* Thousand Oaks, CA: Sage Publications, Inc.

"Office Hours in a Different Format," (2006, November), *The Teaching Professor. 20*(9). 5-6.

Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications.* New York: Wiley.

Steinhaus, C.S. (1999). Walking with students to increase satisfaction and retention. *National Academic Advising Association (NACADA) Journal, 19*(1), 54-58.

Tu, C. (2002). The measurement of Social Presence in an online learning environment. *International Journal on E-Learning*, *1*(2), 34-45.

Wallace, F.L. & Wallace, S.R. (2001). Electronic office hours: A component of distance learning. *Computers & Education, 37(*3-4*),* 195-209.

Wang, L, C. & Beasley, W. (2006). Integrating instant messenger into online office hours to enhance synchronous online interaction in teacher education. *International Journal of Instructional Media*, *33*(3), 277-287.

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Editor's Note: This study is a report of original educational research. It attempts to review the wide-ranging facilities of the internet resources from student teachers' perspectives. Moreover, this study focuses on the positive and negative effects of the internet on the education process regarding the attitudes of students towards the internet accessibility.

Education: With or Without Internet Resources; If With, to What Extent?

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Abstract

The internet is available for endless resources required for the courses in educational surroundings. However, most of the students do not know how to select the appropriate resources. Moreover, it is observed in the courses that some students use the original resources as their own products without acknowledgement of source and intentional or unintentional cheating comes into view. Such tendencies lead to deterioration rather than creativity. This study is aimed at investigating the issues such as how the student teachers of English use the Internet, for what courses they mostly need the internet resources, and whether they can reach the specific information consciously. The survey method was conducted on 124 student teachers attending English Language Teaching Department at Trakya University, Turkey. The findings prove that the student teachers use the internet for their tasks actively but mostly unconsciously. Furthermore, they are not able to decide on the specific information due to endless information.

Keywords: the internet resources, ELT courses, educational development, language proficiency, professional development, language learning, the internet and ELT, teacher training, advantages and disadvantages of the internet, teaching materials

Introduction

Technology has been effective in foreign language education as well as in other fields. The boost in using technology in the educational settings began in the sixties and seventies by installing language laboratories. The essential foundation of such technology was to test the verbal performance of learners in a behaviouristic sense. With the emergence of the communicative approach in foreign language education, computer assisted language learning (CALL) tools have been widely applied in teaching and learning processes. In recent years, however, with the notion of globalisation, the internet as a technological tool in educational surroundings is being increasingly used by both educators and learners to gather information and documents for teaching and learning activities.

The Internet and Education

The internet as a network of thousands of computers is a standpoint of the information age not only for education materials, but also for various sectors of society such as business, government, military, news broadcasting, and so on (Mike, 1996; Gillette, 1996). In the field of education, since the worldwide information is constantly available through the internet, it can open up a vast new collection of learning opportunities and better prepare learners to contribute effectively in a knowledge-based global economy (Todd, 1996). In this sense, the internet is a motivating tool with an increased emphasis on the critical thinking, problem solving, written communication, and collaborative skills (Owston, 1997; Akkoyunlu & Yılmaz, 2005). The feedback through the internet, thus, is provided for learners to obtain a variety of information about the investigated topic and to compare and evaluate different perspectives by analysis.

In teaching a second or a foreign language, particularly English, since learners can easily gather data written in foreign language, the internet use increases the comprehension and acquisition of a second language (Kasanga, 1996) and, thus, facilitates the interaction of language learners by gaining input in the language learning process (Brandl, 2002) for research activities outside the class. On the other hand, for the activities inside the class, the internet use changes the interaction between learners and teachers (Kern, 1995) by the active participation of learners.

Accordingly, through the internet which has been accepted as a functional component of the learning process, foreign language education has shifted to more technology-based dimensions. The most significant reason is that the internet resources and opportunities for learners as well as for teachers, scholars, and researchers in foreign language education have been available in a growing number each day. In this sense, the most valuable contribution of the internet to English Language Teaching (ELT) is its role in facilitating teacher's access to professional materials, contacts and resources in English (Warschauer, Shetzer & Meloni, 2000).

The student teachers attending ELT departments also obtain many teaching materials, resources, literary works and the critical reports about those works, articles, lesson plans, etc through the internet during the education process. The prosperity of the internet in this sense causes them to become aware of the worldwide studies on many topics as well as gain self confidence. In a survey study conducted on 1091 student teachers in the faculty of education by Gürcan-Namlu and Ceyhan (2003), it was concluded that the anxiety levels of student teachers who never enrolled in computer assisted courses were three times greater than anxiety levels of those who enrolled in computer assisted courses. Hence, computer assisted courses can be acknowledged as supportive and encouraging services for both learning and teaching, and thus the internet as a component of computer assisted courses is a constructive medium for education.

Despite all the mentioned constructive and distinctive features of the internet, some disadvantages of using the internet in the field of education cannot be ignored. Since the amount of information generally makes learners confused when they try to find specific information (Chafe, 1999), it may not be easy to obtain the explicit information while searching for the required topic. When the information has been obtained, learners may not be able to analyse it critically or make assumptions whether the information is suitable, reliable, or valuable for them to use (Wood, 2004). Learners may start using the internet unconsciously without being equipped with the skills for searching on the internet. So teaching the internet skills and refreshing those skills throughout the courses are included into the related courses (O'Hanlon, 2002).

Another drawback is the lack of accessibility to the internet all over the world. This is also true for Turkey. According to The Turkey Information Technology Report 2008, the accessibility of the internet is only about 23% in Turkey. One more problem is the incapability in using the internet. According to a study conducted on 685 teachers from primary education by Akkoyunlu (2001), 65% of the teachers (n=115) cannot use the internet due to inaccessibility of the internet. On the other hand, 55% (n= 63) do not know how to search out through the internet. Moreover the multimedia feasibilities in education institutions may not be provided due to the costs. The other and the most striking disadvantage of the internet is that the internet is available for ready materials; that means learners mostly use these resources in the courses for their tasks instead of creating their own products. This may be judged as intentional or unintentional plagiarism. For instance, learners may prefer using the prepared coursework as their own products or reading the summaries of any novel or critical writings on the book instead of/or before reading the whole book.

In this paper, the main concern is to determine the perceived usefulness of the internet from the point of view of student teachers. In the courses in the ELT department at Trakya University, it has been observed that the student teachers widely use the internet resources for their tasks

mostly in the original form. Therefore, the purpose of this paper, regarding all the benefits and detriments of the internet, is to inquire into the availability of the internet from the point of view of the student teachers, while using the information through it for their course tasks.

Method

Participants

The population of the study includes 124 students among 165 students attending theEnglish Language Teaching Department of the Faculty of Education at Trakya University. The participants were selected randomly.

Research Design

In this study, thesurvey method was used to investigate the availability of the internet in the field of foreign language education.

Research Instruments

The data were gathered through an assessment questionnaire completed by the students. The questionnaire comprising 20 items with 5 choices and 3 open ended questions, was developed by the researchers and administered in the survey.

Data Analysis

The numeric data were computed statistically (SPSS 11.0) and the percentage is reported through descriptive analysis.

Findings and Results

The findings of this research are presented in three categories: 1) the responses for the open-ended questions; 2) the facilities of the internet, and 3) the use of internet resources in courses on percentage tables.

What is the internet?

> *The students mostly think that the internet is a tool but not an aim for obtaining relevant information on any topic. For many student teachers, the internet has replaced the libraries. They state that instead of going to the libraries and walking around looking for books, searching into the internet is much easier because of the endless resources. The internet is generally defined by them as a multi-purpose encyclopaedia comprising full information on all topics.*

What are the advantages and disadvantages of the internet?

> *Most of the students focus on the importance of the internet in education. Such a requirement emerges from the demand for obtaining information on many issues they deal with. Further, for them, the availability of the countless texts in the internet world facilitates the students' tasks at once while attaining the required resources instead of going to the libraries. Despite all the beneficial aspects of the internet, the students mostly criticize some texts on the sense that they may be introduced in a subjective manners. In addition, they maintain that although it is cheaper while finding the required resources, the internet obstructs the habit of reading books. Another point on the facilities of the internet put forward by the students is that they mostly do not read the original literary works by themselves. They first read the summary or interpretation of any work and then they read the original work. That is a common view among the students. But they also state that a student teacher of English should try to read the literary work on his or her own for language development.*

For what courses do you use the internet sources?

> *The responses of the students affirm that they employ internet explorations for all courses, but mainly for methodology, linguistics, literature, and translation courses.*

As indicated in Table 1, all of the students use the internet in their educational activities. Among them, 86% declared that they always used the internet for their activities. When the reliability of the internet was questioned, most of the students (71.2%) proclaimed its reliability in common. In addition, they declared that they generally obtained the information they needed at all times and the majority (72.8%) found the internet as functional within their professional competence.

In general sense, the internet is available for perpetual resources which can be found in many languages. The availability of worldwide resources on the internet is among the major advantages of the internet. This notion was also admitted by all students (100%). Moreover, when they were questioned about the impact of the internet on creativity, most of the students (71.2%) acknowledged its benefits at this point. In addition, more than half (70%) of the students stated that they were not directed by their tutors to use the internet in their courses.

The participants were also questioned about how and how often they used the internet for the ELT courses separately. The responses for English Literature courses prove that all students searched for the internet resources to get information. Moreover, most of them (82.5%) admitted that they obtained information about any literary work via the internet resources before they read it. On the other hand, 28.5% of the students stated that they applied for the information about the work after they read it.

When the students were questioned about how often they looked for translated texts in the internet, 88% declared they mostly used the internet as a source, but 12% did not use it. More than half of the students also stated that they used the translated texts they obtained in the internet as models for their translation activities. Some students (39%) admitted they used the original form of the translated texts in their translation tasks.

Among the courses, linguistic courses are the most remarkable ones, because the internet is the best source for obtaining information about linguistics in a general sense. This notion was also accepted by all students. They confessed that they used the internet sources all the time for their linguistic courses.

Another course for which the internet can be widely used is material production. Ninety-six percent (96%) of students admitted that they employed resources in the internet. More than half of the students did not use those materials from the internet in original form. However, 87.5%)of students stated they adapted those materials for their tasks.

In ELT departments, the students are responsible for preparing lesson plans for their microteaching activities. In this context, the internet is the most accessible source because it is rich in these sorts of resources. The students' responses also provide an idea about how accessible these resources are. All students admitted that they used the lesson plans in the internet as models for their microteaching activities and 91.5% acknowledged the directive potentials of the equipped lesson plans in the internet. Eighty point six percent (80.6%) of them stated that they adapted those model lesson plans for their microteaching tasks.

Conclusion and Discussion

The overall findings from the present study, which explores student teachers' preferences about using the internet, clarify how useful the internet is for them, how often they use the internet in their academic lives, what they think about the facilities of the internet, and how they use the internet resources in their academic tasks in different courses. Although it might be difficult to

generalise these findings since only 124 students from ELT department at Trakya University were involved in this survey, these results show that, from a holistic overview, the internet resources are widely used and accepted as functional by the student teachers for their academic studies.

The student teachers' responses prove that the internet is the major source. The most significant problems are the availability of adequate materials and lack of easy access to those materials. Such reasons are acknowledged because the internet helps them with their schoolwork by directing them to learn new things.

Another outcome of the study is that the student teachers use the internet resources for the basic courses in ELT. In this sense, the advantages of the internet are in line with what Warschauer and his colleagues (2000) stated about the facilities of the internet such as access to professional materials and resources in English. Moreover, they admitted that the internet use facilitates getting data written in foreign language, and it may, as Kasanga (1996) and Brandl (2002) mentioned, increase the comprehension in second language and prompt gaining input in foreign language learning process. Thus it may create learning opportunities (Todd 1996).

In spite of all this positive and supportive supremacy of the internet, it may be the source of some troubles. The student teachers' responses provide evidence to elicit overall information about the internet's obstacles. They stated that they can easily obtain information and materials they need for their courses. Although such quality of the internet seems constructive, this can also be estimated as the darker side of the internet. If most of the student teachers gather ready-made materials, they may not activate their creativity for producing their own studies. Because cutting and pasting any piece of information obtained from the internet sites and producing a paper in this way is effortless. It may be viewed as cheating. On the other hand, student teachers may not be able to decide on the specific information due to endless information. That is, they may not reach, easily, accurate and required information as Chafe (1999) and Wood (2004) affirmed due to the fact that some sites can be amateur creations rather than polished and professional ones.

Since they mostly used the material in original form for their microteaching activities while preparing lesson plans and material production courses, this seems another trouble for the student teachers' future occupation. If they use the ready materials, they may not manage to create their own course schedules. A teacher should learn how to create his/her own lesson schedule and to prepare suitable materials for courses.

Additionally, the internet resources are available for literary works. The purpose of introducing literary works into the literature courses in foreign language teacher training departments is to boost the student teachers' analytic visions and language performances. But the resources in the internet may not lead to such an advance. Because getting in touch with the ready resources which can be summary, interpretation, analysis, or criticism of the literary work before reading the work is easy but a vain and worthless struggle for those learning a foreign language. Like literature materials, translation texts can be easily obtained through the internet. Such a choice may be an obstruction for the language development of the student teachers as much as using prepared materials effortlessly instead of translating the text.

Following the assertions, it can be concluded that the internet is available and useful for educators, educational institutions and students as well as other groups of people. It is helpful for presenting information on any topic and motivating the education process in a short time. However, the internet also creates hindrances for the language and professional development of student teachers due to the ready materials for literature, language teaching and material production courses. Moreover, the student teachers cannot use the internet appropriately for specific information. For this reason some precautionary measures may be taken into consideration, and among these, is to make out whether the materials produced by the students are copied or their own products. If they are copied, the students can be advised how to use the

internet resources as models without cheating. Furthermore, the productive effects of using ready-made materials through the internet on their language development and professional competency can be discussed in the courses. They can also be directed to search for polished and professional sites. In order to implement some alternatives for tutoring students to use the internet in effective and creative ways, some sessions can be conducted in educational institutions. Some immediate and interactive facilities in extracurricular activities can be provided for students to overwhelm the troubles due to a variety of offerings appearing online.

Table 1

The Facilities of the Internet

	always	often	sometimes	rarely	never
1. How often do you use the internet for your education activities?	86	10.5	3.5	-	-
2. Do you think the information of the internet is reliable?	71.2	15.8	5.5	7.5	
3. How often have you obtained information you needed?	79	11	10	-	-
4. Do you think the internet is functional in your professional competence?	50.3	22.5	12.6	14.6	-
5. Is the internet useful for getting in touch with worldwide resources?	92	8	-	-	-
6. Does the internet prompt creativity?	51.2	20	23	5.8	-
7. Are you directed by your tutors for using the internet?	17	10	3	22	48
8. How often do you use the internet resources in your English Literature courses?	88.7	11.3	-	-	-
9. Do you get information about any literary work via the internet before you read it?	65.5	17	4	3.5	10
10. After you read the work, do you get information about it?	12	16.5	32.5	18.7	20.3
11. How often do you use the internet resources for your translation courses?	74	14	-	-	12
12.Do you use the translated text you obtained as a model?	49.1	19	15.4	15.5	1
13.Do you use the translated text in its original form?	35	4	10	29	22
14.How often do you use the internet in your linguistic courses?	98	2	-	-	-
15.How often do you use the internet for material production courses?	88.5	7.5	4	-	-
16.Do you use the materials in original form?	17	19	5.4	7	51.6
17.Do you adapt the materials for your tasks?	69	18.5	-	12.5	-
18.How often do you use the lesson plans in the internet as models in your microteaching courses?	91	9	-	-	-
19.Do you think the lesson plans in the internet are directive for microteaching courses?	83	8.5	8.5	-	-
20.Do you adapt the lesson plans for your microteaching tasks?	66.2	14.4	-	8.8	10.6

The data gathered in the study may contribute to better understanding of the phenomena of using the internet in education settings and it may be a supportive starting point for further research. The findings of the study may also support the educators of student teachers of foreign language to look into the internet habits and the way of using the internet. In conclusion, the internet is the world with its advantages and disadvantages in education environments as well as other surroundings. If it is used appropriately and consciously, the benefits of the internet can be countless. If it is used inappropriately, that is, just for cutting and pasting the ready-made materials, or copying the information available in the internet, no creativity will be introduced into the education process.

References

Akkoyunlu, B. (2001). Öğretmenlerin internet kullanımı üzerine bir çalışma [Investigation of teachers' internet habits]. *Journal of Qafqaz University*, 8, 57-66.

Akkoyonlu, B.& Yılmaz, M., (2005). Öğretmen adaylarının bilgi okuryazarlık düzeyleri ile internet kullanım sıklıkları ve internet kullanım amaçları [The rate of using the internet of student teachers and their literacy level and their objectives for using the internet]. *Eğitim Araştırmaları*, 19 (5),1-14.

Brandl, K. (2002). Integrating internet-based reading materials into the foreign language curriculum: from teacher to student-centred approaches. *Language & Technology,* 6, 87-107.

Chafe, A. (1999). *Effective use of the internet in second language education: Benefits, challenges and guidelines for teachers*. *Retrieved* March 21, 2008, from http://www.stemnet.nf.ca/~achafe/Internetclassroom.html.

Gillette, D. H. (1996). Using Electronic Tools to Promote Active Learning. *New Directions for Teaching & Learning*, 67, 59-70.

Gürcan-Namlu,A. & Ceyhan,E. (2003). Bilgisayar kaygısı: öğretmen adayları üzerinde çok yönlü bir inceleme [Computer anxiety: multidimensional investigation on student teachers]. *Kuram ve Uygulamada Eğitim Bilimleri,* 3 (2), 401-432.

Kasanga, L. A. (1996). Peer interaction and second language learning. *Canadian Modern Language Review*, 52 (4), 611-639.

Kern, R. (1995). Restructuring classroom interaction with networked computers: Effects on quantity and quality of language production. *Modern Language Journal*, 79 (4), 457-476.

Mike, D. (1996). Internet in the schools: A literacy perspective. *Journal of Adolescent and Adult Literacy*, 40 (1), 1-13.

O'Hanlon, N. (2002). Net knowledge: Performance of new college students on an Internet skills proficiency test. *The Internet and Higher Education,* 5 (1), 55-66.

Owston, R. D. (1997). The World Wide Web: A Technology to Enhance Teaching and Learning? *Educational Researcher*, 26, 27-34.

The Turkey Information Report (2008). *Retrieved* June 2, 2008, from http://www.businessmonitor.com/it/turkey.html.

Todd, S. (1996). Going Global Desktop Video Conferencing with CU-SeeME. *Learning and Leading with Technology*, 14, 57-61.

Warschauer. M., Shetzer, H. & Meloni, C. (2000). *Internet for English Teaching*. Washington:TESOL Publishers.

Wood, G. (2004). Academic Original Sin: Plagiarism, the Internet, and Librarians. *The Journal of Academic Librarianship,* 30 (3), 237-242.

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Editor's Note: Knowledge of technical skills is important for recruiting and managing technology based enterprises. This paper explores available resources for storing and accessing this information.

Managing Hard Skills: A Tool Set Used in the Software Industry for Associating Projects

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Abstract

Tools for managing hard skills are used in many companies. Here, we investigate different types of actual usage in a medium-size software consulting company. We expected this type of tools to be in use for allocating resources for new projects, but also found three other types of usage: Searching for competence to solve problems, finding areas for new projects, and skills upgrading.

Keywords: Skills Management, Knowledge Management, and Software Engineering.

Managing Hard Skills

Software engineering is knowledge work, where it obviously is critical to have employees that are skilled. We can divide skills in two broad groups - hard skills knowledge about technology issues, and soft skills - competencies of a more personal and social flavors, like organizing and handling complexities in project work, enabling people to contribute with their resources, and customer communication.

It is of major importance to get the right people with the right soft and hard skills to work on a software development project. Many companies have developed knowledge management tools to assist them in the tasks of managing hard skills, by surveying what kinds of knowledge people have, and make an index often called a "company internal yellow pages". We will refer to the process of surveying and indexing and making this type of information available as skills management. This paper will focus on hard skills.

There are many software tools for managing skills - for example, companies that offer jobs on the Internet usually have some kind of database where you as a job-seeker can store your competence profile (see for example www.stepstone.com). The contents of such tools can be: "Knowledge profiles, skill profiles and personal characteristic profiles that define subjective assessments of the knowledge, skills, and personal traits required for the different work-roles" [1]. In order to have such a working system, a company needs to select a set of skills that they are interested in, have a system for evaluating the employees, and make this information available to different user groups. We wanted to know more about how tools for managing skills are used in a specific organization. What purposes do such tools serve, and do they satisfy needs other than the expected use in resource allocation? In order to examine these questions, we interviewed 14 developers, managers and project managers in an ethnographic study at Computas - a consultancy company that develops knowledge based software and has about 150 employees. The company has no traditional departments, but is organized in projects and a set of processes, where knowledge management is considered to be one important process. We now go on to describe their skills management tool, and what different types of usage we found. Note that we do not look at technical implementation of skills management systems, but refer readers with such interests to other literature [2]. A more thorough description of our findings is available in [3].

The Skills Manager Tool

The skills manager is a part of the Intranet at Computas, and every employee has access to it. You can select a skill from a taxonomy of around 250 different hard skills, related to the core competence of the company. When you select a skill, you can find which skill level people have, from "expert" to "irrelevant". In addition to indicating their skill level, people also indicate which level they want to have in the future. When viewing skills, it is shown in black if people are on the level they would like to be on, red if this is a topic they do not wish to work on in the future, or green if they want to develop their skills in this direction.

People are prompted to evaluate themselves when projects finish and when new skills are introduced in the system. Anyone can suggest new skills to the system, which will be included by the manager of the "competence center" process.

A Variety of Usages

When we think of usage of Skills Management systems, we would normally think of resource allocation. But when we interviewed people at Computas, we found four different groups of usage of the skills management tool:

Searching for competence to solve problems

The developers often need to know something about a topic that they are not very skilled in themselves. A developer describes a "short term" usage in solving problems: "Of course, when I wonder if there are anyone who can help me with something, I look up in the skills management system to see if anyone has the knowledge that I need". When you get a list of people with a certain competence, you can also e-mail one or all of them. Or you can just print a list of people and ask them yourself, as another developer is usually doing. Of course, this depends on that people rate themselves in an honest way. "Some overrate themselves and other underrate themselves strongly", according to a developer. Another developer is critical to the categories of competence in the skills management system: "when it comes to more detailed things, like who that in fact can write a computer program, and who that can find a solution - you do not find that there". When we look at more long-term usage, we find one developer who often finds a group that knows something about a subject on the skills management system, and asks them questions by e-mail. But usually, only some will answer, "you learn after a while who it is any use to attempt to get anything out of".

Resource allocation

As one newly employed said: "Contrary to a lot of other companies that uses such a system, here at Computas we really use the system for resource planning." Another comment is on the same track: "I think that the skills manager is a useful tool, but a tool that still has got a lot of potential when it comes to practical use. Those who do the resource-management they already use the tool a lot in the daily resource allocation work."

Finding projects and external marketing

Another usage of the system is for the sales department. One manager said that "Even sales can use it [the skills management system], to find new directions to go in". That is, to find what types of projects that suits the company well; combining strategic- and competence development needs. We can also think of another usage that we did not hear from anyone (probably because we did not talk to people in the sales department) - namely to use the system as external marketing; as "proof" of a highly skilled workforce, although this might be seen as biased information by the customers.

Skills upgrading

At Computas, people are allocated to projects on the basis of what you have in the Skills Manager. In this way, people position themselves for future projects by indicating what knowledge they want to develop as a part of their career plan. And it is "natural to ask for an update on competencies when a project is finished". An employee sees the Skills manager in light of intellectual capital. "[We can] say that we have that many man months with C++ competence, or Java, and we see that there is an increase in this competence, and then we can evaluate that." And by stating what they want to learn about in the future, people can develop their competence by working on relevant projects.

Conclusions

We interviewed people in a software consultancy company about how they are using a skills management system - a part of the company's knowledge management system. We expected the tool to be in use in resource allocation, but also found that the tool is in use for "problem solving" in that people use it to get to know about who knows what in the company. Most people say that they use it to solve problems on a short term, but some also say that the system let them know who to ask the next time. People get to know others in the organization by knowing who to ask. Further, the skills management system is in use for resource allocation, to find new projects for the company and to support skills upgrading. Some are critical to how people evaluate their skills. Others questioned the level of detail of the available skills. Further, it seems that some miss the possibility to include more soft skills. In all, it seems that the usage of the tool is very much implanted in the daily work, and supports a multitude of functions.

References

1. Karl M. Wiig, Knowledge Management Methods: Schema Press, 1995.
2. Irma Becerra-Fernandez, "Facilitating the Online Search of Experts at NASA using Expert Seeker People-Finder," presented at Third International Conference on Practical Aspects of Knowledge Management (PAKM2000), Basel, Switzerland, 2000.
3. Torgeir Dingsøyr and Emil Røyrvik, "Skills Management as Knowledge Technology in a Software Consultancy Company," presented at Learning Software Organizations Workshop, Kaiserslautern, Germany, 2001.

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