

The nature of technology-mediated interaction in globalized distance education

Charalambos Vrasidas and
Michalinos Zembylas

The purpose of this paper is to discuss technology-mediated communication and interaction in globalized distance education. We will briefly present the context, methods, findings, and implications of a research and development program we have been running for the last five years at Western Illinois University in collaboration with other institutions in the US, Mexico, and Cyprus (Intercollege). The emphasis will be on discussing the differences between face-to-face (F2F) and technology-mediated interaction. Online interaction may be slower and 'lacking' in continuity, richness, and immediacy, when compared to F2F interaction; however, in some ways online interaction may be as good as or even superior to F2F interaction. We will use selected findings from our work to theorize the nature of interaction in online distance education in a globalized world. Our argument is that despite differences between F2F and online distance education, the latter should not be considered as second best, because there are significant qualities of online education that are often ignored.

Introduction

In my opinion, technology influences our cross-cultural online interaction by making us simply reflect on each other's opinions posted in words, and not based on biases, stereotypes, misconceived perceptions, or misinterpretations due to someone's skin color, physical appearance, ges-

□ Charalambos Vrasidas, Intercollege/Western Illinois University, USA; Michalinos Zembylas, Intercollege/Michigan State University, USA.

© Blackwell Publishing Ltd. 2003, 9600 Garsington Road, Oxford OX4 2DQ, UK and 350 Main St., Malden, MA 02148, USA.

tures, or facial expressions. [. . .] Part of the problem of this medium is that it forces our relationships to remain on a very 'textual' level by relying on just the typewritten characters that make up our words, sentences, and meaning. This is not exactly a negative aspect. [. . .] Perhaps another way technology has influenced our cross-cultural online interaction is that it 'muffled' some of the insensitivity that we sometimes experience in face-to-face environments. Since most of us are now living on or are originally from the islands where people share a lot and are very close with each other, this technology has at least assisted us and facilitated our 'islander' longing to communicate, socialize, and make lasting relationships.

The above is an excerpt from an online message posted by a student from American Samoa who participated in an online Masters degree in Instructional Technology and Telecommunications (MSITT) offered to educators in the Pacific region. The message was posted during the last week's discussion when students were asked to reflect on their experiences participating in the two-year graduate online program. The author of the message highlighted some of the strengths and weaknesses of online education, namely the lack of audible and visible cues; but at the same time she emphasized that communication on a 'textual' level 'is not exactly a negative aspect,' because it 'muffles' some of the insensitivity experienced in face-to-face (F2F) interactions and 'forces' one to reflect on his or her postings. This paper will address issues raised in the above posting, and concerns with regard to the impact of online education around the world.

Several trends worldwide support the importance of our research. Such trends include the growing competition in global distance education, the increased interest by learners in being able to develop personalized learning plans, and the increasing diversity of learners in various educational settings (Berge, 2001; Salmon, 2000). Corporations are involved in education and training to offer professional development to their employees and customers (Oblinger and Rush, 2003). Furthermore, another important factor leading companies to adopt e-learning is the potential for cost savings (Rosenberg, 2001).

Education is greatly influenced by two major developments: the increased use of information technology and the forces of globalization. These two developments have a profound impact on the process of education, the content of education, and its pedagogical practices. Technology has allowed education and interaction to take place at a distance on a scale never imagined before. Distance education as a field has grown from simple correspondence education to a highly sophisticated, distributed interactive learning experience (Vrasidas and Glass, 2002).

In the next few decades there will be a great need for education, particularly in developing countries where people are disproportionately young (Carty, 1999). In the developing world, information revolution, economic liberalization, and globalization are imposing new skill requirements. Distance education programs serve the needs of people who cannot afford to attend traditional F2F schooling. However, issues relating to the 'digital divide' – the unequal access to information technology – are of prominent importance, given that the debates about the digital divide are a reflection of broader social issues (Light, 2001). Making computer and Internet access widely available is a must. Yet, understanding the complexities of educational and social inequalities that hinges on a 'technological fix' (Light, 2001), especially in the context of globalization, requires a different understanding of technology.

A variety of social theorists have engaged with the historical phenomenon of 'globalization', its meaning, and its impact on society, individuals, and social relations. Although there is no agreement among scholars on what globalization means, there are some identifiable characteristics that focus mainly on its impact. Such characteristics include the dominance of a world capitalist economic system, the increased use and reliance on new information and communications technology, the strengthening of transnational corporations and organizations, the erosion of local cultures, values, and traditions, and the emergence of what some call a 'global culture' (Giddens, 1990) within a 'network society' (Castells, 1996).

Several education theorists are skeptical and 'refuse to accept as given the particular forms that globalization is taking and they ask critical questions about the winners and losers by this new set of rules' (Burbules and Torres, 2000: 2). They argue that, 'even as these changes occur, they can change in different, more equitable, and more just ways' (p. 2). For example, computer-mediated communication (CMC) can be an instrument to democratizing global forces, creating authentically cosmopolitan democratic communities and making possible information flow and broader participation in decision-making (Hand and Sandywell, 2002; Lelliott *et al.*, 2000). Many of the debates about the moral, social, and political effects of technology and globalization on culture often display either a deep skepticism or an innate optimism. Against these variations of responses, we offer a sociocultural perspective that goes to the heart of the nature of F2F and technology-mediated interaction and helps us rethink the complex functions of technologies in everyday life (Hand and Sandywell, 2002; Shields, 1996).

In this paper, we sketch the context for such a critique by examining how technology-mediated interaction differs from F2F interaction on both empirical and theoretical grounds. We first present an overview of the research we have been conducting for the last five years to examine the nature of technology-mediated interaction in a variety of online settings. We focus on illustrating the unique attributes of online interaction. We argue that a richer understanding of the nature of interaction in online education provides many ways of deconstructing uncritical images ranging from despair to celebration.

Research to study technology-mediated interaction

This paper is part of a bigger research project that has aimed to tackle the five goals below. The central question that is of interest to us is: What is the nature of interaction in technology-mediated situations? The major goals of our research are to:

1. Gain a better understanding of the complexities of online learning environments.
2. Identify the factors influencing technology-mediated interaction.
3. Identify the differences between F2F and online interaction.
4. Examine cross-cultural issues related to technology-mediated interaction and online education in a globalized world.
5. Study the characteristics of technology-mediated interaction and how we can best structure online learning environments based on these characteristics.

This paper focuses on addressing goals three and four. A number of critical points need to be made about the differences between F2F and technology-mediated interaction before describing how best to structure online learning environments. Subsequent work will focus on how to design and evaluate online programs.

Settings

To illustrate the concepts addressed here we will use examples from a series of research and evaluation studies we conducted at Western Illinois University in collaboration with other institutions in the US, Mexico, and Cyprus (Intercollege). During the last five years, these institutions have been collaborating with us for the development of distance education programs.

The settings we have been studying are:

- graduate and undergraduate courses delivered internationally and which were offered completely online or as a combination of F2F and online
- virtual high school projects designed to offer online classes to k-12 students
- online professional development communities for teachers
- a complete online Masters degree in instructional technology and telecommunications (MSITT) delivered to educators in the Pacific
- online professional development for large institutions and corporations.

We cannot discuss all these projects in the space provided here. Instead, we provide an overview of the overall research program, a brief analysis of some key methodological issues, and then we focus on some of the findings as they relate to technology-mediated interaction in cross-cultural contexts. The descriptions provided will allow the reader to make inferences about the generalizability of these findings to their own settings.

Theoretical and methodological framework

Symbolic interactionism

The theoretical framework of our research program to study technology-mediated interaction is based on Blumer's (1969) work on symbolic interactionism and Erickson's (1986) interpretive methodological ideas. There are three basic premises that Blumer (1969) advanced for symbolic interactionism. First, human beings act upon the world on the basis of the meanings that the world has for them. Second, the meaning of the world is socially constructed through one's interactions with members of the community. Third, the meaning of the world is processed again through interpretation.

Using a symbolic interactionist framework, interaction is defined as the reciprocal actions of two or more actors within a given context (Vrasidas, 2001). From a symbolic interactionist view, interaction is not a variable that one extracts from a broad context and examines on its own. Interaction is an ongoing process that resides in a context and also creates context. There is a reflexive relationship between context and interaction that prevents us from isolating the two. For example, there is a reciprocal relationship between technology, globalization and cultural issues, on the one hand, and human interactions, on the other.

Interpretive methodology

Interpretive research attempts to understand the process within a given context, and the temporal relationships of events and actors (Erickson, 1986; Stake, 1978). One of the major goals of interpretive research is 'to discover the specific ways in which local and non-local forms of social organization and culture relate to the activities of specific persons in making choices and conducting social action together' (Erickson, 1986: 129). That is, how all the actions combined constitute an online learning environment. Interpretive research attempts to investigate the invisibility of everyday life. Actors are only aware of part of the scene. The researcher is the instrument and it is the researcher's job to uncover those meanings and lift the veils to unravel the multiple layers of meanings represented by human action. By examining the local meanings in action, the researcher asks: What does learning via technology-mediated interaction mean for the learners? What does it mean for the teacher? How is interaction formed online and how is it formed in a F2F setting? How does technology influence the flow of interaction? How does the interaction that takes place in this online program compare to the interaction that takes place at another online program in another cultural context?

Data collection

Data were collected from various sources to triangulate findings and provide a better understanding of technology-mediated interaction and a complete picture of each of the online programs studied. We collected data from: F2F observations of students and teachers during class meetings, F2F observations of students and teachers using online conferencing systems, semi-structured interviews, collection of online messages, students' assignments and completed projects, synchronous chat transcripts, teacher and student journals, server data and statistics of Web usage, focus group interviews, phone interviews, and online survey questionnaires.

Data analysis

During data analysis, we followed two stages: the inductive and deductive stage (Erickson, 1986). First, we collected and organized all the data. Then, we read through the data several times to gain an overall understanding of what was happening in the programs we studied. We wrote notes and memos about those issues and events that emerged and began to generate assertions. Assertions are propositional statements that indicate relationships and generalizations in the data. Once we generated assertions from the data as a whole, we entered the deductive stage. In this stage we engaged in detailed examination of the data and looked for evidence that supported or disconfirmed our assertions. We juxtaposed and weighed all evidence. We examined all instances carefully and tried to determine whether to keep each assertion, refine it, or drop it. Assertions were warranted using a variety of methods and relied on the data as a whole.

Standards of rigor

The fundamental validity criterion for interpretive research is defined by the attention paid to 'the immediate and local meanings of actions, as defined from the actor's point of view' (Erickson, 1986: 119). After we examine the particulars closely, we can reach the concrete universals and make claims about the meaning of interaction in online courses. 'Naturalistic generalization' (Stake, 1978) begins within the case at hand. The readers should compare the findings of this research with their own contexts and others that they are familiar with in order to see if the results generalize to their cases. This research should be judged for coherence and not for correspondence of the findings with an 'objective' world. By presenting a detailed, comprehensive, and coherent account we allow readers to act as co-analysts of our studies and make judgments about the strength of the categories and assertions that are presented.

Conceptual framework for studying technology-mediated interaction

The results of our studies led us to construct and refine a conceptual framework that can be used to study technology-mediated interaction (see Figure 1). The major categories of the framework were fine-tuned by conducting a review of research in distance education (Baynton, 1992; Black *et al.*, 1983; Gunawardena, 1995; Hillman *et al.*, 1994; Moore, 1989; Vrasidas and Glass, 2002).

The classic concept of 'interaction' can now be seen as resolvable into a set of concepts embedded in a particular instructional structure that is itself embedded in a

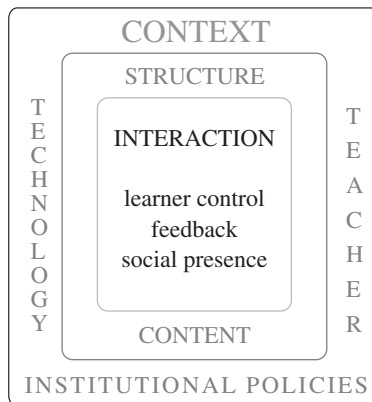


Figure 1: Conceptual framework for studying distance education.

social/cultural/institutional context that mediates the salience of these concepts and the relationships among them. Figure 1 is an attempt to portray this framework. Modalities or qualities of interaction form the foreground (or 'figure') emerging from the background (or 'ground') of social and institutional context. Other researchers will reverse the figure-ground relationship as their interests dictate. But for us, it is the evolving nature of teacher-learner-content interactions shaped by technological advances considered in their social and institutional contexts that serves as the focus of our disciplined inquiries (Vrasidas and Glass, 2002). The framework consists of the following categories: context (e.g., institutional policies, teacher, technology, content), structure, learner control, social presence, feedback, and interaction.

The central category of the framework is interaction. Four kinds of interactions were identified in the literature: learner-content, learner-teacher, learner-learner, and learner technology (Hillman *et al.*, 1994; Moore, 1989). The outer area of the framework, within which all other constructs reside, is context. Learning, knowledge, and human activity are situated within specific contexts (Brown *et al.*, 1989). In order to examine a complex construct such as interaction, researchers need to examine the context carefully, which consists of, among others, institutional and departmental policies, technologies employed, and teacher philosophy. Teachers' beliefs about teaching and learning influence the structure and design of the program, instructional goals and objectives, activities prepared, and interactions that are promoted.

The technology that mediates interaction is important within this framework. Technologies used in distance education include books and other print material, broadcast television, video, audio, telephones, and computers. Various technologies allow for different cues to be communicated and different communication strategies. Print material used in correspondence education is limited in the kinds of interactions allowed and is more appropriate for one-way communication. *Affordances* of telecommunication technologies (e.g., computer conferencing, interactive video, and audiographics) allow for a two-way communication and interaction.

Another category of the framework is learner control which consists of three major components: independence (the degree to which the learner is free to make choices), power (abilities and competencies of the learner), and support (Garrison and Baynton, 1987). The category of feedback was found to be a crucial factor that influences interaction in online programs (Vrasidas and McIsaac, 1999). In F2F situations nonverbal gestures are constantly exchanged thus providing both teacher and learners with feedback. However, in online settings the only way to receive feedback is to receive an electronic message directed to you. The last category of the conceptual framework is social presence, which is defined as the degree to which a medium allows users to feel socially present in a mediated situation (Short *et al.*, 1976). Gunawardena (1995) found that social presence online is not only influenced by the medium but also by the structure of online activities.

Interaction in F2F encounters

F2F interaction is constructed with the use of speech and nonverbal actions and gestures (Kendon, 1990; Schefflen, 1972). In F2F conversations there is a constant *backchanneling* process during which participants respond to each other and constantly reinforce each other's contribution in a conversation with simple gestures, eye contact, nodding of a person's head, and short verbal exchanges such as 'yeah' (Duncan, 1972). According to Sacks *et al.* (1974), in F2F encounters, there is a turn-taking system in action. For example, during a F2F conversation, most of the time there is only one person talking. The amount of overlap between two speakers is kept to the minimum. There are occasions where two persons might be talking at the same time, but those are brief. In addition, there are two commonly identified turn-allocation techniques. The current speaker might decide who the next speaker will be during a group discussion, or a member of the group might self-select and jump into the conversation. In a study conducted by Black *et al.* (1983) to compare F2F and online discussions it was found that online discussions had multiple threads, were slower, and there were

longer delays between the exchange of two messages. In addition, the *backchanneling* associated with F2F interaction was minimal in the online environment.

Findings

In order to illustrate the differences between F2F and online interaction we will present examples of both kinds of interactions and discuss their characteristics. The quotes and data excerpts below are from graduate level courses, which were delivered partly F2F and partly online, online discussion excerpts from a variety of programs, and interviews with participants across settings. The findings of the differences between F2F and online interaction are organized into three themes: (1) continuity and immediacy, (2) richness of information, and (3) flexibility based on place and time independence.

Continuity and immediacy

The first difference between F2F and online interaction has to do with proximity and physical distance. In a F2F situation usually all interacting parties are in the same room sharing the same space and are often very close to each other. The physical proximity and presence in the same visible space (e.g. classroom) allows for communication using multiple cues including verbal language, body language, and voice intonation. In the following example of a F2F discussion, the teacher finished writing a few things on the board about Western Governors University (WGU). Notice the elements of physical distance and proximity as the teacher and two students (Janet and Stella) interact among themselves:

Teacher: Ok, all these are really good points (*pointing to the board*). Alright, anything else that you guys want to add to that? (*Turns to his left towards the board and then looks around the class for about five seconds but nobody responds*). Ok, we got a lot of information on the board about WGU. Can somebody think of any disadvantages associated with WGU?

Janet was sitting in front of the instructor's computer in front of the class with her back towards the board and facing her classmates. She raised her posture.

Janet: Well, I was thinking, who is going to teach online? Anyone will be . . .

Stella: (*Stella sits next to Janet. She turns towards her and begins talking.*) . . . And how many students are they gonna have in each class, to make it teachable?

Janet: Ahm.

Teacher: And those are big issues. How many teachers and assistants per course? (*Stella nods her head in agreement*).

Janet: Right.

Such interactional sequences were typical throughout F2F meetings. Participants used body language, gestures, direction of gaze, voice intonation, and nodded their heads to communicate and interact with others. When the teacher assigned students to talk, he turned towards them and either nodded his head, pointed to them with his hand, or called their name. Students and teacher often exchanged 'yeahs' and 'ahms' during F2F interaction providing feedback to each other. When someone mentioned something that a student agreed with, the teacher would say 'yeah,' or nod her head in agreement. Thus, F2F interaction was rich in communicative cues exchanged during an encounter.

The abundance of cues exchanged in a F2F situation influences the immediacy of interaction. When someone raises a question there is usually an immediate response, either verbal or non-verbal. A response can come from a simple 'yes' or a simple nod of a person's head. There is a constant process of backchanneling during which participants reinforce each other's contribution to the discussion. In addition, the physical presence of the participants in the same room influences the *flow* of interaction. People constantly fit their actions to each other. With all the participants being present in the room, it is easy to fit one's actions to the rest of the class. When Stella raises the

issue of class size, Janet immediately reinforces her comment with a simple 'Ahm' and the teacher raises another question relating to her comment. Participants get feedback on their gestures and interactions immediately. This phenomenon of immediacy and fast response to gestures is typical during F2F interactions.

In an online environment you can only know that someone is present during a synchronous discussion when you see his or her message appear on the screen. Following is a part of an online synchronous discussion transcript (of the same group of students and teacher as before) that indicates some of the problems associated with this kind of interaction. Students were assigned groups to discuss privately a specific issue. They then all returned back to the main chat and they were getting ready to present their findings.

Tina: Everyone here?

Marcela: I'm here.

Molly: Here.

Susan: I'm back.

Stella: I'm here, too. May I go first?

Teacher: I'm back.

Tina: Sure Stella, go for it.

Marcela: Shall we go first?

Stella: Would providing students alternatives to learning the same lessons via various emerging technologies be an effective method of addressing multiple learning styles?

Teacher: oooooooooo . . . good question! (1 minute delay)

Tina: ; -)

Marcela: Yes, it would because currently education seems fixated on one or two delivery modes.

(Here there are about 3 minutes of no posting. Tina jokes about the delay.)

Tina: If you guys are all typing at the same time, we will be slumped . . .

Tina: :)

Heidi: lol

The first indication of the lack of continuity and immediacy appears at the beginning of the chat. Stella reports that she is back in the main chat and asks if she can present her work. Tina tells her to go ahead and report her findings. Following Tina, Marcela's comment appears on the screen asking who will go first. There is always a delay from the time that participants think about something, type it, hit enter to post it, and the time needed for the typed text to travel across phone lines and appear on every participants' screen. Delays of thirty seconds to two minutes were typical in all online chats. One student commented on the pace of interaction stating, 'When you are typing, the pace of conversation is much slower rather than when you are there in person.'

Further, the flow of interaction in the online chats was characterized by what students called a certain 'disjointness.' This is illustrated in the fact that someone says something, then another posts an irrelevant contribution, and after a few exchanges, an issue posted earlier is addressed again. Such holes in continuity of the flow of interaction were typical in all online chats. One student from the MSITT online program, while describing an online chat during the interview, stated: 'Pretty soon (*laughs*) it was kind of pitiful. It was just sort of, you know, the line of conversation just sort of fizzled.' Another student from a graduate course said the following about the flow of interaction during the chats:

[. . .] It seemed that you would be responding about something and somebody else would be responding about something else. And you weren't sure whether you should bother making another comment cause they had taken another line of thought, and you didn't know it would be like, you know, why add something else when you've already gone to another thing. [. . .]

In all the online discussions there were multiple threads of conversations, something that was not common during F2F class discussions. In a F2F discussion, most of the time, discussing one topic had to finish, before another was discussed. A teacher from

a virtual high school project that was launched in the United States stated the following during an interview:

[. . .] You just type, you don't have to wait for somebody to finish, you know? [. . .] and you don't even get multiple conversations going on at one time, and nobody feels like they are being run over or they are ignored. Because, if online I say one thing and Pedro says another, and they are totally unrelated, we can talk about both, and it's almost as fast as we can type and read. In class, if Pedro says something, I feel obligated to address what he is talking about, instead of changing subjects.

Having multiple conversations going on in an online environment is something that participants with prior experience enjoyed. However, participants who did not have prior experience with synchronous chats found the multiple threads of conversation confusing and overwhelming. As one of the graduate students stated in her interview:

Well, (*exhales*) I was expecting some kind of order, just organizational structure of doing the chats online. I was thinking that we would exhaust one topic, before, before branching out (*shows with hand*). But what seemed to have happened is that you branched out even before you exhaust, or even before you get to express your particular opinion. So, it was kind of weird, you know?

This relates to statements made by other students from several settings we studied who did not have prior experience with online chats. What is interesting to note here is that, even though the pace of online chats was slower than the pace of F2F interaction, for those with no prior experience with CMC it was overwhelming. As one of the students with prior experience stated, participating in the chats was like 'running through a pool of water.' One teacher agreed with these statements and pointed out that the computer 'filters the interaction.' While explaining the concept that the computer filters interaction, the teacher affirmed, 'Because I can't type as fast as I can think and speak. Regardless of how good I am [in typing], and I don't know of anybody who can, so that [it] filters your ability to communicate.'

Richness of information

Another difference between F2F and online interaction is the richness of information that is communicated and which influences the continuity and immediacy of interaction discussed earlier. For example, a significant aspect of this is how emotions are communicated in an online environment. In F2F interaction the presence of the body (eye contact, tone of voice, posture, movement, proximity, etc.) communicates complex information about how one feels and understands the other's emotions. In online interaction elements of F2F communication, such as non-verbal cues, are lost. However, new elements are used by online users, such as *emoticons*, which are symbols created by keyboard characters and used to convey emotions. An example of an emoticon is the smiley face ':)' used to indicate that something is funny or a joke.

Table 1 illustrates the emoticons used by participants in both synchronous and asynchronous interactions throughout a graduate course. In this course, four students who were not engaged in a synchronous online communication before, never used emoticons in their interactions. As suggested here, students who had prior experience with CMC used emoticons to compensate for the lack of visual and audible cues in online interaction and express how they felt.

During an interview Heidi explained why she used emoticons:

It's faster. With everyone typing is kind of tedious and awkward and if you can shorten it up. Hey, we are great at that, look at our idioms, you know, big 'U' instead of 'Y' you, you know, shorten it up (*and shows with two hands shorten*), let's use code.

The use of emoticons was mainly manifested in messages posted by students with prior experience in CMC. Participants who did not know what emoticons meant and had limited prior experience in CMC, felt intimidated and overwhelmed when others used them during their interactions. These findings are in agreement with other studies indicating that the temporal, spatial, and contextual limitations of online interaction lead to the development of strategies, such as the use of capitalization and

Table 1: Summary of common emoticons used by participants during online discussions in a graduate online course

Participant	Common emoticons						Total
	... something missing or to be continued	:) smiley	:-) smiley with a nose	;-) smiley with a wink	Lol laughing out loud	K Okay	
Teacher	119	–	12	3	5	7	146
Heidi	29	19	–	–	8	5	61
Susan	5	8	2	5	11	6	37
Stella	10	–	3	2	2	2	19
John	1	5	–	1	8	1	16
Andrew	2	2	4	–	3	2	13
Tina	3	3	–	–	–	–	6
Peter	1	1	–	–	–	–	2
Marcela							0
Sue							0
Jonathan							0
Jeff							0

emoticons, that compensate for the lack of visual and aural cues present in F2F interaction (Gunawardena, 1995; Rezabek and Cochenour, 1998).

Further comments by participants illustrating differences between F2F and online interactions, as they relate to the idea of the richness of information communicated online compared to that in F2F interaction, are the following:

[. . .] Imagine trying to describe [in a text message] what a 'Coconut Crab' is to someone who has no idea what it looks like. 'It's like a giant spider with claws, and it tastes so good.' Compare that with an online video footage of a live crab and me eating a cooked one. You see what I mean? That video will tell the audience much more than just that 'textual' message. Right? (Comment made by a student from the Pacific participating in the MSITT online program)

If I am not actually talking [online] they [my peers] don't even know I exist. But when I come in the classroom, I am still a part of the group, and whether I decide to talk or not, or interact or not, it doesn't matter, I am still here. And even if I am not talking, I can make a 'face' to somebody you know, and still communicate. (Comment made by a student who participated in an online graduate course)

These comments emphasize that sometimes despite efforts to compensate for the loss of visual and audible cues it is hard to communicate information and feelings online. However, this is not an absolute statement about online communication, because as we will see below, online interaction – with its place and time independence – can serve as a catalyst for articulating a richer cultural understanding that would have been very hard otherwise.

Flexibility: place and time independence

The place and time independence that online programs allow is very significant. For several of the students who participated in the online programs we studied, it would have been impossible to participate, had the program not been online. For example, educators in the Pacific who participated in the online MSITT program would have been unable to quit their full-time jobs and families in order to attend a F2F graduate program. The following comments of these students during an online discussion are indicative of this idea:

The program as a whole was very convenient to me, as a mother of two very young children, I was able to manage my own time to do the work. I remember when I first enrolled in the program, my son was only 3 months old and my daughter was 4 years old. Today, my son is two and she is 6, and I don't think I would have been able to complete a masters program if it was not for this kind of program.

Without that flexibility, I'd have been 'dropped' a long time ago. Although I tried to anticipate things, there were also things that came up unexpectedly and twisted my timelines all out of whack. But I'm thankful that (for the most part), there was that flexibility in scheduling so that I could keep up with the work.

Particularly, the fact that students could take the time to reflect on their postings, without the intimidating physical presence of others, was a unique opportunity that offered an aspect of quality in communication (i.e., comfort and openness) that often did not exist in F2F interaction. Following is an excerpt from a posting by a Pacific teacher that illustrates this point:

I am an introvert by nature so I try not to talk so much unless I need to. Disagreements, I try to avoid as much as I can. For the longest time, I just thought it was just me. All of these years I have been teaching, I've come to realize that part of it may be culturally related. When I have my classes here at the college, I really have a hard time getting feedback from my students. There's only 3% of the class that really talks while the rest of the class just nod their heads or show no response at all.

[. . .] The online communication tools provide a way for us to communicate with each other, even the 'shy' ones like me. If we were in a traditional classroom, probably some of us won't speak so much. John [a student] also mentioned the importance of family. I know a few students who attended Community Colleges in the Pacific Islands and then transferred to colleges in the United States. Some of them don't finish their schooling because they can't stand being away from their families. So, online programs would be an ideal educational program for these students who cannot adjust to being away from their families.

For those students who were not 'assertive' because of personal or cultural characteristics, the online environment provided opportunities to flourish. Besides, there is evidence that certain kinds of students prefer programs that allow them to minimize the amount of human interaction required for completion (May, 1993). Family ties in the Pacific islands are of primary importance in one's social life, and the need to stay with the family is very well served with online programs since it allows students to be with their families and yet get educated. Our argument here moves toward the suggestion that despite differences between F2F and online education, the latter should not be considered as second best, because there are significant qualities associated with online interaction. Online education can serve particular purposes that might not be served otherwise. In other words, there is a time and place for online education just as there is a time and place for F2F education.

Following is another excerpt by a student who describes the impact of online education in the Pacific region:

[. . .] I know that all of us are representing diverse cultural groups. Each of us has a different way of looking and interpreting things, even in the way we express ourselves. I am really amazed that the differences did not show much of how different we are. Rather, it brings us together to concur or agree about many things.

[. . .] Although we are separated by this huge water of the Pacific, we have been enriched by its immensity. We have learned to be adaptable and adjustable to different kinds of situations such as one is our culture. So through technology, we learned from each other. Through our discussions, we have learned to appreciate, critique, enjoy, and so forth. [. . .] I have learned so much from other cultures. I have learned how to adjust myself fit in others' cultures, especially in the way we discuss issues.

In the above excerpt, the student emphasizes the importance of being able to express, share, and enrich her cultural values. An electronic space becomes an important locus of community building and cultural understanding. Online social interaction has cultural characteristics, and thus can foster a sense of community among participants. This sense originates in the idea of communities constructed through togetherness, mutual understanding, and respect. The manifestation of cultural characteristics such as symbolic communication, language, and shared ideas exist in relation to the kinds

of interactions taking place online. After considering the evidence provided by the participants in our studies, we believe that under some circumstances and for particular purposes, online environments can enable participants to enrich their cultural understandings of the *Other* and construct their own online communities. These cultural understandings are an important contribution of online education. We should note that all participants in the MSITT online program, upon completion of their Masters, expressed a strong interest to continue the 'online community' they developed and participate in an online forum as a means of maintaining and expanding the bonds and friendships they established with their peers.

Discussion and implications

Our findings (summarized in Table 2) indicate that online interaction seems to be slower, and lacks in continuity, richness, and immediacy when it is compared to F2F interaction. At the same time in asynchronous online discussions, as many students and teachers pointed out, this time lapse was beneficial because it provided them with the time to 'think' and 'reflect' deeply in ways that F2F interactions did not allow them. Students could edit, correct, expand and revise their statements before posting their contributions to the discussion. On the other hand, there was another kind of richness in information communicated because students were able to develop valuable academic relationships and get to know their teachers and peers in unique ways.

The findings of our research as presented in Table 2 have important implications for practice and support the importance of certain skills for successful participation in online learning environments. Training students to utilize emoticons, use online communication systems, and employ appropriate etiquette are important. A simple survey at the beginning of the course, or a needs assessment, can show which students need help. Then, the instructor can provide remedial work to those individuals and help them use the online communication system. Another suggestion for practice is to assign students with a mixed range of skills in pairs. For example, pairing up an experienced computer user with a less experienced one can ensure that students with limited skills can get help from their partners.

The multiple threads of conversation, particularly during synchronous discussions, were overwhelming for students with no prior experience. The data from our work supported Sacks *et al.*'s (1974) idea that during F2F interaction there is a suggested turn-taking system that is employed, according to which participants in the conversation contribute one at a time. On the other hand, in online synchronous chats there are multiple threads in the conversation (Black *et al.*, 1983). In F2F classroom discourse, the teacher usually initiates a topic, students are called to contribute one at a time, and then another topic is introduced. All interactions in F2F classrooms are constructed in an organized and structured manner. In the online setting there are multiple topics addressed at the same time by multiple participants with a great amount of overlap. F2F interacting parties try to keep the overlap to a minimum and they usually begin talking when the other ends. The conventional rules of turn-taking are violated in the online chats, therefore, novice students are intimidated by the new ways of conversation. Thus, it is important that novice students are provided with opportunities to practice online chats and develop the skills necessary to participate in discussions.

Another important practical implication is the need to provide immediate feedback in online environments. In F2F classes there are several ways that students can receive feedback. Head nodding and body language are frequently exchanged among participants. The only way that students get feedback online is via text messages. Unless they receive feedback, participants feel they are posting to the network without any response. Therefore, it is important that the instructor provides timely feedback and encouragement to students' contributions in all aspects of the course: student assignments, asynchronous discussion contributions, synchronous chat participation, and class moderations.

Education has always been thought of as including occasions in which one has to engage in learning as a private activity (Blake, 2000), such as, for example, in asyn-

Table 2: Summary of characteristics of F2F and online interaction

Characteristics	F2F	Online
Place and time dependency	Place and time dependent. Require physical presence on the same time. If one cannot be present, cannot get educated	Place and time independent. Allow for flexibility in participating in online education, that would have been impossible otherwise
Flow-continuity	Smooth and continuous flow of interaction	Disjointed interaction
Immediacy	Immediate – speaking and listening live	Synchronous chat: Fairly immediate Asynchronous discussion: Lack of immediacy but has the advantage of deeper reflection on what one writes
Speed	Relatively rapid Good talkers may dominate	Variable Can be days of delay allowing reflection Can be minutes – allowing interchange of views
Threads of conversation	Usually one thread. Little overlap Replies are ephemeral and no record is kept other than memory	Multiple threads of conversation with a lot of overlap Can be confusing Discontinuous but all replies are recorded for later review
Backchanneling	Constant and frequent	Mainly expert users provide backchanneling usually in synchronous chats
Turn-taking	Implied One person at a time	Needs to be specifically structured otherwise it is arbitrary and confusing Expert users dominate
Richness	Many clues (visible, audible). Verbal and body language, gestures, direction of gaze, voice intonation, etc.	Few clues, mainly textual Adept users may use textual clues for compensating for lack of visible and audible cues ‘Textual richness’ may allow to get to know the Other in unique ways

chronous online interactions. Online interaction allows exploring the complexities and the cultural aspects of one’s identity, just as students from the Pacific pointed out in our studies. Thus, an important issue for educators, given this online, cultural and historical context, is how subjectivity is re-defined after discarding fixed notions of identity and celebrating notions of the self as process, complexity, and cultural inter-relatedness. To put this a different way, both educators and students in an online environment have possibilities to develop identities that take account of difference *between*, difference *among*, and difference *within*, and conceptualize identity/subjectivity as a continuous dynamic process. Ironically, the unavoidable degree of veiling of one’s

identity in online interactions 'may also foster and encourage a more vivid disclosure' (Blake, 2000: 191). This interplay between 'disclosure' and 'veiling' suggests an 'online nomadism' that subverts essentialist descriptions of cultural identities (Zembylas and Vrasidas, in press).

Furthermore, it is unclear whether heightened social and 'physical' presence is always to be sought after. Some people may find the 'F2F ideal' interaction too anxiety provoking and may function better in an environment that puts more distance between teacher and learner (Vrasidas and Glass, 2002). It is often assumed that immediate interactions are preferred. Burbules (2000) argues that, 'it is a myth to imagine that more immediate interactions are always the most honest, open, and intimate ones' (p. 329). Some learners feel more comfortable and less emotionally intimidated interacting with teacher and peers by not being physically present (Burbules and Callister, 2000).

Further, an assumption that is usually made is that F2F interaction has no inherent problems, because it offers increased opportunities for communication. However, this is rather simplistic (Blake, 2000). In online interactions, many personal characteristics might be screened out or clouded – age, disabilities, religious and political alignments, social background to some degree, etc. – precisely the kind of information that often disrupts F2F interactions. Online, the student has some greater control as to what she or he reveals. Online interaction can be more appropriate for specific kinds of contents, teachers, students, contexts, and purposes.

One has to acknowledge that online education offers opportunities that are often not available to a large number of people. Burbules and Callister (2000) argue that in the developing economies of Southeast Asia, 'access to higher education courses and programs online, and to the other fruits of advanced technology, is regarded as a primary engine of growth.' There are multiple perspectives and views on how the Web shapes culture and influences countries around the world. People in Palau see the Web as a space where they can express, share, and enrich their cultural values (Kitalong and Kitalong, 2000). In our research we found that online education offered unique opportunities to people in the Pacific to participate in education, share their culture, and communicate with others.

In addition, online learning has much to offer to students who do not have the time or the opportunity to be physically present in an institution but it also creates relationships that might otherwise be impossible for these students even in the context of conventional education. Blake (2000) argues that even supporters of online education recourse to the standard argument that 'for many students who have little or no chance to attend an institution physically, this is not the second-best mode but the only alternative to nothing at all. So not even they consider the possibility that it may be in some ways as good as or even superior to F2F teaching' (p. 183). Continuity, richness, and immediacy are much valued and their relevance to academic work is not questioned. However, there are several advantages associated with online education. When we enrich our understanding about this we will be in a better position to acknowledge the values of each kind of interaction and thus we will avoid the qualifications of which one is the 'best' or 'lacks' something that the other 'possesses.'

Conclusion

Technology-mediated interaction constitutes a fascinating new area of research, and one which merits much deeper investigation. The blatant sociality of online education and the effects of technology-mediated interaction can help educators better understand the ways in which culture, education, and community are manifested online. The results of our research re-conceptualize interaction as a theoretical construct and provide a new lens through which to study interaction in online education. An interesting aspect of online interaction is that it is constructed solely through written messages, i.e., pure text. Further analysis of the data transcripts, and the thousands of online messages posted online could shed light on how the ideas of power and control are worked out in online and F2F encounters. Exploring the 'ecological' relationship

between online interaction and F2F interaction is a fruitful direction of research. The project of transforming education will take different forms in different contexts. But above all, learning and teaching will remain fundamentally an interaction among individuals, content, and tools. In a world undergoing processes of globalization, educators should take advantage of all the ways in which interaction is manifested and manifests individuals. A comprehensive exploration of the complexities of these issues remains to be carried out.

References

- Baynton, M. (1992), Dimensions of 'control' in distance education: A factor analysis. *The American Journal of Distance Education*, **6**, 2, 17–31.
- Berge, Z. L. (ed.) (2001), *Sustaining Distance Training: Integrating learning technologies into the fabric of the enterprise*. San Francisco: Jossey-Bass.
- Black, S. D., Levin, J. A., Mehan, H., and Quinn, C. N. (1983), Real and non-real time interaction: Unraveling multiple threads of discourse. *Discourse Processes*, **6**, 1, 59–75.
- Blake, N. (2000), Tutors and students without faces or places. *Journal of Philosophy of Education*, **34**, 183–96.
- Blumer, H. (1969), *Symbolic Interactionism: Perspective and method*. Englewood Cliffs, NJ: Prentice Hall.
- Brown, J. S., Collins, A., and Duguid, P. (1989), Situated cognition and the culture of learning. *Educational Researcher*, **18**, 32–42.
- Burbules, N. C. (2000), Does the Internet constitute a community? In N. C. Burbules and C. A. Torres (eds), *Globalization and Education: Critical perspectives* (pp. 323–355). New York: Routledge.
- Burbules, N. C. and Callister T. A. (2000), Universities in transition: The promises and the challenge of new technologies. *Teachers College Record*, **102**, 2, 271–293. Retrieved on January 21, 2000 from <http://www.tcrecord.org>.
- Burbules, N. C. and Torres, C. A. (2000), *Globalization and Education: Critical perspectives*. New York: Routledge.
- Carty, W. (1999), New markets for meeting old needs: U.S. distance education and developing countries. Paper presented at the EDUCAUSE 1999 conference. Retrieved online on 20/5/02 from <http://www.educause.edu/ir/library/html/edu9918/edu9918.html>.
- Castells, M. (1996), *The Rise of the Network Society*. Oxford: Blackwell.
- Duncan, S. J. (1972), Some signals and rules for taking speaking turns in conversation. *Journal of Personality and Social Psychology*, **23**, 283–92.
- Erickson, F. (1986), Qualitative methods in research on teaching. In M. C. Wittrock (ed.), *Handbook of Research on Teaching* (pp. 119–161). New York: Macmillan.
- Garrison, D. R. and Baynton M. (1987), Beyond independence in distance education: the concept of control. *The American Journal of Distance Education*, **1**, 3, 3–15.
- Giddens, A. (1990), *Consequences of Modernity*. Cambridge and Palo Alto: Polity and Stanford University Press.
- Gunawardena, C. N. (1995), Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications*, **1**, 2/3, 147–66.
- Hand, M. and Sandywell, B. (2002), E-topia as cosmopolis or citadel: On the democratizing and de-democratizing logics of Internet, or, toward a critique of the new technological fetishism. *Theory, Culture & Society*, **19**, 197–225.
- Hillman, D. C., Willis, D. J. and Gunawardena, C. N. (1994), Learner interface interaction in distance education. An extension of contemporary models and strategies for practitioners. *The American Journal of Distance Education*, **8**, 2, 30–42.
- Kendon, A. (1990), *Conducting Interaction: Patterns of behavior in focused encounters*. New York: Cambridge University Press.
- Kitalong, K. S. and Kitalong, T. (2000), Complicating the tourist gaze: Literacy and the Internet as catalysts for articulating a postcolonial Palauan identity. In G. E. Hawisher and C. L. Selfe (eds), *Global Literacies and the World-Wide-Web* (pp. 95–113). London: Routledge.
- Lelliott, A., Pendlebury, S., and Enslin, P. (2000), Promises of access and inclusion: Online education in Africa. *Journal of Philosophy of Education*, **34**, 41–52.
- Light, J. (2001), Rethinking the digital divide. *Harvard Educational Review*, **71**, 709–33.
- May, S. (1993), Collaborative learning: More is not necessarily better. *The American Journal of Distance Education*, **7**, 3, 39–49.

- Moore, M. G. (1989), Three types of interaction. *The American Journal of Distance Education*, 3, 2, 1–6.
- Oblinger, D. G. and Rush, S. C. (2003), The involvement of corporations in distance education. In M. G. Moore and W. G. Sanderson (eds), *Handbook of Distance Education* (pp. 587–600). London: Lawrence Erlbaum Associates.
- Rezabek, L. L. and Cochenour, J. J. (1998), Visual cues in computer-mediated communication: Supplementing text with emoticons. *Journal of Visual Literacy*, 18, 2, 201–16.
- Rosenberg, M. (2001). *E-learning Strategies for Delivering Knowledge in the Digital Age*. New York: McGraw-Hill.
- Sacks, H., Schegloff, E. A., and Jefferson, G. (1974), A simplest systematics for the organization of turn-taking for conversation. *Language*, 50, 4, 696–735.
- Salmon, G. (2000), *E-moderating: The Key to Teaching and Learning Online*. London: Kogan Page.
- Schefflen, A. E. (1972), *Body Language and Social Order*. Englewood Cliffs, NJ: Prentice-Hall.
- Shields, R. (ed.) (1996), *Cultures of Internet: Virtual spaces, real histories, living bodies*. London: Sage.
- Short, J., Williams, E., and Christie, B. (1976), *The Social Psychology of Telecommunications*. London: John Wiley & Sons.
- Stake, R. E. (1978), The case study method in social inquiry. *Educational Researcher*, 7, 2, 5–8.
- Vrasidas, C. (2001), Interpretivism and symbolic interactionism: 'Making the familiar strange and interesting again' in educational technology research. In W. Heinecke and J. Willis (eds), *Research Methods in Educational Technology* (pp. 81–99). Greenwich, CT: Information Age Publishing, Inc.
- Vrasidas, C. and Glass, G. V. (2002), A conceptual framework for studying distance education. In C. Vrasidas and G. V. Glass (eds) *Current Perspectives in Applied Information Technologies: Distance Education and Distributed Learning* (pp. 31–56). Greenwich, CT: Information Age Publishing, Inc.
- Vrasidas, C. and McIsaac M. S. (1999), Factors influencing interaction in an online course. *The American Journal of Distance Education*, 13, 3, 22–36.
- Zembylas, M. and Vrasidas, C. (in press), Globalization, information and communication technologies, and the prospect of a 'global village': Promises of inclusion or electronic colonization? *Journal of Curriculum Studies*.