



Student Perceptions of Using Instant Messaging Software to Facilitate Synchronous Online Class Interaction in a Graduate Teacher Education Course

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Abstract

This study investigated student perceptions of using instant messaging software for online interactive chapter discussions in a graduate teacher educational technology course. The criterion instrument was a 47-item scale that measured Chickering and Gamson's (1987) first four principles for good practice in undergraduate education, yielding reliabilities ranging from .837 to .895. Students rated the course significantly higher than their regular classroom courses, with stronger effects on perceptions of student cooperation and active learning, and weaker effects on perceptions of instructor contact and feedback. These findings support the proposition that instant messaging may be used as a technique to increase dialogue and thereby reduce transactional distance, especially among students, in an online course environment. (Keywords: online interaction, instant messaging [IM], synchronous communications, Moore's theory of transactional distance, principles for good practice in undergraduate education, computer mediated communications)

Introduction

In recent years "distance education" has come to mean many different things to many different people. While most of these different meanings carry with them connotations of geographical separation between teacher and learner, Michael Moore (1993) has suggested that what was once thought of as "distance education" is better understood as being a matter of "transactional distance" rather than geographical distance.

For Moore, this transactional distance is a function of interplay between three sets of variables: dialogue, structure and learner autonomy. "Dialogue" refers to purposeful, constructive interaction between teacher and student; instruction by means of a recorded video would be an example of extremely "low dialogue." "Structure" deals with elements of course design, and is concerned with the rigidity (or flexibility) of components such as teaching strategies and evaluation methods. A recorded video would be very high in structure; a teleconference without a predetermined agenda would be very low in structure. "Learner autonomy" is the extent to which the learner, rather than the teacher, determines aspects such as goals, learning experiences, and evaluation decisions. A high-autonomy learner pursues his or her own goals using methods and activities that he or she has chosen; a low-autonomy learner depends on others to determine these aspects of the learning experience.

In rough terms, high levels of course structure with small amounts of dialogue demand high levels of learner autonomy in order to succeed. Another way of saying this would be that only students with a high degree of autonomy would be likely to succeed in a highly structured course with minimal interaction. These are descriptors which apply to many distance education courses, and Moore would suggest that they are examples of high transactional distance. It would seem desirable to make it possible for students with moderate or low personal autonomy to succeed in a distance education settings. To use Moore's terminology, this would mean

reducing the transactional distance, and within Moore's paradigm one way to do this would be through manipulating the amounts of dialogue and structure involved in the learning experience. Kanuka, Collett, and Caswell (2002), for example, found in their interviews with instructors that a high degree of course structure and high dialogue were associated with a low level of transactional distance. In other words, increasing the amount of interaction between instructor and student (creating "high dialogue") appears to reduce the transactional distance. How does one modify dialogue? Moore wrote of many factors, including course design and number of students, but a major determinant is the medium of communication (email, threaded discussion, etc.).

In explaining his theory of transactional distance, Moore (1993, p.33) made specific reference to what he called the "inter-learner dialogue" (i.e., communication among learners, with or without the presence of an instructor) made possible by computer conferencing, and described the potential of these technologies as "enormously significant". Gorsky and Caspi (2005) suggested that web-based synchronous forums (e.g., chat rooms) are an example of a structural resource having high potential to encourage student-student interpersonal dialogue.

The intent of this study was to assess the ability to reduce transactional distance by increasing dialogue within a highly structured class setting. The attempts to increase dialogue were carried out by modifying the medium of communication used in the class. Specifically, during the time of this study whole-class discussions were carried out using as the medium of communication instant messaging (IM). While IM is not a "chat room" in the traditional sense, it is a web-based synchronous forum of the general type discussed by Gorsky and Caspi. For purposes of this study, "dialogue" refers to the interactions which made up the IM-based class discussions. Since the purpose of the study was to determine whether or not these interactions had a positive effect on the learning experiences of the participating students, we sought to measure experiences that reflected transactional distances. For this, we turned to principles which pre-date modern distance education by a considerable margin—Chickering and Gamson's Seven Principles of Good Undergraduate Instruction (1987). These principles are: (1) encouraging contacts between student and faculty, (2) developing reciprocity and cooperation among students, (3) using active learning techniques, (4) giving prompt feedback, (5) emphasizing time on task, (6) communicating high expectations, and (7) respecting diverse talents and ways of learning.

As Chickering and Ehrmann (1996) have noted, the emergence of powerful new communication technologies brings to the fore the idea that these technologies should be used in accord with those seven principles when used for educational purposes. Distance education in most of its forms makes heavy use of these technologies, so it makes sense to apply Chickering and Gamson to understanding distance education. Numerous studies have done so. Graham, Cagiltay, Lim, Craner and Duffy (2001) used Chickering and Gamson's principles to derive a series of lessons

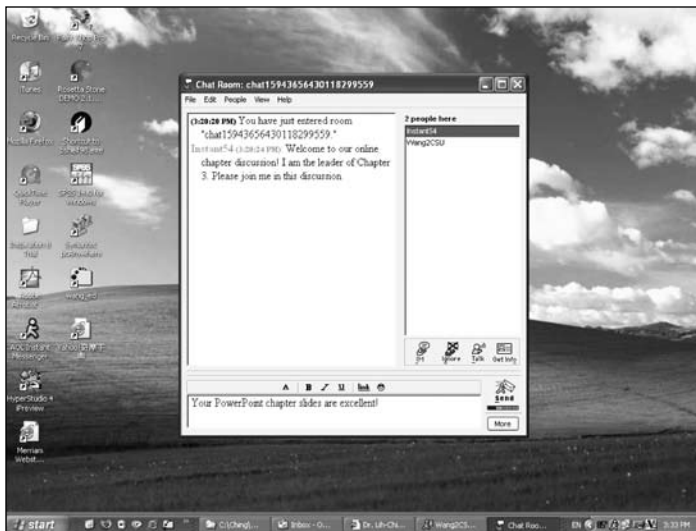


Figure 1: Example of a computer screen with instant messaging in foreground.

for online instructors. In more recent times, Honey (2007) found the principles helpful as a structural framework for a study of postgraduate nurses encountering hybrid and web-based courses; Sabin and Higgs (2007) used the seven principles as the framework of their study, which found computer conferencing to be a significant positive addition to the online course environment under study, and Illowsky (2007) enumerated specific ways in which synchronous online instruction could be used to satisfy certain of the principles:

When the instructor desires to group students, those students may work interactively on problem solving, even though they may be physically apart. This encourages the “cooperation among students” in Chickering and Gamson’s second principle and the active learning in their third principle. When the instructor is present in the chat room, students usually receive prompt feedback, satisfying the fourth principle (p. 21).

Hutchins (2003) provides a helpful summary of research in this area, noting the shortage of empirical research utilizing the seven principles as a variable of interest. To the best of the authors' knowledge, these principles have not yet been used to study synchronous online interaction. We chose to use four of Chickering and Gamson's seven principles which we judged to be the most dialogue-related (i.e., contact with instructor, student cooperation, active learning, prompt feedback) as the basis for our examination of what took place during this study.

It is important to establish the context within which we employed Chickering and Gamson's principles as a proxy for manipulating the dialogue component in this particular situation, and in order to do that a discussion of instant messaging is in order.

Instant messaging programs allow users to conduct online dialogue by means of typing messages back and forth to one another within specialized portions of one's computer screen (see Figure 1). In conceptual terms, IM programs are a highly specific example which falls within the much larger and older field of Computer Mediated Communications (CMC); they are one form of synchronous communication, which means that they enable communication to take place in "real time" (like a telephone call) rather than being "asynchronous" (like an exchange of postcards). While the body of CMC literature is quite large and contains copious amounts of research devoted to the use of CMC in the context of education, to date there appears to be very little literature on the use of IM in educational contexts, and little or no research on the use of IM for class discussions.

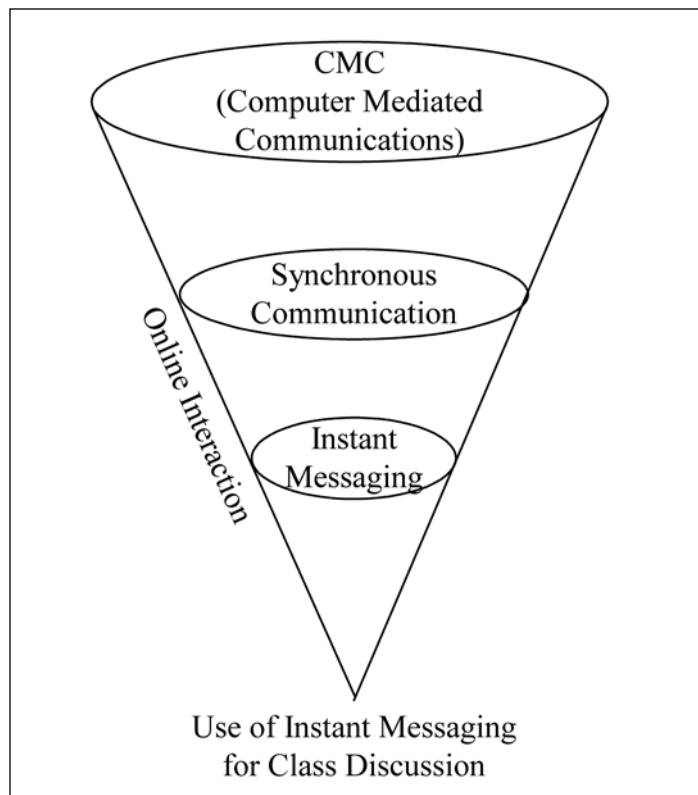


Figure 2: The conceptual location of this study in the CMC universe.

This article will explore the use of instant messaging for the purpose of conducting structured class discussion (see Figure 2).

CMC has been an active field for decades. Online (that is, Web-based) education is one example of the use of CMC for instruction. MacDonald and Caverly (2000) described the development of online education as having moved through three generations. Instructors began with companion Web sites to provide online resources for their students, gradually adding asynchronous interactive capabilities to their Web sites, and culminating (so far) in the availability of synchronous online communications. MacDonald and Caverly's generations describe an increasingly sophisticated ability to deliver information online; their model is not intended to represent a value judgment related to the pedagogical value of a given type of online activity.

There are a variety of reasons for using synchronous online education: (1) brainstorming (Branon & Essex, 2001), (2) team working (MacDonald & Caverly, 2000; Branon & Essex, 2001), (3) community building (Branon & Essex, 2001), (4) addressing technical issues (Branon & Essex, 2001), (5) holding online office hours (MacDonald & Caverly, 2000; Branon & Essex, 2001), and (6) extending classroom discussion (MacDonald & Caverly, 2000). In each usage a principle benefit, whether the interaction is dyadic or group, lies in the immediacy with which the student upon receiving the communication can respond or question. Such immediacy in online communication may not necessarily be appreciated or uniformly valued across different categories of students. Stewart, Shields, Monolescu, and Taylor (1999) studied gender and participation in synchronous online interaction; in their sample women contributed not only significantly fewer but also significantly shorter messages than the male subjects. Veerman, Andriessen and Kanselaar (2000) found that while synchronous online communication could be used to "coach" students through various comparative and analytical tasks, the synchronous medium itself (they used Microsoft NetMeeting) seemed to interfere with "meaningful interaction." They hypothesized that this might be due to the necessity to complete messages before sending them in the synchro-

nous environment; in the absence of visual or auditory cues, a student composing a long message was often interrupted by messages from others unable to tell that the conversation was still underway.

Synchronous online education could theoretically be conducted using almost any means of synchronous online interaction; to pick an extreme example, cellular telephone text messaging (which is intensely popular among young students today) might eventually be used for such a purpose. The form of synchronous online interaction most heavily investigated for educational use to date has been that of online “chat rooms.”

For example, Darhower (2002) has identified a variety of interactional features in the use of online chat for foreign language instruction, some of which interacted in significant ways with the socio-cultural aspects of the individuals doing the chatting (“chatters”). These differentiating interactional features included (1) inter-subjectivity (e.g., a shared orientation on a collaborative task), (2) off-task discussion (e.g., alteration of the assigned discussion topic to chatters’ own chosen topic), and (3) social cohesiveness (e.g., greetings and leave-notifications, teasing and joking, role playing, gender identification, flaming, and insulting. The author further found that flaming, cursing, or insulting appeared often in the learner-centered online chatting discourse community. Chatters may feel more comfortable teasing others while hidden behind their computer screen than in face-to-face conversation (Darhower, p. 271, 2002). The author also suggested that, if these features can be used wisely by the online chatters, it will allow the chatters to feel that they are taking ownership of the online chatting environment and, at the same time, raising their sociolinguistic competence. Consequently, online chatting communication can not only function as a strong mediator, it can facilitate task performance in language learning.

The “chat room” approach to synchronous online communications is typified by the use of a dedicated piece of software (such as a Web browser, or a chat client program) which the instructor and student use to conduct online conversations as a “foreground” activity. That is to say, if one is using a chat room, one is expected to be focused primarily on the chat room, and to have the computer window corresponding to this conversation at least in the foreground on one’s computer, if not functioning as the only activity running on one’s computer during the conversation.

A somewhat different approach to “chat process” has become increasingly popular in recent years. It is often called “instant messaging” (IM), and is typified by the use of a small piece of software intended to remain active in the “margins” of one’s computer screen most or all of the time. The idea seems to be that conversations with physically distant individuals in real time using this software may take place simultaneously with other computer activities. For example, one might edit a word processing document for a class assignment while simultaneously instant messaging with a friend about a social engagement. At the core of instant messaging is the concept that conversations take place in the midst of other, parallel, simultaneous online activities. Instant messaging is a more flexible but potentially less focused offspring of the more traditional, foreground-positioned chat room.

Throughout their existence, IM programs have enabled online chatting among two or more users. Features added in recent times include: (1) the ability to leave a text “answering machine” message for potential chat partners (e.g., “I’m at lunch, and will be back at 1:00”); (2) instant file and image exchange; and (3) instant “buddy group” creation (i.e., the ability to create a user-defined group chat “on the fly,” as with an instructor creating class discussion breakout groups).

With such recent advances in these programs, educators and students increasingly have become willing to use them to enhance learning activities. It has been the experience of the authors that when these functions are used appropriately within a class context, there are in fact significant advantages to be realized for both instructor and students.

A large number of different programs are freely distributed for use in IM. Popular examples of these free programs include: AIM (America Online Instant Messenger), MSN (Microsoft Network Messenger), Yahoo! Messenger, ICQ (I Seek You), and Trillian. The particular program used in this study was AIM, which is widely distributed and has features typical of other IM programs. It is likely that the results we obtained could be replicated had we used most any of the other widely used products.

Purpose and Research Questions

The focus of the investigation was student perceptions of class-related online interactions using IM software, within the context of structured online class chapter discussions. A questionnaire was developed that focused on four of the seven “Principles for Good Practice in Undergraduate Education.” These were:

1. encourages contact between students and faculty
2. develops reciprocity and cooperation among students
3. encourages active learning
4. gives prompt feedback

While these principles were originally defined with respect to undergraduate education, they also represent learning objectives central to sound graduate teacher education. The research questions thus follow directly from these four principles:

1. Do students perceive that the use of IM for online interaction encourages contact between students and instructor?
2. Do students perceive that the use of IM for online interaction encourages the development of reciprocity and cooperation among students in the class?
3. Do students perceive that the use of IM for online interaction encourages “active learning” (as defined by Chickering and Gamson)?
4. Do students perceive that the use of IM for online interaction enhanced the process of receiving feedback from classmates and instructor?

Methodology

Sample and Context

The subjects were 43 master’s level graduate students at a commuter urban state university in the Midwestern United States; total enrollment in the sections being studied was 44, with one subject excluded because of substantial prior IM experience. The subjects were mostly PK–12 educators, with 9 being male and 34 being female (the dominance of females over males in this sample is typical of teacher education programs in the United States).

Subjects were from four different sections, varying in size from 8 to 13, of an introductory course in educational technology for teachers, across three semesters. All subjects had previously completed or were currently enrolled in other (non-IM-using) graduate education courses. None of the subjects in this group had ever experienced any IM program in other education courses according to their self-reported survey data. In other words, this was a sample with limited IM experience. Branon and Essex (2001) reported that learning groups of about this size are optimal for synchronous online interaction.

The class interacted online once per week for four hours. This included one hour of mandatory synchronous chapter discussion and instruction. The other three hours were the instructor’s online office hour time, students’ use of the class file server for class activity, and students’ optional online peer help sessions. In most cases students continued to use IM as their mode of online communication during these three hours. Outside of this time students also contacted each other, most of the time using IM but also using e-mail and other methods.

Directions

Here are statements describing how you feel about using IM software for real-time online-chapter-discussion in this course. For each statement listed, by comparing to other education courses you have taken (if there have been any) in a conventional classroom, please click one answer corresponding to the degree to which you feel about that statement.

Compared to other education courses I have taken in a conventional classroom, in this course we used IM software for real-time online-chapter-discussion,

Principle #1: Encourages Contact Between Students and Faculty

1. . . . I feel the amount of one-on-one interaction with my instructor that I have had during the online-chapter-discussion meeting period is

Much Higher	Somewhat Higher	About The Same	Somewhat Lower	Much Lower
5	4	3	2	1

Figure 3: Sample survey question.

Subjects were told that their participation would be part of their class activities but their grades would not be affected by their participation in the study. The content and instructor were the same for all sections. All sections were taught how to use IM as a part of class content, and then were required to use IM for structured class discussions at regularly scheduled times outside of class. The discussion chapters, guidelines, and schedule were provided on the course syllabus for all subjects.

Instrument

An attitude survey was used in the study. The complete survey is online at http://wang.ed.csuohio.edu/JCTE/IM_survey.pdf; see Figure 3 for a sample question. The survey instrument was deliberately constructed to address four of Chickering and Gamson's "Principles for Good Practice" (see above). Of the 47 questions, 8 addressed principle one (i.e., encourages contact between students and faculty), 12 addressed principle two (i.e., develops reciprocity and cooperation among students), 13 addressed principle three (i.e., encourages active learning), and 14 addressed principle four (i.e., gives prompt feedback). The format of the questions required students to mentally compare specific aspects of their current (IM-using) class to similar aspects in other (non-IM-using) education classes with which they had experience. For each question they reported if their experience was either much higher (5), somewhat higher (4), about the same (3), somewhat lower (2), or much lower (1) than what they experienced in their other conventional non-IM-using education classes. An example of principle one would be students' comparison of the amount of one-on-one interaction with the instructor during the online-chapter-discussion period. An example of principle two would be students' comparison of the amount of sharing between classmates of their ideas on the learning topic. An example of principle three would be students' comparison of the time spent more as an active participant than a passive listener. An example of principle four would be students' comparison of the likelihood of getting timely responses from the instructor on a question addressed during the online-chapter discussion period. Items were summed in Likert fashion with reversals where necessary to generate summated scales for each principle. The Cronbach's alpha inter-item reliability coefficients were .895 for principle one, .837 for principle two, .891 for principle three, and .855 for principle four.

Procedures

On the first day of class, every participant was taught how to download and install the IM software being used by the class. Also on the first day of class, all students were taught how to use IM, both in general and for the purpose of discussing an assigned topic, and also how to save conversations and discussion within the IM environment to disk. Students

were then informed that during the rest of the semester they would be required to carry out a planned series of class discussions, which would center around assigned topics drawn from major textbook chapters and would take place entirely within the IM environment according to a schedule provided by the instructor.

Within the IM environment, participants in conversations are identified by "screen names," or aliases, of their own choosing, rather than by their regular names. In some ways this is useful, as it can preserve anonymity; as one might surmise, anonymity can also be associated with problems. Since this anonymity is an attribute of IM as commonly used, the instructor chose to preserve this quality during class discussions in order to study a "typical" IM configuration, although none of the research questions or questionnaire items dealt

directly with this attribute. The instructor collected a complete list of students' screen names, so that the instructor (and only the instructor) would be able at any time to recognize the true identity of all participants in a class discussion. The instructor then placed a complete list of student screen names (without the associated full names) on the class file server. Each student was then able to access this list of screen names, which they could use to set up a "buddy list" (i.e., a list of individuals with whom they could communicate via IM) on their own computers at home or at school. This process made it possible for any student to initiate contact with the entire class through a single mouse click after logging into the IM environment.

Meanwhile, each student was asked to choose a single chapter from the class text for which they would be responsible for leading a one-hour online chapter discussion. There would be one discussion per week throughout the semester, according to the schedule in the syllabus. In the case of more students than chapters, students were asked to form a team of two students to lead the corresponding chapter discussion. A full schedule containing the names of the discussion leaders was posted to the class file server and remained there for the remainder of the semester as a reference point. Posted with this schedule was a detailed set of guidelines and expectations to be followed by each student discussion leader.

In an effort to maximize the chances of a successful initial experience for the class, the instructor hand-selected the leader for the first discussion to take place within each class. The criteria were informal, but included a demonstrated competence and comfort level with both IM technology and group leadership, and the choice was made in each case with the full consent of the individual selected.

In order to help the students become familiar with this IM mechanism, the instructor encouraged the students to practice using IM with the instructor and their classmates outside of class beginning immediately after the first class meeting; therefore students were able to consult the instructor or other classmates about problems encountered regarding the usage of the IM program. They were also encouraged to interact online with the individual who was scheduled to lead the first discussion. After this second week, although IM-based contacts between the instructor and students continued, as did IM-based contact between individual students, the focus shifted to the use of IM for structured class discussions.

As a result of this procedure, all the participants were able to successfully log on to the IM program and enter the designated IM discussion group at the scheduled times before the online chapter discussions began. The leaders were also able to follow all guidelines provided by the instructor, showing up online successfully about fifteen minutes before the discussion time as scheduled, and then inviting those participants who were

wandering around “outside” into the designated IM discussion group. Then, the online-chapter-discussions proceeded as expected under the leaders’ guidance and instructor’s facilitation as scheduled. The instructor took attendance online as a means to ensure full class participation; online attendance, quantity, and quality of a student’s online interaction were formal portions of the “class participation” criterion, which constituted 10% of a student’s final grade.

Data Collection

All subjects completed a questionnaire. The questionnaire and data collection were administered online using a custom PERL (Practical Extraction and Reporting Language) script. The resulting computer program recorded all the data while the subjects were answering the survey. The data included user identification, password, login and logout time and validation, and the answers a student submitted to the survey questions.

Data Analysis

The data were analyzed to assess whether or not the students rated their IM learning differently from their prior learning in classroom-based education courses. Two-tailed t-tests were used to assess whether their mean perception scores on each of the four principles differed from the test value of 3, signifying “about the same.” This technique permitted each student to select subjectively her or his own comparison group, but within a relatively homogeneous pool of conventional education courses. What was distinctive about all comparisons that students made was the experimental treatment of this study—none of the other courses used IM.

Results

Table 1 presents the means, standard deviations, significance tests, and 95% confidence intervals for the four difference scores. As indicated, subjects rated their IM experience as being significantly different on all four principles ($p < .001$), with all differences in the positive direction. The confidence intervals all have lower bounds substantially above the no difference rating of three, providing further evidence of the robustness of our sample findings.

Although the tests of mean differences for all the four principles were highly significant, in order to assess possible variation in how IM affected students learning on these criteria, Figure 4 presents effect sizes computed from the mean difference for each principle $[(i = 1, 2, 3, 4) - 3]$ divided by its standard deviation (σ). In absolute magnitude, any effect size that is larger than .25 is customarily considered a meaningful one, and Figure 4 clearly shows that all effect sizes exceed this value.

The strongest effect of IM was for the students’ perception that the IM experience promoted a higher degree of student cooperation. This effect size of 1.9 ($\sigma = .484$) is higher than the next strongest effect size of 1.3 for the perception that IM increased active learning. Noticeably lower but still substantial effect sizes for IM were in their perceptions that IM increased contact with the instructor and increased prompt feedback, with effect sizes of 1.0. The relative order of these effect sizes suggests that IM’s primary effect was in promoting student activity level, and secondarily in strengthening contact with the instructor.

Conclusions and Discussion

These findings on the four principles constitute support for each of the corresponding four research questions in our study. First, using IM for synchronous online chapter discussions of the textbook heightened students’ perceptions of their contact with the instructor. The positive mean difference on this principle one (effect size 1.0, $p < .001$) indicates they reported a higher level of one-on-one interaction with the instructor both during the class and outside of class. Associated with this, they reported a higher degree of advice and encouragement from the instructor on

Table 1: Analysis of Ratings on Chickering and Gamson’s Four Principles by IM-Using Subjects (n = 43)

Principle	Mean*	Standard Deviation	t-value	p-value	95% Confidence Interval
One (Contact with Instructor)	3.698	.718	6.37	<.001	(3.477, 3.919)
Two (Student Cooperation)	3.931	.484	4.48	<.001	(3.182, 3.480)
Three (Active Learning)	3.691	.546	8.29	<.001	(3.522, 3.859)
Four (Prompt Feedback)	3.553	.578	6.28	<.001	(3.375, 3.731)

* 5: **Much higher.** 4: **Somewhat higher.** 3: **About the same.** 2: **Somewhat lower.** 1: **Much lower.**

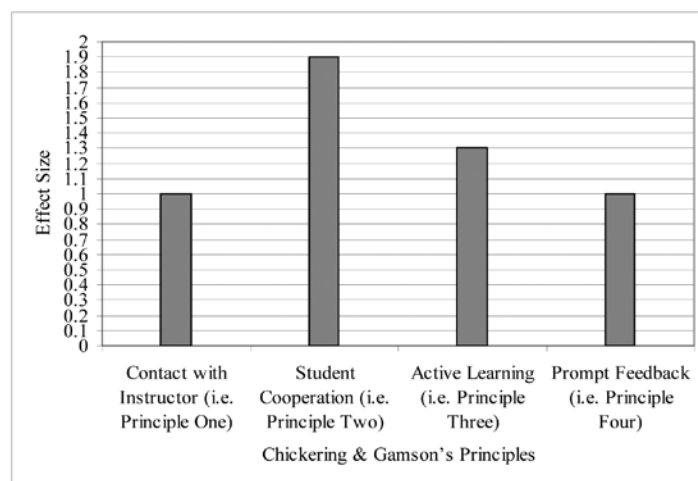


Figure 4: Online interaction effect sizes of IM as perceived by students.

class assignments, felt the instructor showed a higher level of concern for them, and were more likely to report knowing the instructor as a whole person and valuing the instructor as a professional role model. Note that assessment of Chickering and Gamson’s first principle does not include any content pertaining to amount of contact directly between students. The items focused only on whether or not student contact with the instructor was higher.

Next, the second principle addressed the issue of heightened student reciprocity and cooperation as a result of using IM for online chapter discussion. The significant mean difference (effect size 1.9, $p < .001$) on this principle represents their perception they were more likely to share ideas and understandings of the learning topics, that they were more likely to make suggestions on improving other classmates’ ideas, including half-baked suggestions, and that this intellectual stimulation was a major part of the course learning experience. Associated with this greater task activity were more positive emotional responses to the interaction. They were less likely to resent a classmate with better ideas, less likely to feel embarrassed when challenged with a better idea, more likely to enjoy helping others, less likely to feel others were providing “noise” to slow the discussion, and finally, less likely to feel emotionally and intellectually isolated.

The third principle referenced whether IM increased the amount of active learning the students experienced in this new online environment. The large mean difference (effect size 1.3, $p < .001$) summarizes their item responses that they did more preparation to participate in the chapter discussion and were more likely to contribute experiences from their real-world teaching. They also reported that during the discussion they wanted to be an active participant more than a passive listener for

greater amounts of time. Others' suggestions were more likely to inspire their responses, and more likely to cause them to reflect on their response before doing so. They reported a greater sense of responsibility to prepare for the discussion and contribute meaningfully and felt an increased ability to make novel contributions. At the end of the discussions, they had a greater sense that their contributions had been appreciated and acknowledged by the classmates and by the instructor.

Finally, the fourth principle assessed how well IM promoted prompt feedback from both students and instructor during their online discussion. This significant mean difference (effect size 1.0, $p < .001$) indexes their perception that they were more likely to get answers to their questions from classmates and the instructor, more likely to know if the instructor and classmates agree with their contributions, and were less concerned about negative judgments of these contributions by their classmates and instructor. They believed their questions more often received answers that were helpful, but that classmates and instructors were also more likely to correct an unhelpful contribution from another classmate. The length of time for the instructor to respond to a student's contributions was perceived to be lower. This give-and-take interaction with the instructor and classmates heightened their sense that at the end of the discussion their understanding of the chapter was higher.

Limitations and Suggestions

Students were asked to mentally compare to other classes taken in a traditional setting; for many students, the instructor(s) in those classes would have been someone other than the authors. Were the positive results in this setting the result of IM, or the results of the authors' pedagogy? This is a pilot study; over time, the authors intend to gather data on a comparison sample of students in their own classroom sections (but not using IM), to determine the source of the observed differences.

Another limitation is rooted in the fact that instant messaging varies slightly from one program to another, and that IM in general is similar but not identical to other forms of synchronous online communication. To what extent would these results be duplicated with other forms of IM software? To what extent would they be duplicated with other types of synchronous online communications, such as those built into many modern course management systems? Those questions are beyond the scope of this study, and could only be answered through further research.

This study used only the first four of the Chickering and Gamson's seven principles. In the future, the authors may expand the study to incorporate the remaining three. The differential strength of the positive assessments on these first four, for example, suggests the merit in future research of addressing the issue of how IM may affect online interaction differentially. The reason for the somewhat smaller effects for the first and fourth principles, contact with instructor and prompt feedback, relative to the second and third, student cooperation and active learning, warrants further examination. Our leading hypothesis is that the online interaction experience reduces perceptions of transactional distance primarily among students, in the help they get from each other and in the instruction they prepare for one another. This experiential gain in the form of mutual peer tutoring may be stronger than their sense of increased interaction with the instructor. It is not so much that the instructor has become more distant because of physical separation due to the medium of online communication; it is rather that the students experience a new sense that they are indeed learning from each other, and hence the instructor's direct contribution may be perceived as relatively diminished. The students in our study were fulfilling a requirement for educational technology in their Master's level teacher education program. Use of IM in other subject areas and by other student levels needs to be examined in order to assess the generalizability of the strong positive perceptions of IM in our subject area sample.

Significance of Study

Other researchers have confirmed that the seven principles of undergraduate education are in fact highly correlated with quality of instruction (for examples, see Chickering & Ehrmann, 1996). This study confirms that teacher education students view IM as being an instructional technique which in fact significantly contributes to the presence of (at least) four of these seven principles in the classroom. Our findings regarding the perceptions of this group of students suggest that synchronous online class interaction using Instant Messaging can significantly facilitate four of the seven principles: promoting cooperation among the students, and active learning, and secondarily, prompt feedback and contact with the instructor. In the language of Michael Moore, it appears that these interactions taking place via IM do in fact have the potential to increase dialogue within an online class, thereby reducing transactional distance and lowering the level of autonomy required for individual student success.

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Call for Manuscripts for *Digital Literacies and the Future of Schooling*

**Please consider submitting an article
for the *Journal of Computing in
Teacher Education* theme issue
entitled, *Digital Literacies and the
Future of Schooling*.**

The deadline for submissions will be **April 1, 2009**.

Background

Advancements in networked information and communication technologies (ICTs) have changed the way people work, participate in democratic institutions, and find personal fulfillment. Literacy practices are being redefined as people communicate in chat rooms and videoconferences, participate in virtual worlds and online role-playing games, and create digital media. The continuous changing nature of ICTs necessitates definitions of literacy that capture the complexity of the literacy practices in contemporary society. These new literacy practices will require changes in literacy instruction if schools are to keep pace with the realities of contemporary life. Traditional literacies will still be important, but will no longer be enough to fully prepare children for life in the 21st century. To best prepare students, schools need to reshape curriculums that account for the diverse and changing global conditions that have generated new literacies.

Research in the field of educational technology has largely focused on the efficacy of technology on learning (Salomon, 2000; Harrison, 2006; Hew & Brush, 2006). While research of this type has contributed valuable knowledge to the field, there is also a pressing need to examine the changing nature of literacy and literacy practices associated with new uses of ICTs (Leu & Kinzer, 2000; Gee, 2003; Knobel & Lankshear, 2003). To this end *JCTE* is seeking articles that elaborate the relationship between digital literacies and schooling. Potential topics include:

- The changing nature of literacy related to ICTs and what this means for teachers and school leaders.
- Digital literacy practices in out-of-school spaces and how they can be applied to classroom learning.
- The relationship between digital media, identity, and literacy.
- Teacher education programs that have specifically focused on the development of digital literacies with preservice and/or inservice teachers.
- Policies related to literacy, technology, and learning.
- The assessment of digital literacies at the classroom, school, or district level.