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Instant Messaging in a context of virtual schooling: balancing the affordances and challenges

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This article reports on a case study of Instant Messaging (IM) in a context of high-school virtual schooling. Data collection relied on interviews conducted with 20 participants in a context of high-school web-based instruction in Newfoundland and Labrador, Canada. The participants included e-teachers as well as other distance education personnel. Inductive analysis of the interview transcripts resulted in the identification of six categories of findings that we have labeled as follows: IM instructional affordances; IM comfort and preference; IM and classroom management; IM and social presence; IM and private versus public conversations; and IM and multitasking. The findings illustrate some of the challenges that can arise when a tool that typically serves solely a social purpose is appropriated into an educational context. Implications include the need for a knowledge base and professional development related to instructional strategies and techniques for managing IM and for capitalizing on the affordances offered by the tool.

La Messagerie Instantanée dans un contexte d'école virtuelle : établir un équilibre entre les capacités et les défis
Cet article relate une étude de cas de Messagerie Instantanée (MI) dans un contexte de scolarité virtuelle au lycée. La collecte des données s'est fondée sur des entretiens menés avec 20 participants dans un contexte d'enseignement au lycée reposant sur Internet à Terre Neuve et au Labrador au Canada. Les participants étaient des professeurs de cours en ligne ainsi que d'autres personnels de l'enseignement à distance. Une analyse inductive des transcriptions de ces entretiens a abouti à l'identification de six catégories de découvertes que nous avons étiquetées comme suit: capacités éducatives des MI ; confort et préférences en matière de MI ; MI et gestion de la classe ; MI et présence sociale ; MI par rapport aux conversations publiques/privées ; MI et multitâches. Les résultats illustrent quelques uns des défis qui peuvent surgir lorsqu'on s'approprie un outil dont la fonction majeure est spécifiquement d'ordre social pour le transférer dans un contexte éducatif. Les conséquences que l'on peut tirer sont la nécessité d'une base de connaissances et d'un développement professionnel liés aux stratégies éducatives et aux techniques de gestion de la MI ainsi qu'à l'exploitation des potentialités qu'offre l'outil.

Instant Messaging im Kontext einer virtuellen Schule: Abwägen von Leistungen und Herausforderungen
In diesem Artikel wird über eine Fallstudie von Instant Messaging (IM) im Kontext einer virtuellen High-School berichtet. Die Datensammlung beruhte auf Interviews, die mit 20 Teilnehmern im Rahmen eines Web-basierten High-School Unterrichts in Neufundland und Labrador, Kanada, durchgeführt wurde. Die Teilnehmer bestanden aus "eLehrern" und anderem Fernstudiums-Personal. Eine induktive Analyse der Interview-Transkriptionen führte zu einer Identifikation von sechs Kategorien von Befunden, die wir wie folgt bezeichnet haben: instruktionale Affordanz (Angebotscharakteristik) von IM; Komfort und Vorliebe bei IM; IM und die Organisation einer Schulklasse; IM und soziale Präsenz; IM und private versus

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öffentliche Konversation; IM und Multitasking. Die Ergebnisse beleuchten einige typische Herausforderungen, die dann entstehen, wenn ein Werkzeug, das typischerweise einem sozialen Zweck dient, in eine Lernumgebung übernommen wird. Implikationen beinhalten die Notwendigkeit einer Wissensbasis und einer "professionellen Entwicklung", die auf Strategien beim Unterricht, Techniken für die Organisation von IM und auf die Affordanz konzentrieren, die dieses Werkzeug bietet.

La mensajería instantánea dentro de un contexto de escuela virtual: una evaluación de las capacidades y de los desafíos
Este artículo presenta un estudio de caso de mensajería instántanea (MI) dentro de un contexto de escuela secundaria a nivel del colegio. La colecta de datos se fundó en entrevistas conducidas con 20 participantes dentro del contexto de cursos de colegios basados en la Web en Terra Nova y Labrador en Canadá.Los participantes eran e-profesores además de otras categorías de personal de educación a distancia. Un análisis inductivo de las transcripciones obtuvo como resultado la identificación de seis categorías de resultados que hemos clasificados como sigue : capacidades educativas de la MI, comodidad y preferencias de las MI ; MI y gestión de la sala de clase, MI y presencia social, MI y las conversaciones privadas contra las públicas; y MI y multitareas. Esos resultados ilustran algunos de los retos que pueden aparecer cuando se apropia una herramienta que típicamente desempeña solamente un papel social, para transferirla a un contexto educativo. Las conclusiones que se puede sacar incluyen la necesidad de una base de conocimiento y de un desarrollo profesional relacionado con estrategias educativas y con las técnicas para administrar la MI y para aprovechar las capacidades que ofrece la herramienta.

Introduction

With an estimated 130 million users worldwide (Farmer, 2003), Instant Messaging (IM) is "one of the most popular online applications" (Hu, Wood, Smith, & Westbrook, 2004) and is increasingly common in education, home, and corporate contexts (Farmer, 2003). In spite of its growing prominence, IM has received comparatively meager attention in the educational technology literature. In a review of research on computer-mediated communication in education, Hrastinski and Keller (2007) commented: "Even though students seem to like and know how to use synchronous media, few researchers are conducting research on such media" (p. 74). In general, there has been limited research on the use of synchronous text-based chat in educational contexts (Cunliffe, 2006).

With some exceptions (e.g., Kinzie, Whitaker, & Hofer, 2005), studies of IM in educational contexts have been limited to distance education settings (e.g., Chou, 2002; Contreras-Castillo, Favela, Perez-Fragoso, & Santamaria-del-Angel, 2004; Contreras-Castillo, Perez-Fragoso, & Favela, 2006; Davidson-Shivers, Muilenburg, & Tanner, 2001; Hrastinski, 2006; Nicholson, 2002; Spencer & Hiltz, 2003). There have been some studies in second- or foreign-language learning courses (e.g., Cheon, 2003; Crolotte, 2005; Ghani & Daud, 2006; LaPointe & Barrett, 2005; Payne & Whitney, 2002). The majority of these studies were conducted in post-secondary settings, either at the undergraduate or graduate level. Additionally, participants in studies of IM in distance education contexts were generally students. One exception is Spencer and Hiltz's (2003) study, which involved surveying faculty and students about their perceptions of synchronous chat.

Other studies conducted in educational contexts have included IM, not as the focus of inquiry, but within a broader comparison of synchronous and asynchronous communication. For example, Chou (2002) explored interaction patterns, Hrastinski (2006) focused on participation in online group work, and Davidson-Shivers et al. (2001) compared types and amounts of communication statements in graduate students' discussions in asynchronous and synchronous mode. Schwier and Balbar (2002) investigated perceptions of synchronous and asynchronous

online communication in order to identify the value and limitations of online synchronous communication in a post-secondary setting. Nicholson (2002) compared differences in communication between graduate students who relied on asynchronous interaction alone and those who also relied on IM available within a course. Findings of Murphy and Ciszewska-Carr (2007), Murphy and Laferrière (2002, 2006), and Nippard and Murphy (2007) in post-secondary and secondary contexts included an emphasis on IM although the studies themselves were part of a broader focus on online synchronous learning environments such as E-Live.

The paucity of literature on the use of IM in teaching and learning means that we have not generated a knowledge base related to its use in this context. Such a knowledge base could potentially inform policy decisions, support the development of theory, and guide pre- and in-service teacher education and professional development programs. Our article aims to contribute to this knowledge base. We focus on IM classroom use as experienced and perceived by high-school e-teachers and other professionals in a high-school distance education context with teenagers.

Few studies have been conducted at this level in contexts of teaching and learning. This is in spite of the fact that IM is becoming the technological tool of choice for this age group. Surveys of youth ages 12–17 conducted in the United States have indicated that this segment of the population uses IM more than adults and even prefers IM over email (see Lenhart, Madden, & Hitlin, 2005; Lenhart, Rainie, & Lewis, 2001). In addition, our findings come from a context in which students are in an online learning environment that has IM readily available to them as a communication tool. The study also focuses on IM from the perspective of the teachers themselves and of other distance education personnel, thus adding to the limited number of studies of the phenomenon from the perspective of these individuals.

Study context, design, and methods

The case

The findings presented in this article come from a broader exploratory case study (Yin, 2003) of web-based distance education at the high-school level in the province of Newfoundland and Labrador, Canada. The Centre for Distance Learning and Innovation (CDLI), created in 2000, is responsible for virtual schooling within the province. CDLI complements physical schools' offerings in that their students are physically located in remote and rural schools. Geographic isolation, declining enrolments, and extreme demographic conditions resulting from out-migration and population decline make it difficult for these schools to offer the same range of courses as do urban schools. In many cases, a CDLI student may be one of a few students in his or her school.

Delivery of instruction relies on asynchronous and synchronous communication through use of the learning management system WebCT^{TM} and of Elluminate Live^{TM} (E-Live). The E-Live environment supports simultaneous voice-based (audio) and text-based synchronous communication. Other tools available in the E-Live environment include a whiteboard, an application sharing tool, Class List Display, Graphing Calculator, and a polling feature. Due to bandwidth requirements at the time of the study, use of videoconferencing was limited in this context.

E-Live incorporates text-based Direct Messaging or what we refer to in this article with the generic term of Instant Messaging (IM). The IM window supports synchronous text-based conversation which can occur along with other types of interaction such as through audio conferencing. The window can be used to send instant text messages to everyone in the group, to selected individuals, or to another individual. The moderator of E-Live sessions has the ability to grant and remove the IM privilege for one or more individuals. IM discussions can also be saved for subsequent review. Figure 1 shows the E-Live window as it appears on the computer screens of session participants and highlights the Direct Messaging or IM window. Figure 2 shows only the IM window with its main features. In both figures we have added notes indicated with arrows.

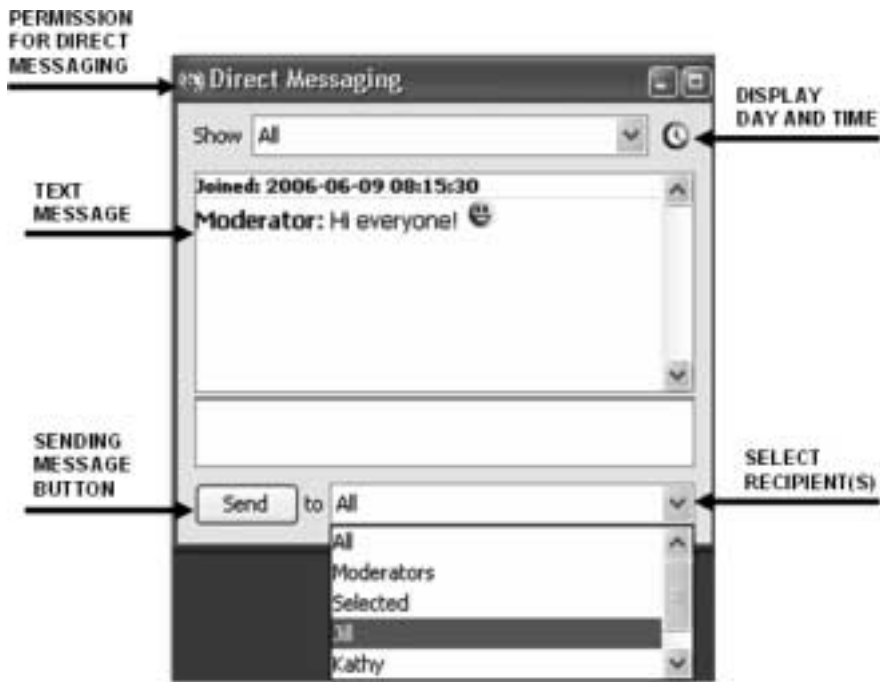Figure 1.   Direct Messaging (IM) window in Elluminate Live (E-Live, 2006).

Figure 2.   Direct Messaging (IM) window and features (E-Live, 2006).

Data collection

Participants included 13 e-teachers as well as the director, former director, guidance counselor, and personnel responsible for program development, program delivery, teacher professional

development, and communication and connectivity services. Among the e-teachers interviewed, three were female, whereas all the other participants in the study were male. The e-teachers worked from different locations in the province and taught a variety of subject areas, such as mathematics, physics, chemistry, biology, language arts, social studies, music, French, art, communications technology, and career development. Some had up to more than 25 years of previous experience teaching in face-to-face classrooms. Several had been working for CDLI since its inception in 2000, whereas others had been hired more recently. Among the participants in the study, several interviewees had experience with education at a distance in the province through the teleconferencing model that preceded web-based learning and had worked in various capacities in that context, from content and course design to instruction. That model did not include IM as a tool. This means that use of IM as part of teaching was generally new for the individuals who participated in this study.

Data collection relied on semi-structured interviews (Patton, 1990). Two of the participants were interviewed in person, whereas all others (including all e-teachers) were interviewed using E-Live. Interviews lasted from 90 to 120 minutes. The interview script for e-teachers included questions related, for example, to their background, history, teaching approach and style, online learning, wish list, and teacher stories. Questions for the other participants were similar but also included a focus on the organization, its values and goals, as well as on constraints and possibilities. Interviews were subsequently recorded and transcribed.

Data analysis

Transcription resulted in approximately 300 pages of text. Subsequently, Coder A, who had training and experience in qualitative data analysis, began coding the transcripts. The process involved reading the transcripts, identifying units of meaning and at the same time assigning codes to them. We chose the unit of meaning or thematic unit (Henri, 1992) as the unit of analysis. The unit of meaning is "a statement or a continuous set of statements, which convey one identifiable idea" (Aviv, 2001, p. 59). We relied on the software MAXqda2^{TM} to facilitate analysis and overall data management. We did allow for a unit to be included in any number of categories. For example, a unit in which an interviewee talks about IM and how it might promote rapport was coded in a category labeled *Tools and environment* as well as in a category labeled *Rapport*. In some cases, the boundaries of units overlapped. Some segments of the interviews were not coded. These were extraneous comments such as those of the interviewer.

One of the categories that resulted from the analysis of the 300 pages was that of *Tools and environment*. This category included eight labels or sub-categories as follows: Instant Messaging (38 units), Elluminate Live (13 units), WebCT (23 units), Blogs (1 unit), Breakout rooms (2 units), Whiteboard (2 units), Asynchronous versus synchronous (12 units). For the purpose of this article, we proceeded to recode the 38 units of Instant Messaging for a more fine-grained analysis. Coder B, the principal researcher, oversaw the process of data coding and worked collaboratively with Coder A to verify, confirm, or alter labels for the units. Once all the units were labeled, we searched for patterns and subsequently grouped similar units into categories.

Findings

The process of inductive analysis of the interview transcripts culminated in the identification of six categories of findings as indicated in Table 1. These were IM instructional affordances; IM comfort and preference; IM and classroom management; IM and social presence; IM and private versus public conversations; and IM and multitasking. Some of the categories included sub-categories as reported below.

Table 1.   Categories and sub-categories of findings.

Category	Sub-categories
IM instructional affordances	Checking for understanding
	Increasing classroom participation and communication
	Communicating with students outside instructional time
	Archiving and evaluating
IM comfort and preference	Tool comfort
	Voice versus text preference
	Learner- versus teacher-centered use of tools
IM and classroom management	Control of text chat versus voice chat
	Permissions and privileges
	On-task versus off-task chat
IM and social presence	Reducing distance
	Interaction
	Rapport-building
IM and private versus public conversations	No sub-categories
IM and multitasking	No sub-categories

We report findings according to the six IM categories. We have chosen a reporting style in which we aim as much as possible to use the actual words of the interviewees in order to communicate our findings vividly and meaningfully (Walker, 1985) and to demonstrate credibility of findings (Bogdan & Taylor, 1975). We reserve interpretation of findings for inclusion in the discussion section.

IM instructional affordances

Participants in our study identified a number of affordances that IM offers to teaching and learning. During the interviews, most of the teachers identified IM as an instructional tool that can be relied on to ask students questions, test their understanding, test their ability, or get their opinion. In a face-to-face classroom, sometimes a student's question never gets responded to. However, because IM allows instant responses from the whole group, it can make it easier to increase class participation and interaction with the e-teacher. IM can also make it easier to address students' feelings and opinions. In fact, e-teachers may get constant messages from students who they would never hear anything from in class.

IM can also be relied on outside of synchronous classes in order to provide ongoing feedback and guidance to individual students. An e-teacher can make him- or herself available to students using text chat in MSN (Microsoft Network), keeping in contact night and day. In that situation, an e-teacher is constantly on call, which is challenging but also very convenient for students because they know the teacher is approachable. Archives of IM sessions can be used in the context of evaluation and can also be presented to students as notes created by them. Additionally, IM can be archived simply to record the "gossip" so students can go back over it afterwards.

IM comfort and preference

A term used to describe CDLI students was "MSN kids". These students spend a lot of time messaging, are very proficient at that type of chat, and have their own vocabulary. IM is the tool that they use most in the online environment. The fact that they also use messaging constantly

outside of the classroom means that they may be more comfortable, advanced, and proficient with it than are e-teachers. During synchronous periods in E-Live, students prefer to use IM as opposed to audio. The e-teachers, in contrast, want to hear students' voices, hear from them verbally, and have them speaking as much as possible.

This preference may be even more pronounced in cases where the e-teacher is aiming to provide students with the skills needed to communicate orally and publicly. For students located in physical schools where there are few or no peers, talking online may be the only other opportunity they have to communicate orally with their own age group. Yet some students are very reluctant to use the audio and shy away from it. Ultimately, the decision of whether to use IM or voice may be a matter of give and take or it may be a matter of adopting a more student-centered approach to tool use in the classroom. One administrative staff member referred to this approach as one that would "bridge to what's comfortable and safe for the students" and "penetrate the world of the student in the technologies that they are accustomed to using".

IM and classroom management

Use of IM in the virtual classrooms in our study gave rise to a number of classroom management issues. In a face-to-face environment, teachers have to maintain some control and students do not talk unless they have a question. However, in the virtual classroom, students are often observed carrying on conversations parallel with the instructor's voice. This use of IM is, as reported by one e-teacher, "like talking in class, only it [is] quiet talk". Sometimes, the conversations are on-task, while other times they are private conversations of a social nature between students.

One approach to controlling these private conversations might be to take away the IM privilege or permission, but this may not be an effective solution, as one e-teacher noted: "You can say to the students, 'Nobody is allowed to type in the direct messaging …,' but that's going to limit the amount of interaction". Another approach to resolving this problem might be to permit use of IM only as long as it is on-task chat.

IM and social presence

Unlike in a face-to-face classroom, where noise is disruptive, in the virtual classroom, some text chat is not disruptive and is, in fact, tolerable and encouraged because it adds to the climate. Promoting IM, as one e-teacher commented, "brings [students] that much closer together as an actual class" and "takes away some of the distance that's between them". In fact, IM can help promote social interaction, for example through chatting and socializing before synchronous classes begin. It provides e-teachers with the opportunity to know students personally. E-teachers can even feel their personality more easily than in a face-to-face classroom. Getting to know students is facilitated by the fact that they are conversive in IM and feel that they "can say things online that they might not say … face-to-face", as one e-teacher noted. Students are accustomed to using IM in very complex ways and as a social vehicle. They are very open in IM, as illustrated in the following comment by another e-teacher: "Students will tell you much more honestly how they feel if they type it, as opposed to going up to you face-to-face …".

IM and private versus public conversations

The IM tool in the E-Live environment provides the option of sending private versus public messages. Private messages can only be viewed by the sender, the receiver, as well as the moderator of the E-Live session, who, in the case of our study, was the e-teacher. Use of private messaging represents a strategy that the e-teacher can rely on when drawing responses from shy students, so that they are not forced to communicate publicly for the entire class. However, e-teachers

sometimes face dilemmas regarding private and public uses of IM. Having IM open for public use may result, as one e-teacher mentioned, in "the same thing [as] in a regular classroom" where "the same student will answer the question". In contrast, it may result in students "making comments or making jokes" as the e-teacher is teaching. Yet, turning off IM may make students "less likely to comment [and result] in two-way interaction" between the e-teacher and isolated students.

IM and multitasking

Use of IM requires e-teachers to simultaneously juggle multiple conversations, tasks, activities, and interactions. They must be able to talk using the microphone and read the IM and respond to it at the same time. Trying to teach while managing IM conversations, as one e-teacher described, echoing other participants' view, is "tough" and "brutal" in some cases, to the point that multi-tasking alone would "turn a lot of people off from teaching online". The e-teacher added that those used to "quiet and peaceful, very controlled teaching in a classroom" would likely find the multi-tasking required to be "crazy". One e-teacher described how managing the simultaneous use of tools and modes of communication made him feel like "an octopus … , do[ing] everything at the one time".

Discussion

IM was originally conceived to support synchronous, text-based interactions and has been widely appropriated as a social networking tool. Like other computing devices (see Gibson, 1977), it was not conceived or designed as a tool for learning. Even when a new tool such as IM is integrated into learning, it may not be used to its maximum potential (Farmer, 2003). With respect to IM, McGreal and Elliott (2004) indicate that it is "not yet used as an efficient content-delivery teaching tool" (p. 125). Our findings provide an example of a case in which a social networking tool such as IM has shown potential as a teaching tool. Its affordances as teaching tool were, however, shadowed by tensions, issues, and challenges.

In terms of the affordances, participants identified the capacity of IM to support social interaction and rapport-building. They also observed that, in a context of virtual schooling where learners are geographically dispersed from each other and from the e-teacher, IM can be an effective tool for social interaction and rapport-building. The important role of the social in learning is reinforced in the literature on social presence (see Gunawardena & Zitte, 1997; Picciano, 2002; Richardson & Swan, 2003; Rourke, Anderson, Garrison, & Archer, 2001; Swan, 2003).

In addition to the role that IM can play in the social domain, our participants also identified other affordances that directly support instruction. These included immediate, constant, and comprehensive checking for understanding and providing feedback; providing one-on-one contact outside of instructional time; archiving classes; and evaluating students. In this context of virtual schooling, IM represented a tool that, if properly used and managed, can effectively support the instructional process.

As with any case of use of technology, users have to be able to capitalize on the affordances while at the same time managing the tensions, issues, or challenges that can accompany them. One of these tensions manifested itself in terms of needing to promote or tolerate off-task chat because it encourages interaction and rapport-building while at the same time maintaining control over instruction and ensuring that students are on-task. Some strategies were proposed but no clear resolution to the tension emerged in the findings. One approach suggested was to deny students the tool privilege or permission. However, that approach would deprive students of the tools with which they are most comfortable and which have a potentially important social and instructional role to play.

We can deduce in relation to this one case of use of IM in an educational context that the introduction of IM into a classroom environment requires strategies, techniques, and an ability to juggle purposes and manage tasks. The participants in our context had not received direct professional development in the use of IM in this context. Not surprisingly, therefore, while they identified the affordances and challenges related to use of the tool, they did not always identify specific strategies to balance the affordances with the challenges.

Conclusions

As we noted at the beginning of this article, in spite of its growing prominence, IM has received comparatively meager attention in the educational technology literature. This lack of attention may be due in large part to the fact that IM has not played a prominent role in educational contexts. Our findings contribute to the literature in this area by providing insight into a unique educational context in which IM has played both a social and an instructional role. Our findings provide insight into IM's affordances and illustrate some of the challenges that can arise for teachers when a tool that typically serves solely a social purpose is appropriated into an educational context.

In a study of IM conducted in a post-secondary setting, Farmer (2003) concluded, "Clearly students have embraced this technology, while faculty have not" (p. 11). In our study at the secondary level, in contrast, e-teachers appeared to be embracing the technology in recognition of its value for rapport-building and interaction in a distance education context. Unlike in Nicholson's (2002) study of graduate students' use of IM, where not all students were knowledgeable about IM or comfortable with it, our participants highlighted high-school students' proficiency and comfort with IM. This difference could be due to the fact that our study was conducted in 2005, compared with 2002 for Nicholson's study, at which time IM might not have been a widespread phenomenon. Also, as noted in a previous section of this article, IM is more common amongst teenagers than adults (e.g., Lenhart et al., 2005). Thus, we can expect its prevalence to be greater in a high-school context such as the one presented in this article.

The issue of off- versus on-task chat with IM has been discussed in other studies (e.g., Chou, 2002; Ghani & Daud, 2006; Kinzie et al., 2005; Nicholson, 2002; Schwier & Balbar, 2002). Our findings provide insight into how teachers experience the combination of both types of conversation. The findings illustrate the delicate balance of simultaneously promoting social presence and building rapport through off-task chat while managing on-task interactions and conversations that are directly related to the instructional process.

The role of IM in promoting social presence, or "the degree to which participants are able to project themselves affectively" (Garrison, 1997, p. 6) within a medium, was evident in our study. Schwier and Balbar (2002) referred to the capacity of synchronous communication to promote a "sense of community". Our findings confirm those of studies in educational settings that have found that students overcome feelings of isolation and build community through IM (e.g., Contreras-Castillo et al., 2004; Hrastinski, 2006; Maples, Groenke, & Dunlap, 2005; Nicholson, 2002; Nippard & Murphy, 2007). E-teachers in our study used IM for establishing rapport with students during non-instructional time by providing students with the opportunity to contact them individually. Cunliffe (2006) and Jeong (2007) have also highlighted the value of this type of one-on-one contact. In Nippard and Murphy's (2007) study of virtual synchronous high-school classes, students' manifestations of social presence were achieved through use of IM whereas e-teachers' were through audio.

Our findings highlighted the challenges related to private versus public use of IM in the classroom, in terms of avoiding off-task chatting while at the same time promoting student participation and community-building. Monitoring and managing students' off-task private conversations

adds to e-teachers' requirements for multitasking. Similarly, in a study of post-secondary instructors' experiences of synchronous communication environments, Murphy and Ciszewska-Carr (2007) found that students' private messaging distracted the instructors.

Our findings relating to classroom management issues that arise as a result of IM are relevant because there has been little in the literature on this topic. Regarding IM use in post-secondary education, Murphy and Laferrière (2002) observed that it placed multi-tasking demands on instructors because of students' "unrestricted use of the tool" (p. 324). We found that our high-school e-teachers experienced similar challenges in terms of multitasking. However, while Murphy and Laferrière's study found that IM "emerged as the tool least compatible with instructors' current practices" (p. 324), in our study, high-school e-teachers highlighted instructional affordances of IM.

In terms of limitations, our study of IM in the virtual high-school classroom was conducted in one particular context of virtual schooling. Studies in post-secondary contexts might yield different results, as might studies conducted in contexts where students are not geographically dispersed from each other and their teacher. It is likely that the social role was emphasized in this case because students were geographically dispersed and because they may have had few opportunities for socialization in their small rural and remote schools and communities. In a context where there are video interactions, the social role of IM might be lessened. More studies are needed to confirm this hypothesis.

Our study did not include observations or analysis of IM exchanges. The fact that IM sessions can often be archived means researchers have access to transcripts that might undergo content analysis. We did not have access to these archives in our study. Obtaining access to IM transcripts written by students would have entailed additional ethics permission not only from the online organization delivering online courses, but also from the schools where students were registered and from the schools themselves. Use of additional data sources both from e-teachers and students, such as observation of IM use and archives of IM interactions, provide convenient and rich sources of data and would enhance triangulation.

Future studies might further investigate how high-school teachers and post-secondary instructors balance the affordances and challenges of IM use. These types of inquiry might contribute to a better understanding of what pedagogical strategies related to IM are most effective. In general, we need to know more about teachers' and instructors' experiences of IM use. Particularly useful would be studies that identify examples of best teaching practices with IM.

In terms of implications for practice, our findings illustrate some ways that IM can contribute to teaching and learning. One use of IM that participants identified was for rapport-building. This use may be particularly important in terms of promoting social interaction and social presence in contexts where students are geographically dispersed as they were in our context. Another implication for practice that emerges from the study's findings is that it might be detrimental to the learning process to deny students use of IM because of, for example, off-task chat. The issue of off-task chat also points to the need for professional development opportunities for teachers and instructors to learn how to best manage off-task chat specifically and IM in general in order to capitalize on its affordances.

Acknowledgements

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