

LEARNER CHARACTERISTICS AS PREDICTORS OF ONLINE SOCIAL PRESENCE

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In this study, the authors' determined the individual learner characteristics of educators enrolled in online courses that influenced social presence (affective social communication). Findings reveal that the number of online courses taken, followed by computer-mediated communication proficiency, are significant predictors of social presence. Recommendations for the effective use of online learning recognize that instructors must deliberately structure interaction patterns to overcome the potential lack of social presence of the medium. Similarly, quality instructional design and course development strategies need be incorporated with supportive pre-course instructional activities provided to acquaint novice learners with online learning expectations.

Key words: online learning, social presence, learner characteristics, computer-mediated communication

Cet article porte sur les expériences scolaires de jeunes africano-canadiens. D'habitude, les chercheurs ont tendance à souligner le piètre rendement scolaire des élèves noirs ou les problèmes reliés à leur échec scolaire ou encore à les présenter de façon stéréotypée comme des personnes bruyantes, paresseuses, portées à commettre des crimes, athlétiques, démunies, dangereuses ou ayant un comportement déviant. Cet article décrit plutôt des élèves noirs albertains qui réussissent bien leurs études en dépit de conditions très difficiles. Les données présentées indiquent que les facteurs comme le milieu familial et les encouragements des parents contribuent au succès scolaire.

Mots clés : élèves noirs, succès scolaire, milieu familial, éducation en Alberta

Johnson, Aragon, Shaik, and Palma-Rivas (2000) have criticized online learning because it does not enhance learning outcomes as measured by student satisfaction in comparison with traditional face-to-face instruction. Other researchers continue to raise questions about the quality of access, the ability of students to use and embrace new technology, the need for technical support, and the way to provide asynchronous communication (Packham, Jones, Miller, & Thomas, 2004; Phipps & Merisotis, 1999; Smith, Murphy, & Mahoney, 2003). Although increasing rates of student satisfaction for online learning are being reported (Allan & Seaman, 2004), Moody (2004) notes that higher enrollment attrition rates still exist, when evaluators compare online learning to traditional face-to-face learning environments.

To reverse these negative trends, a primary objective for online learning has become the creation of an environment where learners are at ease and experience comfort in their communications with others (i.e., social presence). This objective is desirable because evidence suggests that when learners experience a high degree of social presence they are more likely to engage in higher order critical thinking (Garrison, Anderson, & Archer, 2000); actively participate in computer-mediated communications (Danchak, Walther, & Swan, 2001); are less likely to drop out of their classes (Visser, Plomp, & Kuiper, 1999); and are more satisfied with their learning experience (Gunawardena & Zittle, 1997). The persistence and motivation of students taking online courses can also be influenced by learner characteristics that include age and sex (Packham et al., 2004); one's readiness for online learning (Smith et al., 2003); computer self-efficacy (Compeau & Higgins, 1995; Hayashi, Chen, Ryan, & Wu, 2004); the learner's cognitive characteristics (i.e., learning style and metacognitive skills); and preference or need for social interaction within the learning environment (i.e., group work and class discussion) (Miller & Miller, 2000).

The purpose of this study was to determine what, if any, individual learner characteristics predict the degree of social presence experienced for those enrolled in online, post graduate, special education courses. We administered a valid and reliable measure of social presence and determined learner demographic variables including age, sex, number of years teaching, number of online classes taken, and readiness for online

learning (as measured by computer-mediated communication proficiency). This research provides the opportunity to better assess what individual learner characteristics affect the degree of social presence experienced within an online learning environment and to determine the ensuing learner and instructional support necessary to optimize the online experience.

PEDAGOGY, ONLINE LEARNING, AND SOCIAL PRESENCE

Replicating online the sense of community experienced in a face-to-face environment by establishing social relations in a computer-mediated medium is a daunting task. In text-based systems, tools such as email, threaded discussion, and chat rooms are used to facilitate and support learner dialogue. The interactions in these systems (email, discussion, and chat) are a form of computer-mediated communication (CMC), which is not a neutral event because the way people communicate with one another affects social interaction patterns (Fulk & Collin-Jarvis, 2001) through the formats used (instructor-student, student-student, one to many). To help define these interactions in an online environment, scholars have advanced the concept of social presence.

The genesis of social presence lies in the conceptualization from social psychology of immediacy (Weiner & Mehrabian, 1968) and intimacy (Argyle & Dean, 1965) surrounding face-to-face communication. In face-to-face communication, immediacy refers to the psychological distance between two speakers, whereas intimacy is the closeness obtained, verbally and non-verbally, among individuals and maintained by immediacy behaviours (Rettie, 2003). When applied to CMC, Short, Williams, and Christie (1976) report that the social effects experienced are caused by the degree of social presence afforded users and Gunawardena (1995) noted that immediacy behaviours enhance and maintain social presence.

To frame good pedagogical practices for online learning, Garrison et al. (2000) developed the community of inquiry model to recognize the transactional relationship between instructors and learners through the interaction of cognitive presence (of the learner), teaching presence (i.e. the structure and process), and social presence (i.e. affective interpersonal communication). According to Garrison et al., these

elements, which define the community of inquiry model, are fundamental to a successful higher education learning experience. A key component in the model is the concept of social presence which refers to the affective domain as it relates to interpersonal communications. If social presence is absent, learner frustration develops because of the poor quality of interpersonal interactions (Rifkind, 1992). Conversely, a high degree of social presence in online learning is viewed as synonymous with an interactive environment (Lobry de Bruyn, 2004; McIssac & Gunawardena, 1996).

Within Garrison et al.'s (2000) community of inquiry model, social presence is viewed as an integral component that acts as a causal variable on the cognitive presence of the learner. As stated by Garrison et al.:

The primary importance of this element [social presence] is its function as a support for cognitive presence, indirectly facilitating the process of critical thinking carried on by the community of learners. However, when there are affective goals for the educational process, as well as purely cognitive ones, (i.e., where it is important that participants find the interaction in the group enjoyable and personally fulfilling so they will remain in the cohort of learners for the duration of the program), then social presence is a direct contributor to the educational experience. (p. 89)

In assessing social presence within a text-based, asynchronous environment, Rourke, Anderson, Garrison, and Archer (2001) have identified three categories of communicative responses: affective indicators (i.e., values, beliefs, feelings, and emotions); cohesive indicators (i.e. group presence and commitment); and interactive indicators (i.e., attending in a socially meaningful way). Although Rourke et al. recognize that the coding and analyzing of CMC text-based transcripts using the aforementioned indicators provides a measure of the density of social presence, they also contend future exploratory studies including factor analysis would aid in further defining the construct.

The construct of social presence is the critical affective ingredient for online learning. Although earlier research on social presence has found it to be related to learner satisfaction (Gunawardena & Zittle, 1997) others such as Wise, Chang, Duffy and del Valle (2004) argue that it is more of a

correlational than causal variable. Nevertheless, several researchers have demonstrated that social presence is one of the more important constructs to determine the level of interaction and effectiveness of learning in an online environment (Garrison et al., 2000; Gunawardena & Zittle, 1997; McIssac & Gunawardena, 1996; Lobry de Bruyn, 2004; Rourke et al., 2001; Tu & McIssac, 2002).

Part of the difficulty then in aggregating findings is the varying way that researchers have measured and reported social presence. Although several instruments exist, not all have been created for the CMC medium. To address this shortcoming, Yen and Tu (2004) recently validated and revised the Computer Mediated Communication Questionnaire (CMCQ) (Tu 2005) to measure the construct, social presence, in a computer-mediated, communication environ.

METHOD

In our study, we drew the participant sample from students enrolled in special education, online learning courses offered at the University of Saskatchewan. All those enrolled in an online certificate program in special education have a Bachelor of Education and at least one year of teaching experience. The content in the certificate courses has been based on the international standards for the preparation of special education teachers, standards established by the Council for Exceptional Children (CEC), the largest international professional organization dedicated to improving educational outcomes for individuals with exceptionalities.

The first four courses, from which we drew our sample, comprise the knowledge base with the following content: the history and philosophy of special education, and the high incidence exceptionalities relating to speech and language, learning disabilities, and behaviour. The courses are text-based, employing both asynchronous (i.e., email and discussion) and synchronous tools (i.e., chat rooms). All courses are similar at the knowledge level in look and feel, are highly collaborative, and provide an opportunity for the development of complex thinking skills. This interaction occurs through use of immediacy and intimacy behaviours such as daily, weekly, and monthly postings by the instructors, the use of introductory biographical sketches from students, and collaborative course assignments that require discussion and chat tools for completion

of group-based projects. Media richness of the courses is enhanced through graphics, flash macromedia, and both video and audio streaming. The courses have parallel forms of instructional design with content specific to their particular knowledge base (Mykota & Bonneycastle, 2006).

Those enrolled in the program were varied demographically in age, proficiencies with computer-mediated technologies, years of teaching experience, and experience with online learning. Participants in the study voluntarily completed the computer-mediated communication questionnaire (CMCQ) (Tu, 2005). We used the sentence stems on the CMCQ to identify social presence in a text-based system with the CMC tools (email, discussion, and chat). The participants were asked to complete each of the instrument's 24 items on the basis of a five-point Likert scale converted to a numerical weighting ranging in options from 0 (uncertain); 1 (strongly disagree); 2 (disagree); 3 (agree); and 4 (strongly agree). A raw score was then calculated for each participant with high total scores indicating a strong degree of online social presence and low scores indicative of a lack of social presence.

We also determined participants' demographic variables including age, sex, number of years teaching, number of online classes taken, and readiness for online learning as determined by self-rated CMC proficiency. We obtained the self-rated CMC proficiency variable by aggregating three other five-point Likert scale variables, exclusive of the CMCQ, that pertained to the forms of computer-mediated communication specific to each of email, discussion, and chat. A reliability analysis for the new variable was conducted with a Cronbach alpha reliability coefficient value equal to or above .70 considered to reflect a high internal consistency. A visual inspection of the corrected item total correlations for the three variables was then conducted with items below .10 deemed as outlier test items. The Cronbach alpha reliability coefficient for the CMC proficiency scale was calculated at .89, indicative of a high internal consistency, with no items deemed as outliers. The mean values for the three five-point Likert scale variables pertaining to CMC forms of communication (email, discussion, and chat) were then combined and calculated to provide a new mean value

representative of a CMC proficiency scale. All data in the present study were analyzed using the SPSS 13.0 suite of programs (Norusis, 2004).

We used correlation coefficients to determine the relationship between social presence, as measured by the total score on the CMCQ, and individual teacher demographic and online learning readiness (i.e., CMC proficiency) variables. To determine which combination would be a better predictor of social presence scores, we entered the variables into a multiple linear regression analysis (enter method) to obtain a regression equation. All non-manipulated categorical variables were dummy coded for inclusion in the multiple regression analysis (Pedhazur, 1997). We used analysis of variance to determine if any significant differences in social presence scores occurred as a function of individual demographic and readiness variables.

RESULTS

Frequency counts for the demographic variables age, sex, number of years teaching, and number of online classes taken are displayed in Table 1. When examining the frequency counts, we found that although sex was an initial variable having a potential impact on social presence, we excluded it from further analysis because of the low number of males in the sample.

Table 1. Sample by Sex, Age, Teaching Experience, and Number of Online Courses

Sex			Age		
	Freq.	%Total	Years	Freq.	%Total
Male	3	4.1	18-25	41	56.2
Female	70	95.9	26-33	19	26
			34+	13	17.8
Total	73	100	Total	73	100

Teaching Experience			Number of Online Courses		
Years	Freq.	%Total	Courses	Freq.	%Total
0-3	25	34.2	1	35	48.0
4-10	30	41.1	2-3	23	31.5
>10	18	24.7	4+	15	20.5
Total	73	100	Total	73	100

Correlations for the dependent variable (i.e., total score on the CMCQ) and the independent variables (i.e., age, number of years teaching, number of online classes taken, and CMC proficiency) are displayed in Table 2. Inspection of Table 2 reveals significant correlations between the CMCQ, the number of online classes taken, and CMC proficiency.

The multiple regression data for the variables include age, number of years teaching, number of online classes taken, and CMC proficiency when used together to predict social presence (as measured by the CMCQ). We used the enter selection method for the independent variables in the linear regression analysis. Examination of the strength of the equation reveals that the predictive power of the equation is moderate at 20.7 per cent where the proportion of variation in predicting online social presence is accounted for by number of online courses taken and CMC proficiency ($Y=58.22 + 7.56[\text{courses online}] + [-3.26][\text{CMC proficiency}]$). The multiple R is .46 and the proportion of variance accounted for is .21 ($F [7, 65]=2.42, p<.03$). The moderate predictive power of the equation is likely due to restricted variability in the sample. When this situation occurs, "the reduced variability will cause the value of r to be less than its value in the unrestricted sample" (Glass & Hopkins, 1996, p. 123). For the present study, because we sampled only learners in their first year of online courses, the distribution for the social presence total score has a negative kurtosis which is evidence of restricted variability in the sample.

To answer the research question postulated, we used one way ANOVA's to determine whether a significant difference occurred among students in online social presence based on age, teaching experience, number of online learning courses taken, and readiness for online learning (i.e., CMC proficiency). The analysis of variance results indicate that a significant main effect for number of online learning courses $F (2, 72) = 5.238, p<.01$ exists with Levene's test of homogeneity of variances insignificant. In conducting the post hoc analysis, we decided to use the Scheffé statistic because we compared pairs of means with dissimilar group sizes. The mean difference for online social presence, as measured by the total score of the CMCQ, was significantly lower for learners in

their first online course as compared to those who had taken four or more online courses.

Table 2. Correlations by Variable for Total Sample

	CMCQ Social Presence	CMC Proficiency	Teaching Experience	Age	Number of Online Courses
CMCQ Social Presence	1.00				
CMC Proficiency	-2.82*	1.00			
Teaching Experience	.124	.154	1.00		
Age	.029	.178	.398 **	1.00	
Number of Online Courses	.315**	-.160	.180	.029	1.00

* $p < .05$; ** $p < .01$

DISCUSSION

Our study explored what if any individual learner characteristics of those enrolled in online special education courses predicted the degree of social presence experienced. Findings reveal that the number of online courses taken followed by self-rated, computer-mediated proficiency are significantly correlated and are the salient predictors of the social presence total score. We found significant main effects to exist for the number of online courses taken with the mean total score for social presence. Interestingly though, the age of the learner did not impact on one's CMC skills or affective communication, which would seem to indicate that online learning is accessible to learners of all ages. Therefore, readiness for online learning, as determined by proficiency with computer-mediated communication tools and the number of online

courses taken, are related to the affective domain of immediacy and intimacy behaviours in the social presence construct. The functionality of computer-mediated communication technology incorporated into text-based online learning environments and the use of such tools among students can effect communication among users with CMC proficiency integral to a successful learning experience.

If educators desire learners to be highly collaborative in their professional practice, it is important that they are provided pre-course instructional activities necessary to embrace computer-mediated communication so as to ensure best practices in their course work. Furthermore, instructors need to construct interaction patterns to overcome the inherent challenges of the medium. Informality and friendliness modeled by the instructor coupled with frequent interaction can sustain this process (Tu, 2002). For example, contributing to discussions, replying promptly to email, addressing students by their first names, and becoming familiar with the posted biographies are all activities that instructors can undertake to facilitate social presence in an online learning environment (Aragon, 2003). What this implies is that development and support for faculty in delivery of online courses is needed. Similarly, novice online students with limited computer-mediated communication proficiency skills need to be made aware of how interaction is structured for online learning. For example, participating in chats, posting discussion messages, providing a personal biography, and sharing experiences are ways in which learners can create social presence in an online environment (Aragon, 2003). But social presence can also be developed through instructional design strategies which include limiting enrollment (i.e. to a 30:1 ratio; Rovai, 2001) and development of collaborative course assignments (Aragon, 2003; Jonassen, 1999; Mykota & Bonneycastle, 2006). By undertaking the aforementioned recommendations, instructors, students, and course designers can overcome some of the inherent barriers to the creation of social presence.

CONCLUSION

Affective communication for online learning needs to recognize that instructors and course designers must facilitate and deliberately

structure interaction patterns to overcome potential barriers to establish social presence. Moreover, we argue that supportive pre-course instructional activities be provided for learners to acquaint them with the tools and their usage so they understand their role and responsibilities in online learning environments. This is necessary because as Tu (2002) has pointed out, "many online users apply face-to-face communication skills to an online environment" (pg. 21). Moreover, these strategies will promote retention of students in an online learning environment because they have learned the necessary readiness skills required for online learning (Packham et al., 2004). If online learning is an accessible and flexible learning environment and if educators desire their learners to be highly collaborative in their professional practice then it is important that they are provided the requisite training necessary to embrace computer-mediated communication so as to emulate these practices in their course work.

This study contributes to knowledge and research on social presence through the applied measurement of the construct with a recently developed survey instrument. However, this study does have limitations in terms of the initial sample size. It is envisaged that future research will continue to explore the construct, social presence, as measured by the CMCQ with a larger sample size so as to replicate previous research on the validity and reliability of the instrument. Additionally, qualitative phenomenological or grounded theory studies could be conducted to delve in-depth into the meaning of affective communication in a text-based environment and its effect on learner's cognitive processes with specific reference to social presence as articulated within a community of inquiry model.

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