

Participation and Alienation in Online Networked Learning: Social Affordances to find People and to build Social Capital

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Abstract

The success of informal learning in large online learning networks largely depends on the existence of a sound social space that encompasses the networks of interpersonal relationships each individual has formed within this space. These personal social networks form the social capital of the individual and it is through this social capital that social interaction becomes possible and, thus, learning and knowledge co-creation can occur. It would appear that the existence of social capital is self-evident in large online learning networks as these networks are meant to connect people. However, online learning networks depend on technological systems that are incapable of transferring all the awareness cues necessary for finding people and feeling a sense of social presence. In this sense technological systems may hinder the development of a social space and the growth of social capital. Therefore, it is of utmost importance that the technological systems incorporate social affordances – subsystems or widgets that compensate for the missing awareness information. At the same time they should provide mechanisms to get into contact with others and to share information. In this position paper we propose that these social affordances should orient towards promoting impromptu encounters, social navigation, and social browsing. Social affordances that enable people to experience a psychological proximity (in contrast with physical proximity) with each other will facilitate impromptu or chance encounters which will in turn lead to an increased probability of meeting people. Social affordances not only are important to get in contact with people but also because of the informal conversations that arise from these meetings. Through these conversations, a person meets new people and maintains old contacts as well as gets information that may contribute to learning. Social navigation is the process in which people use other people (direct social navigation) or other people's traces (indirect social navigation) to find other people, perhaps the ones who possess expert knowledge and from whom they may learn a lot. Social browsing is using directories of people (the social 'yellow pages') for browsing through the user profiles stored in these directories to find other people that have similar interests or other commonalities that are important. Ultimately, social affordances enable individuals to participate in online networked learning and experience the social presence of all other members of the network who may become part of the individuals' personal social capital. Without these affordances, individuals may feel isolated and alone and, thus, alienated in these large online learning networks.

Keywords

Impromptu encounters, social affordances, social browsing, social capital, social navigation, social presence, social space.

Introduction

For a place that gathers millions of people the Web seems pretty lonely at times. This is mainly due to the current predominant browsing scenario; that of an individual participating in an autonomous surfing session. (Papagalis, Papagalis, Zaoliagis, 2008, § Abstract)

Literature points out that people learn the most outside the walls of formal settings such as schools and training institutions (Eraut, 2004). This type of learning is referred to as informal learning. Often, informal learning occurs in social contexts such as working environments where people meet each other (e.g., during lunchtimes

or by the photocopier, water cooler or coffee machine). During these encounters, people socially interact with each other resulting in the exchange of several types of information, from knowledge on one end of the spectrum to personal stories on the other end. In some cases, these moments lead to meeting new people, hereby learning what their interests are, where they live, what they professionally are doing, and what their expertise is. Those people may potentially become part of the individuals' personal social network. Personal social networks are important because individuals may invoke them sooner or later for finding information and getting answers to their questions. Therefore, these social networks, in fact, form a rich source to learn from and to create and share knowledge. In that respect, personal social networks also can be considered as a learning network.

In organizations, personal social networks have been shown to play a crucial function in getting the organization in a competitive edge with respect to other organizations and keeping it that way (De Laat & Coenders, 2011). Hence, organizations have designated these personal social networks as its social capital; that is, the organizational social capital is the sum of each individual's personal social capital. Bourdieu and Wacquant (1992) defined social capital as "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (p. 14). Cohen and Prusak (2001) presented the following definition of social capital: "Social capital consists of the stock of active connections among people; the trust, mutual understanding and shared values and behaviours that bind the members of human networks and communities and make cooperative action possible" (p. xx). From these definitions, it can be concluded that social capital is a prerequisite for enabling social interaction and, thus, also learning, knowledge building, -sharing, and -use (Lesser & Prusak, 2000). Nahapiet and Ghoshal (1998) reaffirmed that social capital is "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (p. 243). They distinguished three dimensions of social capital: the structural, the relational and the cognitive dimension. The structural dimension refers to the ability of individuals to make connections to other individuals within an organization. These connections are important because they "constitute information channels that reduce the amount of time and investment required to gather information" (p. 252). The relational dimension refers to developing interpersonal relationships that relate to obligations, norms, trust, and identity. Finally, the cognitive dimension addresses the need for a common context and language to build social capital.

Central in each definition of social capital is the emphasis on the interpersonal relationships each individual has formed. Instead of addressing complete strangers to obtain information, people can make use of their relationships hereby facilitating access to the information. For these interpersonal relationships to exist, however, mutual trust is needed. Indeed, many scholars see trust as a very important condition. Sveiby and Simons (2002), while focusing on the effectiveness of knowledge work and interpersonal relationships in an organizational context, found from an experimental study that members of a working team show more willingness to collaborate if a collaborative climate exists in which members do trust the other team members. They are supported by Nahapiet, Gratton and Rocha (2005) who found that "[w]here relationships are high in trust, people are more willing to engage in social exchange in general and cooperative interaction in particular (p. 5). This is very similar to what Johnson and Johnson (1989) already have concluded from their research on collaborative learning with contiguous learning groups. They emphasized interpersonal trust as another factor enabling effective collaboration and consider it a central dynamic of promotive interaction. Lack of trust impedes cognitive processes taking place: "[t]o disclose one's reasoning and information, one must trust the other individuals involved in the situation to listen with respect" (p. 72).

In online learning networks, a positive climate must be simulated which fosters the establishment of social relations and social capital. This climate is referred to as "social space". It is expected that when people interact socially, a social space is established between them. Kreijns, Kirschner, Jochems, and van Buuren (2004) define social space as "the network of social relationships amongst [people] embedded in group structures of norms and values, rules and roles, beliefs and ideas" (p. 607). Although some researchers denominate the concept as social space (e.g. Harasim, 1993) other terms are often used, that have connotations with social space, including 'social climate' (Gunawardena, 1995), 'online atmosphere' (Brandon & Hollingshead, 1999), 'social environment' (Rourke, 2000), and 'collaborative climate' (Sveiby & Simons, 2002). The social space is 'sound' if it is manifested "by affective work relationships, strong group cohesiveness, trust, respect and belonging, satisfaction, and a strong sense of community" (Kreijns et al., 2004, p. 607). All these qualities contribute to open communication, critical thinking, supportive interaction, and social negotiation and, thus, to learning and knowledge co-creation. Furthermore, a sound social space determines, reinforces and sustains the social interaction that is taking place amongst the group members and enables open critical dialogues that neither harm

nor offend group members because they know and trust each other (Rourke, 2000). Therefore, a sound social space in the learning network is a necessary condition for social capital to grow.

Barriers in online learning networks

It would appear that the existence of social capital is self-evident in large online learning networks; however, as these online networks use technological systems for collaboration and communication, features of face-to-face settings cannot be fully substituted by such systems. In turn, the absence of these features may hinder the construction of social capital within online learning networks. The reason for this may be that these systems have limited capabilities to transfer all the awareness cues necessary for finding people and experiencing their social presence. In essence, the development of a sound social space in which individuals are able to build social capital is limited by the technological features of the online learning network.

In order for a social space to be established in online learning networks as well as in other forms of online communities, people must experience the existence of other members of the community when being online. Experiencing the other (either online or offline) is referred to as "social presence". Social presence is amongst others determined by visual and other non-verbal cues (Short, Williams, & Christie, 1976). In general, current technological systems have no built-in mechanisms to find other people as is the case in daily life where you can ask people if they know other people who are the experts in a specific domain. Furthermore, the limited bandwidth of the medium of communication often forces the communication to be predominantly text-based. This can be observed in tools such as synchronous computer conferencing, instant messaging, and asynchronous email and discussion forums (newsgroups and message boards). Even with the emergence of Web 2.0 technologies, most communication media have remained text-based such as microblogging systems (e.g., Twitter and Yammer) and other social software systems (e.g., Facebook and MySpace). Text-based communication media limit the transmission of visual and other non-verbal cues that play a role in feeling a sense of social presence of others in the communication (Short, Williams, & Christie, 1976). The richer a medium is in terms of the transmission of audiovisual cues, the higher the sense of social presence. Yet, even in text-based communication media, social presence may reach the same levels as in richer media. This is because social presence not only depends on the medium's attributes but also on social factors (Walther, 1992). Nevertheless, a text-based communication medium is usually experienced as low in social presence. According to Kear (2010) this is why "[people] find online environments impersonal, resulting in low levels of engagement and participation, and hence less effective learning. This feeling of impersonality can be characterised as a lack of 'social presence'" (p. 541). As a result, people often feel isolated and alienated in these online learning environments (Wilson Butler, & Sullivan, 2007)

When considering the three dimensions of social capital, that is, the structural, the relational and the cognitive dimension (Nahapiet & Ghoshal, 1998) it would appear that the requirements implied by each dimension cannot be entirely fulfilled in online learning networks. Because it is difficult to find new people in large online learning networks, individuals can hardly expand their personal social capital hereby endangering the structural dimension. The relational dimension is endangered because of the low social presence in text-based communication media. Text-based communication media, therefore, are likely to render socializing more difficult and, thus, the emergence of a sound social space is hindered. Finally, the cognitive dimension is at risk because according to Clark and Brennan (1991) communication over telecommunication media is associated with certain costs. They stated that different media may involve different costs to different parts of the process for achieving common ground. According to Preece (2003) text-based media involve high costs as they found that "[w]hen entering textual environments, people leave their bodies (and body-language) behind which severely hamper common ground development. Empathy and trust are also affected" (p. xx).

In order to overcome the barriers of large online learning networks the underlying technology should be reconsidered. Indeed Kear (2010) already remarked that "social presence in online learning communities can be enhanced by changes to the design and use of communication systems" (p.541). We propose that the technological systems should incorporate social affordances – subsystems or widgets that compensate for the missing awareness information while at the same time provide mechanisms to get into contact with others and to share information with them. In this position paper we propose that these social affordances should orient towards promoting impromptu encounters, social navigation, and social browsing. In the next section we will discuss these different types of affordances in depth.

Social affordances

In the spirit of Gibson (1977), social affordances are defined as those properties of a learning environment that act as social contextual facilitators relevant for the learner's social interaction. When they are perceptible, they invite the learner to act in accordance with the perceived affordances, that is, start a particular communication episode (Kreijns & Kirschner, 2001). The latter is important as this represents Gibson's perception-action coupling property of affordances. Social affordances are usually implemented in technology based learning networks as subsystems or widgets that provide dynamic and static awareness information about others as well as information about their past and current actions. At the same time they provide communication mechanisms to get into contact with others, start a discussion, and to share information. Awareness about others is generally designated as group awareness, and awareness about past actions as history awareness. A simple example is the online status of the other members combined with an overview of their past online/offline status. This kind of awareness information provides insight into whether certain members are predominantly online during daytime or at night and, thus, when it is possible to have a real-time conversation with them.

Impromptu encounters

In other words, create opportunities for frequent contacts between employees and cooperation in changing teams, rather than databanks on an intranet containing codified information on former education and working experience of employees (Gelauff, 2003, p.1)

One mechanism for finding people and to get in contact with them is bringing them in the spatial proximity of each other thereby creating opportunities for impromptu encounters (Fussell & Setlock, 2003; Kraut, Fussell, Brennan, & Siegel, 2004). Impromptu or chance encounters facilitate meeting new people and to start a conversation with them in order to get to know them. These encounters may also help keeping in contact with old contacts. Impromptu encounters are not only important to get in contact with people, they also provide opportunities for informal conversations in which important information can be exchanged. Furthermore, in case of new contacts, new trusty interpersonal relationships may develop so that the individuals' social capital grows. It is for this reason that Currie and Kerrin (2004) concluded: "[m]anagement of knowledge may therefore imply more sensitive management of social relations and less the management of corporate information" (p.12). They referred to Brown and Duguid (1991), who "in reflecting upon the importance of social relations, suggest organizations might better invest in a communal coffee machine or water cooler, since it is around such sites as these that informal but highly important knowledge diffusion occurs" (p.12). Indeed, researchers on organizational behavior and computer-supported cooperative work (CSCW) have pointed to the advantageousness of having good working relationships in information exchange and that these relationships usually develop when people meet each other by chance (Sveiby, 2001). Whittaker, Frohlich, and Daly-Jones (1994) additionally found that most interactions in the work environment take place during chance encounters and therefore the latter must be promoted. However, in the case of online communities, Kraut et al. (2004) warn us not to neglect privacy issues as people do not always want to be 'visible' online or be disturbed for a casual conversation. Several attempts have been made to explore social affordances for impromptu encounters in technology based learning environments. It is important that if affordances are implemented, it should focus on some shared interest or activity; this is the shared commonality, also referred to as object of sociality (Engeström, 2005). For example, Tamura, Hidaka, Oishi, and Kikuma (2002) created WineDiary as a prototype "to promote impromptu encounters in the online community and support mutual trust formation through more effective use of word-of-mouth on the Internet" (§ Conclusions). In WineDiary, the object of sociality is 'wine.'

Social navigation

Communities are, in many cases about 'knowing a man who can,' and they enable conversations that transfer knowledge around the group. A lot of this would be called gossip by some managers. That's just what it is, and you run a big risk by preventing it. (Pierce, 2002, p. 3)

Generally, people pay a lot of attention to others and other people's behavior when they navigate in 'information space,' which is quite natural in everyday life. For instance, when we feel hungry after attending a entire day of meetings, we may desire for a good restaurant. If we do not know which restaurant to choose, we usually look through the restaurant's windows to see whether the restaurant is crowded thereby assuming that when many people are having a meal there it must be a good restaurant with reasonable prices and a pleasant atmosphere, for otherwise no one would be staying there. Social navigation is a way to navigate, mainly by addressing people, their actions, and the traces left by these actions (Diebergen, 1999; Wexelblat, 1999). Dourish and

Chalmers (1994) first applied the concept of social navigation to the domain of Computer-Supported Cooperative Work (CSCW) and have defined it as “moving ‘towards’ a cluster of people, or selecting objects because others have been examining them” (p. 1). In other words, people or objects leave traces that can be exploited for finding and gathering information. Diebergen (1997) also described social navigation as “the process where a number of people that share interests and searching goals decide to coordinate their efforts. As a design approach social navigation tries to raise awareness that social activities should be part of our information processing environments” (p. 805). If large online learning networks provide features which support social navigation it may help people finding other people with the knowledge or expertise they are actually searching for. Alternatively, through social navigation people may find the most useful resource about some topic (e.g., a document with someone's experiences or thoughts regarding the topic) as other people have apparently found this resource useful since there is evidence that others have frequently accessed the resource. This evidence takes the form of traces left by other members at the time the resource was accessed (see also Kreijns, 2000). According to Papagalis et al. (2008) “[s]ystems based on social navigation concepts typically make people more aware of each other and thus contribute to a more social experience of the information space. At the same time, awareness of others and their actions make a space feel more alive and turn it into something we might perceive as place” (§ Introduction). In order to enable social navigation in an online learning network, its implementation requires the provision of awareness cues, in particular, group awareness about other people's activities, and history awareness about the traces produced by these activities. The semantic neighborhood radar (Papagalis et al, 2008) that operates within Web-browsers as an extension for search engines is an example of a social navigation system that truly represents what a social affordance device is. The radar visually depicts relevant others as dots at some distance of the radar's owner whose dot is at the center of the radar. The different distances of the dots relative to the owner reflect how proximate the others are, and this, in turn, reflects the similarity in the recent navigational patterns of the others with the owner when they search the web for the same topics. The semantic neighborhood radar also allows placing the other at the center of the radar thereby opening new possibilities to look at this person's neighbourhood. A private chat can be initiated with anyone who is visible as a dot in the semantic neighbourhood radar.

Social browsing

People pages [...] presented the profile of each member, directory tools to access these pages, and a serendipitous introduction feature that highlighted members. Contributions were attributed to their authors through links to personal profiles in order to promote accountability and support cooperation. (Danis, Lee, & Karadkar, 2003, p. 745)

Social browsing is an activity in which people scan descriptions of others. Social browsing requires dedicated social affordance devices called social browsers. Contrasting the social affordances for promoting impromptu encounters and social navigation, social browsers do not present dynamic awareness information about the whereabouts of others, what they are currently doing and about what they have done. Instead social browsers present static information in the form of collections –directories or white pages– of people. Depending on the directory service, certain personal information about the member is disclosed, which is referred to as the profile of that member. People's profiles may include demographical data, contact information, job history as well as current job, hobbies, and most importantly the things they are (professionally) interested in and who their contacts are. By browsing through these profiles, one may get an impression of other persons and decide to contact them. According to Pierce (2002) “Apart from making it easier to find the right kind of person there is a photograph and room for some ‘personality,’ adding to the sense of knowing people that is so essential to building useful communities” (p. 5). Girgensohn, Lee and Zhang (2004) gave an example of a social browsing system which is CHIplace People's Browser (<http://chiplace.fxpal.com/people/browser.jsp>) aimed “to support information exchange and interaction by the community of researchers and practitioners of human–computer interaction [and to learn] who the CHIplace members were” (p. 68). In CHIplace People's Browser, members are depicted as dots that are graphically clustered around some similarity amongst the members belonging to the particular cluster. The similarity is determined by the set of roles CHIplace member have in common. CHIplace enabled its members to define a number roles they play in the system. Clicking a dot revealed the member profile associated with the dot.

The research model and research agenda

Our research model is depicted in Figure 1. Social affordances for promoting impromptu encounters and for social navigation require dynamic group and history awareness. Social affordances for social browsing require only (pseudo) static profile awareness.

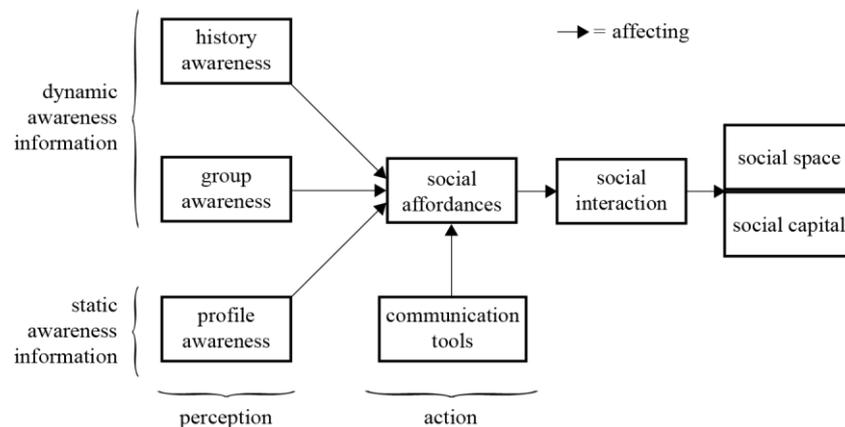


Figure 1: The research model

Based upon the theoretical framework presented above a research agenda can be constructed that takes the following research questions into consideration:

Research Question 1: To what extent do social affordances for promoting impromptu encounters, social navigation, and social browsing contribute to participation (i.e. social interaction) of the members in online networked learning systems?

Research Question 2: To what degree do social affordances for promoting impromptu encounters, social navigation, and social browsing contribute to the co-development of a social space and the individuals' social capital in technology based learning networks.

In closing

As web 2.0 technology is the prevailing technology for building sites that can be categorized as social software (e.g., Facebook, LinkedIn, Twitter, Flickr and the like), it could be assumed that the social networks of the members of these sites entail social capital. While indeed social software have certain affordances that make them a great improvement when compared to more traditional websites, they, however, still fail to a certain degree with respect to important aspects that inhibit finding people and building social capital that are truly based on trusty interpersonal relationships. For example, in many social software sites the number of contacts - designated as 'friends' - a member has is a means to rank this member higher as other members. Consequently it becomes a sport to get as many contacts as possible. As a result, some members may have over a thousand 'friends'. The question arises what the value is of such a friend. Indeed, Beattie (2005) in his blog told that he linked out of LinkedIn because "though I had 106 contacts, I didn't know most of the people. Neither in person or virtually. What happened was that at first I invited anyone to link in with me on my blog. That was the "game" right? He who has the most contacts wins." Also, Engeström (2005) pointed out that most social software fail because they have no object of sociality to focus on. Flickr has as an object of sociality photographs, MySpace music, Delicious bookmarks, and Youtube small videos. However, possessing an object of sociality is not a sufficient condition for social software to be successful. The point is that, with respect to the discussion above, the affordances offered by social software cannot always be identified as true 'Gibsonian' affordances, in contrast with our social affordances. That is, care should be taken that perception-action coupling is preserved and this is not always true in social software. Although some social software provides awareness information, they often lack the necessary action coupled to this awareness hereby limiting the effectiveness of the provided information for learning networks. Thus, social affordances should provide different types of awareness while at the same time should provide the means of communication to get into contact with others, either through a real-time conversation or through sending an e-mail. In our opinion the conditions and the types of social affordances – as we have outlined in our framework – are not always present in the currently available social software. Therefore, social software, such as online social networks, may not always work as online learning networks.

If we want online networked learning to be successful in developing a sound social space in which social capital can grow, we should take a design based approach with regard to its underlying technology. That is, we should take care that the technology is incorporating social affordance devices in the form of widgets for promoting impromptu encounters, social navigation and social browsing. Only when the three dimensions of social capital - the structural, the relational, and the cognitive dimension - are sufficiently present people will participate rather than be alienated in the large online learning networks. And only then informal learning and knowledge co-creation will occur.

References

- Beattie, R. (2005). Linking out after two years of Linked In. Retrieved October 1, 2011, from <http://www.russellbeattie.com/blog/1008411>.
- Bourdieu, P., & Wacquant, L. (1992). *An Invitation to Reflexive Sociology*. Chicago: University of Chicago Press.
- Brandon, D. P., & Hollingshead, A. B. (1999). Collaborative learning and computer-supported groups. *Communication Education*, 18(2), 109–126.
- Brown, J., & Duguid, P. (1991). Organizational learning and communities of practice: Toward a unified view. *Organizational Science*, 2(1), 40–57.
- Clark, H. H., & Brennan, S. E. (1991). Grounding in communication. In L. B. Resnick, J. M. Levine, & S. D. Teasley (Eds.), *Perspectives on socially shared cognition* (pp. 127–149). Washington, DC: American Psychological Association.
- Cohen, D., & Prusak, L. (2001). *In good company: How social capital makes organizations work*. Harvard Business School Press.
- Currie, G., & Kerrin, M. (2004). The limits of a technology fix to knowledge management. *Management Learning*, 35(1), 9–29.
- Danis, C., Lee, A., & Karadkar, U. (2003). Function of social browsing in integration into a workplace. In M. Rauterberg, M. Menozzi, & J. Wesson (Eds.), *Human-computer interaction - Interact 2003* (pp. 745–748). IOS Press.
- De Laat, M., Coenders, M. (2011). Communities of practice en netwerklere: De ontwikkeling van sociaal kapitaal in organisaties. In J. Kessels & R. Poell (Eds.), *Handboek human resource development: Organiseren van leren*. Houten, Bohn, Stafleu, van Loghum.
- Diebergen, A. (1997). Supporting social navigation on the world-wide web. *International Journal of Human-Computer Studies*, 46(6), 805–825.
- Dieberger, A. (1999). Social connotations of space in the design for virtual communities and social navigation. In A. Munro, K. Höök and D. Benyon (Eds.), *Social Navigation of Information Space* (pp. 35–52). London: Springer.
- Dourish, P., & Chalmers, M. (1994). Running out of space: Models of information navigation, In *Proceedings of the Conference Human Computer Interaction'94*.
- Eisenhart, M. (2000). Around the virtual water cooler. *Knowledge Management Magazine*, October
- Engeström, J. (2005). Why some social network services work and others don't — Or: the case for object-centered sociality Retrieved October 1, 2011, from <http://www.zengstrom.com/blog/2005/04/why-some-social-network-services-work-and-others-dont-or-the-case-for-object-centered-sociality.html>.
- Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education*, 26(2), 247–273.
- Fussel, S. R., & Setlock, L. D. (2003). Informal communication in an online volunteer community: Implications for supporting virtual relationships. Unpublished manuscript. Carnegie Mellon University.
- Gelauff, G. M. M. (2003, March) Social capital: An indispensable asset in the knowledge-based economy. Paper for the workshop Social capital and economic development on the occasion of the 75th anniversary of the University of Tilburg. Tilburg, the Netherlands.
- Gibson, J. J. (1977). The theory of affordances. In R. Shaw & J. Bransford (Eds.), *Perceiving, Acting and Knowing* (pp. 67–82). Hillsdale, NJ: Lawrence Erlbaum.
- Girgensohn, A., Lee, A., & Zhang, J. (2004). Social browsers for visualizing web communities. *IEEE Computer Graphics*, 24(5), 66–75.
- Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications*, 1(2&3), 147–166.
- Harasim, L. (1993). *Global networks: Computers and international communication*. Cambridge: MIT Press.
- Hoffman, P. (2008). "But are we really friends?": Online social networking and community in undergraduate students. Unpublished doctoral dissertation. Ohio: University of Akron.

- Johnson, D. W., & Johnson, R. T. (1989). *Cooperation and competition: Theory and research*. Edina, MN: Interaction Book Company.
- Kear, K. (2010, May 3–4). Social presence in online learning communities. In L. Dirckinck-Holmfeld, V. Hodgson, C. Jones, M. de Laat, D. McConnell, & T. Ryberg (Eds.), *Proceedings of the 7th international conference on networked learning 2010*, Aalborg, Denmark.
- Kraut, R. E., Fussell, S. R., Brennan, S. E. & Siegel, J. (2002). Understanding effects of proximity on collaboration: Implications for technologies to support remote collaborative work. In P. Hinds & S. Kiesler (Eds.), *Distributed Work* (pp.137-162). Cambridge, MA: MIT Press.
- Kreijns, K. (2000, April 1–6). Inspector-based social awareness for social navigation. A position paper for the CHI 2000 workshop on Social Navigation: A design approach. The Hague, The Netherlands.
- Kreijns, K., & Kirschner, P. A. (2001). The Social Affordances of Computer-Supported Collaborative Learning Environments. In D. Budny & G. Bjedov (Eds.), *Proceedings of the 31th ASEE/IEEE Frontiers in Education Conference* (session T1F). Piscataway, NJ: IEEE.
- Kreijns, K., Kirschner, P. A., Jochems, W., & Van Buuren, H. (2004). Measuring perceived quality of social space in distributed learning groups. *Computers in Human Behavior*, 20(5), 607–632.
- Lampe, C., Ellison, N., Steinfield, C. (2006, November 4–8). A Face(book) in the crowd: Social searching vs. social browsing. In *CSCW '06: Proceedings of the 2006 20th anniversary conference on Computer supported cooperative work* (pp. 167-170), Banff, Alberta, Canada.
- Lesser, E., & Prusak, L (2000). Communities of practice, social capital and organizational knowledge. In E. Lesser, M. A. Fountaine, & J. A. Slusher (Eds.), *Knowledge and communities* (pp. 123–132). Boston, MA: Butterworth-Heinemann.
- Nahapiet, J., & Ghoshal, S. (1998). Social capital, intellectual capital and the organizational advantage. *Academy of Management Review*, 23(2), 242–266.
- Nahapiet, J., Gratton, L. and Rocha, H.O. (2005) Knowledge and relationships: when cooperation is the norm. *European Management Review*, 2(3), 3–14.
- Papagelis, A, Papagelis, M, & Zaroliagis, C. (2008). Enabling social navigation on the web. Retrieved October 1, 2011, from <http://mastoris.files.wordpress.com/2010/10/socialnavigation.pdf>.
- Pierce, J. (2002) Intellectual capital, social capital and communities of practice. Retrieved October 1, 2011, from http://www.providersedge.com/docs/km_articles/Intellectual_Capital_-_Social_Capital_-_CoP.pdf.
- Rourke, L. (2000). Operationalizing social interaction in computer conferencing. In *Proceedings of the 16th annual conference of the Canadian Association for Distance Education*. Quebec City, Canada. Retrieved October 1, 2011, from the World Wide Web: <http://www.ulaval.ca/aced2000cade/english/proceedings.html>.
- Short, J., Williams, E., & Christie, B. (1976). *The social psychology of telecommunications*. London: John Wiley & Sons, Ltd.
- Sveiby, K-E. (2001). A knowledge-based theory of the firm to guide in strategy formulation. *Journal of Intellectual Capital*, 2(4), 344–358.
- Sveiby, K-E., & Simons, R. (2002). Collaborative climate and effectiveness of knowledge work: An empirical study. *Journal of Knowledge Management*, 6(5), 420–433.
- Tamura, H., Hidaka, T., Oishi, T., & Kikuma, K. (2002) Preference Mediation Network. Retrieved October 1, 2011, from http://www.hesonet.net/lab/papers/PMN_cameraready.pdf.
- Walther, J. B. (1992). Interpersonal effects in computer-mediated interaction: A relational perspective. *Communication Research*, 19(1), 52–90.
- Wexelblat, A. (1999). Footprints: History-rich tools for information foraging. In M. G. Williams, M. W. Altom (Eds.), *Proceedings of the SIGCHI conference on Human factors in computing systems: the CHI is the limit* (pp. 270–277). New York: ACM Press.
- Whittaker, S., Frohlich, D., & Daly-Jones, O. (1994). Informal workplace communication: What is it like and how might we support it? In B. Adelson, S. Dumais, & J. Ohlson (Eds.), *Proceedings of the SIGCHI conference on Human factors in computing systems: Celebrating interdependence* (pp. 131–137). New York, NY: ACM Press.
- Wilson Butler, J. & Sullivan, M. (2007). Increasing Social Interaction in Online Classes Through Live E-learning. In T. Bastiaens & S. Carliner (Eds.), *Proceedings of World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2007* (pp. 189–194). Chesapeake, VA: AACE..