

The ties that bind: Social presence, relations and productive collaboration in online learning environments



Benjamin Kehrwald

College of Education

Massey University

This paper contributes to the growing body of knowledge which identifies benefits for online learning in the understanding of mediated social processes. It reports on an exploratory study into the nature, role and function of online social presence and a potential link between social presence and learner support in text-based online learning environments. Employing a qualitative collective case study design, the study sought to produce understandings of mediated social processes which were grounded in the experiences of learners in text-based online learning environments. Informed by social network analysis, the paper presents key findings of that study including (a) a definition of social presence as described by online learners (b) the role social presence in the development of relations and ties between online learners and (c) the progressive development of relational states which leads to productive collaboration.

Keywords: social presence, social network analysis, online learning, constructivist research

Introduction

Online learning environments are social systems. As Wellman (1997) points out, when a computer network connects people, it is a social network. In recent years, online educators and researchers have become increasingly interested in understanding the social dimensions of networked connectivity in online learning to create online communities (e.g. Barab, Kling, & Gray, 2004; Garrison, Anderson, & Archer, 2000; Preece, 2000) and other supportive social structures (Kirschner & Van Bruggen, 2004; Murphy, 2004; Steeples & Jones, 2002) in order to improve learners' experiences with online learning (Kehrwald, 2005; McLoughlin, 2002; Thorpe, 2002).

This paper contributes to the growing body of knowledge which identifies benefits for online learning in the understanding of mediated social processes. It reports on an exploratory study into the nature, role and function of online social presence and a potential link between social presence and learner support in text-based online learning environments. Informed by social network analysis (see Garton, Haythornthwaite, & Wellman, 1997 for an overview), the paper presents key findings related to the development of relations and ties between online learners and the progressive development of relational states which leads to productive collaboration.

Background

Text based online communication

Gunawardena (1995) points out that communicative failures in online environments occur much more often at the social level than at the technical level. Interactions in these environments are predominantly text-based. The relative leanness of the textual medium limits the sociability of these environments and creates conditions which make communication in this medium potentially difficult. These limiting conditions include a lack of contextual information; significant social and psychological distance between actors introduced by the media; and imbalances in the sender--receiver relationship due to a lack of synchronous two-way interaction (Riva, 2002). Paradoxically, a significant number of participants in text-based online environments, including online learners and teachers, cite overwhelmingly positive experiences with online learning. They refer to connection and qualities of interactive exchanges which surpass their experiences with other delivery modes, including face-to-face education (Walther, 1992). They cite the relative qualities of their technology mediated relationships as indications of the power of this medium and its ability to connect people (Baym, 1998; Turkle, 1995). This suggests that technology

mediated learning can be rich, rewarding and humane. The question that follows is: *How is this possible given the apparent limitations of the textual medium?*

Social presence

Part of a response to the question above involves understanding online social presence and its role in online learning environments (see Gunawardena, 1995; Gunawardena & Zittle, 1996; Rourke, Anderson, Garrison, & Archer, 2001; Walther, 1992). Short, Williams and Christie (1976), the genitors of social presence theory, defined social presence as “the degree of salience of the other person in a mediated interaction and the consequent salience of the interpersonal interaction” (p. 65). Whilst the term social presence was originally used to describe the qualities of media and their respective abilities to create the illusion of non-mediation, users of virtual environments have appropriated the term to describe the combination of skills and abilities which allow them to achieve, in Short et al’s terms, salient interpersonal interactions. More contemporary definitions of social presence include individuals’ abilities to perceive others through their mediated interactions (Collins & Murphy, 1997); the degree of “tangibility and proximity” of others within a communicative situation (McLeod, Baron, & Marti, 1997); and participants’ abilities to project themselves both socially and emotionally in a community (Rourke et al., 2001). As a result of experience and increased attention to online communication, the concept of social presence has come to be viewed as much more complex than originally understood.

Social network analysis

Much of the research in computer mediated communication is concerned with immediate, direct aspects of online communication such as interpersonal interaction between individuals and communication within small groups. In contrast, Social Network Analysis provides researchers with a set of tools for understanding wider social phenomena in online environments, including interaction amongst large distributed groups, the development of extended networks and structural representations of social processes within groups.

In particular, Social Network Analysis provides a nomenclature for identifying and tracking the constituent connections which form the basis for understanding social processes and structures. Terms relevant to this study include *relations* and *ties*. Relations are pathways for exchange between individual social actors. These pathways are characterised by their *content* (e.g. information, electronic resources, various forms of support), *direction* in terms of being directed (*from me, to you*) or undirected (through incidental interaction, no clear direction or purpose to ongoing relations) and *strength* according to a variety of conditions such as frequency of interaction, relative emotional content, productivity and ability to deal with difficult or uncertain conditions. Relations act individually or in combination to create ties, which are connections between social actors. Therefore, ties are also characterised by content, direction and strength. Of particular interest is the relative strength of ties, which has been shown to influence factors such as resource sharing, intimacy and durability which make ties (potentially) more productive as part of social systems. Also relevant is the concept of *multiplexity* in which multiple relations contribute to the formation of a tie and its qualities (i.e. content, direction and strength) (Garton et al., 1997; Wellman, 1997). Higher degrees of multiplexity indicate the likely formation of ties with relative qualities such as strength and types of content.

Approach and method

This paper is drawn from an exploratory (i.e. theory generative) study aimed at understanding the role and function of online social presence through exploration of the experiences online learners. The approach to the research was qualitative and constructivist in which the goal was to understand the world of lived experience from the perspective of those who live it (Schwandt, 1998). The design was a collective case study (Stake, 2003) containing four constituent cases based on four separate wholly online postgraduate course offerings within a single faculty at a regional Australian University.

Cases were chosen based on their fit with a model of contemporary networked (online) learning suggested by Steeples, Jones and Goodyear (2002): employing a constructivist pedagogical approach, a learner-centric process orientation, high levels of interaction between participants as part of the course design, extensive use of CMC tools and a significant portion of the course content that is dynamic or emergent over the term of study. It was anticipated that courses which had these characteristics would provide learners with experiences which are relevant to this study, namely: text-based interpersonal interaction, high levels of involvement in learning processes and social connectivity. A group of 3-6 volunteer

participants was recruited from the respective cohorts of online learners within each of the four courses under study. Learners with experience over multiple academic terms in multiple courses were preferred as it was anticipated that their experiences would provide them with a richer and more developed body of heuristic knowledge with the phenomena in question (Padilla, 1991).

Information was collected using an interview-like dialogical process consisting of a questionnaire, a preliminary interview, an initial focus group discussion, a secondary interview and a final focus group discussion. This process allowed for the combination of accessing individual experiences as well as the collaborative process of developing shared understandings of the phenomena in question. Information was analysed using iterative thematic analysis at multiple points in the information collection process: (1) within the information collection process for each case; (2) after the conclusion of information collection for each individual case; and (3) at the conclusion of collection for all four cases. The combination of multiple analyses which produced a continual focusing of results, extensive respondent validation with a focus on the authenticity of emergent conclusions and multiple opportunities for triangulation of results greatly enhanced the interpretive rigour of the findings (Keeves & Sowden, 1997).

Findings and discussion

The four individual cases generated a number of findings related to online learners' experiences with online social presence, the workings of the social-relational systems within online learning environments, and the dynamics of interpersonal interaction. The findings presented below relate specifically to the role and function of social presence and the development of relations amongst groups of online learning in text-based online learning environments.

Definition of social presence

Two key aspects emerged from the data regarding the nature of social presence: (a) that there is an 'other' party who conveys a social presence in the online environment; and, (b) that this 'other' exists and is identifiable as a real person i.e., as a human being, with all the characteristics thereof, including personality, emotion, personal history and context, amongst others. The definition of social presence produced by respondents is: *Social presence is an individual's ability to demonstrate her state of being in a virtual environment and so signal her availability for interpersonal transactions.* This definition highlights the point that social presence is seen to be a characteristic of individual participants rather than a quality of media and alludes to the performative nature of social presence.

Social relational mechanisms

Exploration of participants' experiences with social presence led to the identification of a number of social-relational mechanisms which operate as a result of information provided in social presence cues and affect the experience of interactive, collaborative online learning. These mechanisms include commonality, trust, feelings of safety, respect, rapport and interdependence.

Commonality

Commonality refers to something shared between individuals, i.e., something that is held *in common*. This was manifest in the data as "mutuality" and things "shared" (e.g., shared purpose) such as common interests, common background (e.g., professional situation, educational history, family situation, location/shared cultural location), shared problems, common aspirations, and shared purposes/goals. Implied in commonality is the notion of reciprocity, i.e., the relation is *mutual*. However, respondents indicated that in some instances, the identification of points of commonality provides an entrée to such reciprocity. In this way, commonality was seen as an important genesis point for other social-relational mechanisms. Commonality provides a basis for establishing a relational pathways between parties and contributes to feelings of an existing relation between individuals. The notion of commonality provides information about the content of the relation insofar as it indicates what is being held in common and the direction of the relation as demonstrated by the state of mutuality or otherwise. Respondents linked commonality to the ideas of "groupness" and group cohesion. In particular, findings highlight the notion of "shared purpose" and indicate that shared purpose is perhaps the most important factor in creating a sense of cohesion and productive collaborative activity in group situations. Shared purpose was seen as a defining characteristic of group formation and group membership. Notably, shared purpose describes not only specific task-oriented activity, but also more general notions of purposeful learning activity.

Feelings of Safety and the Creation of a Safe Environment

Another important relational condition is the creation of an environment which is *safe* in the sense that it fosters feelings of trust and promotes interpersonal interaction. Respondents indicated that this was important for creating a stable, secure environment for basic communication, interpersonal interaction and critical discourse. This was described in terms of “comfort”, “confidence”, “safety”, and, in particular, “trust”.

A safe environment was described by respondents as one in which there is a generally positive atmosphere in which participants felt safe from rebuke, ridicule or other negative behaviours. It is populated by other participants whose behaviour was respectful and non-threatening. Respondents made both tacit and explicit links between this notion of safety and rapport, respect, and trust. The creation of a safe environment includes a variety of conditions related to the development of relations and ties: a sense of connection with others, relational pathways remain open and positive associations between participants. A safe environment is supportive of interaction as a form of learning activity by increasing participants’ willingness to “put themselves at risk” through personal disclosure, testing of ideas, seeking clarification or admitting lack of understanding. Notably, respondents repeatedly referred to negative experiences in emphasising the need for a safe environment. Negative feelings identified included embarrassment, exclusion, a sense of being offended, dismissal, lack of respect and being ignored.

Trust

Trust was viewed as an essential part of a productive online learning environment. Consistent with Tanis and Postmes (2005), findings indicate that trust includes both “trustworthiness” and “trusting behaviour”. Trustworthiness is a precondition of trusting behaviour in most cases and is a subjective construct which varies from one participant to another. Trust was described by respondents with three “C’s”:

1. *Confidence* in the other party, including confidence that the others would not act in a negative or unfriendly way as well as confidence that the other party can help, i.e., “has something I need”, will provide an appropriate response, or help me in some way.
2. *Comfort* in interacting with others including putting themselves at risk through idea sharing, personal disclosure, etc. This idea is related to the creation of a safe environment.
3. *Courage* to “have a go” and participate actively in discussions and other interpersonal transactions. This also includes the courage to respond honestly and openly in ongoing dialogues.

Trust indicates relative qualities of the content (as trustworthy), direction (e.g. I trust her) and strength (as a relative measure) of relations and ties between individual actors.

Respect

Respect is a positive relational condition between people which includes notions of trust and admiration. Respect is a highly subjective construct and no clear criteria for respect were evident in the data. Individuals have very personal ideas about the development of respect and how it is conveyed. Likewise, the actions of others in a relation are interpreted very subjectively as respectful or not. Findings indicate a pattern in which instances of respect are cited with directionality, i.e. when the respondent has respect for another (from me to you, I respect him), while instances of a lack of respect are indicated the other way around, e.g., he didn’t respect me.

In terms of the benefits, respect was seen to provide a basis for creating relations and ties between individuals, particularly in the absence of a sense of commonality. While participants may not *like* one another, they can still *respect* one another and that may provide a basis for ongoing productive relations. Likewise, respect may contribute to a sense of interdependence and facilitate collaborative activity, particularly when there is a strong task-orientation (shared purpose). As such, a multiplexity of relations is included in an understanding of a tie between actors which is characterised by respect.

Rapport

Rapport is a positive relational condition in which there is mutuality of trust and respect. It is based on notions of commonality and shared purpose and may develop out of necessity in task-related activity. Therefore rapport is clearly related to these other social-relational mechanisms. Notably, rapport emphasises the power of multiplexity in the formation of ties between individuals in which the rapport is generated. Positive results of rapport included willingness to put oneself at risk in discussions, willingness to offer critique or take critical positions, willingness to make personal disclosures and enhanced feelings of “closeness” to other individuals. Respondents repeatedly referred to notions of “honesty”, “trust” and “openness” when discussing experiences with rapport in online interactions. They cited a number of

negative examples of behaviours which undermined and/or prevented rapport from developing, particularly where these behaviours were interpreted as indicating a lack of respect.

These points suggest that while rapport represents a highly desirable relational state, it is a result of advanced levels of relational activity, dependent upon other relational states as pre-conditions of establishing rapport. Findings indicate that rapport is linked to multiple complex relations including combinations of the social-relations mechanisms identified above, acting in both directions (due to mutuality) and with relative strength.

Interdependence

Interdependence refers to the notion that learners both support and are supported by other learners. It manifests as explicit or implicit acknowledgement of the reciprocal (bidirectional) relationships between individuals in the online learning environment. Examples include: recognising how the contributions of individuals contribute to a collaborative effort, a sense of commitment to “the team” or “the group” or the “greater good” and expressions which indicate that there is inherent value in collaborative activity based on reciprocal commitment to a shared purpose. Interdependence is related to:

- *Commonality* in terms of shared purpose, common views and the notion that “we’re all in this together”. Some respondents indicated that commonality formed the basis for group formation and identification of “like minded” others who might have similar goals (shared purpose). There is an explicit recognition of the contributions others can make to personal learning, often identified through difference.
- *Trust* in the sense that, because the other parties are experienced only in mediated interactions, they must seem “trustworthy” and trust must be given for interdependent relationships to develop.
- *Specific identifiable personal characteristics* including skills, attitudes, beliefs, abilities and more which allow for individuals to be assigned (or sought out) for particular tasks. This is related to the notion of “division of labour” and creating a functional “whole” from a given set of “parts” in collaborative work. Social presence has a role in making the personal characteristics of individuals known to the group.
- A sense of both *commitment* to the group and *accountability* within the group (see also Hung & Chen, 2001). Notably, there is a potential conflict between commitment to collaborative processes and pervasive assumptions about the individual nature of study (and learning) in formal education. Likewise, there is some conflict about levels of accountability to the group. Some online learners viewed this as necessary, while others could not reconcile group orientation with expectations of individual learning processes.

However, responses indicated some conflict between the notion of interdependence and respondents’ expectations of independent activity. To some degree, this were related to learners’ expectations in formal education settings. These expectations include individual study activities, one-to-one support from the teaching staff and individual assessment. Some respondents expressed frustration with collaborative work while others expressed frustration with differing levels of commitment between individuals with regards to collaborative work.

Overall, a clear understanding of interdependence has not emerged from these data, but there are indications that it is an important concept in social support insofar as that is related to “networks of support”, collaborative and community work situations and supportive relationship building. Further study is need into learner experiences and expectations with regard to interdependence as it relates to collaborative activity and the development of community.

Social presence and the progressive development of relations and ties

The findings indicate that relations between individuals develop progressively from a point of first contact. In this initial encounter, there is a sender/receiver relationship between parties. The sender establishes a social presence and the receiver is made aware of the presence of the sender as an “other” party in the environment. At this stage the relation may be unidirectional from the person who has indicate his/her presence. The receiver forms an impression of the sender as *real* and *present* which encompasses such attributes as personality, background, and attitude, amongst others. The receiver uses this information for two main purposes. The first purpose is to create a context for the other party’s comments and so make meaning of them. This includes the recognition of the sender as a known party in the environment. The second purpose is to make informed decisions about the other party’s availability and willingness to engage in ongoing transactions. Together, these two purposes help characterise the relation between the parties. When both parties alternate roles as senders and receivers (i.e. there is

bidirectionality, from A to B and B to A), there multiplexity in the relations between them develops. Relations may be strengthened, operate in both directions and include a variety of content. There is a greater chance of forming ties as more stable interpersonal connections.

Relations and ties between individuals develop over time based on the number of interactions and transactions between them, the intensity of those interactions and the working of the social-relational mechanisms within those transactions. As the number of transactions between individuals increases, the combination of social presence cues and social-relational mechanisms contributes to the overall development of the ties between these social actors. A variety of social-relational mechanisms are called into play as individuals develop respect for one another's opinions, identify points of commonality, develop closeness and begin to trust one another. What emerges is a developing sense of history which contributes to the sense of the overall qualities of the ties between individuals. According to respondents in this study, depending on the cumulative effect of the transactions this quality may be characterised as "deep", "meaningful", "close" or "intimate". In other cases, the ties are more "shallow", "limited", "temporary" or "superficial".

Beginning with social presence as the basis for relations between social actors, findings indicate five main types of relational mechanisms which follow a developmental progression. These include a) those which form a basis for 'me-other' (one way) relations; b) those which form a basis for mutuality, reciprocity or a 'shared-ness' in the relation; c) those which contribute to feelings of safety and the development of a risk-free environment; d) those which promote feelings of trust, including informing decisions about trustworthiness of other participants, and lead to the exhibition of trusting behaviors; and (e) those which lead to production in the completion of collaborative work (see also Murphy, 2004). These types of social-relational mechanisms work in concert with social presence to influence the development of relations and ties and the related quality of the relationships between individuals.

Table 1: The progressive development of relations

Progression of relations	Relational mechanisms at work
Me-other relations	Empathy Respect Admiration Commonality Connection Likemindedness
Mutuality	Freedom from risk Comfort with others Confidence in others
Feelings of safety	Trustworthiness Trusting behaviours Willingness to put oneself at risk
Trust	Group cohesion Rapport Interdependence
Production	

Notably, the stages in this progression are not discrete. Rather, they are relative positions. Relations are emergent and dynamic. They are in a state of constant flux -- sometimes developing, sometimes waning. There are not clear thresholds between these stages. Table 1 above illustrates these progressive stages and the relational mechanisms at work.

Basis for me--other relations

Once social presence is established, participants' decisions about whether and how to respond to one another are influenced by basic feelings of relation between the parties. Social-relational mechanisms which operate here include: (a) *empathy*, defined as the ability to put oneself in the place of another; (b) *respect*, which is the acknowledged value of another party or their attributes; and (c) *admiration*, which not only is acknowledged value but also includes a desire to be like the other party.

For each of these relational-mechanisms to exist, a participant must acknowledge the existence of another as a real person (as previously established through social presence) and relate the other party's situation to that participant's own. These mechanisms form the basis for relations between the two parties. Notably, the relations are largely undeveloped at this stage as interaction may be limited to one-way communicative exchanges.

Basis for mutuality

When communication becomes two-way, there is opportunity to develop mutuality, or sharedness in the relation. This sharedness is an important precondition for the development of more advanced relational states between parties as it includes relations operating in both directions and adds to the multiplexity of ties. Mutuality is built upon the identification of points of commonality, feelings of familiarity and a sense of "likemindedness". This sense of mutuality is sometimes described as a sense of connection, which explicitly acknowledges the relations and ties between individuals. These relational mechanisms (commonality, likemindedness) contribute to a sense of reciprocity which adds multiplexity and strengthens the tie/s between the individuals, which opens the door to ongoing interactions between the parties.

Creation of a risk-free environment

To build upon mutuality and create sustained interaction, participants need to feel that the social environment is safe. In the data, these feelings of safety are often characterised by notions of "comfort" combined with either a "freedom from risk" or a willingness to put oneself at risk because of a decision to trust fellow participants. Results from the study indicate that these social-relational mechanisms facilitate "deep" interactions which move beyond "safe", superficial interactions into more provocative or less safe interactions. As the ties between individuals become stronger, their relationships become more intimate and closeness develops. Participants engage in greater personal disclosure and hypothesising as they delve more deeply into the issues at hand.

Promotion of trust

The relational mechanisms identified above have a cumulative effect as they promote the development of trust by informing decisions about the trustworthiness of the other party (Tanis & Postmes, 2005). There are indications of strengthening of ties due to multiplexity of relations acting in the formation of the ties. In particular, decisions about trustworthiness are influenced by feelings of safety or freedom from risk in the learning environment mentioned above. Together, these feelings contribute to an individual's willingness to exhibit trusting behaviours which include personal disclosure, openness and a willingness to put themselves at risk. When these feelings of trust are characteristic of relational states amongst members of a group, there are higher levels of group cohesion and feelings of closeness.

Production

The progression of relational states and the development of stronger ties are potentially beneficial to online learners in a number of ways. First, these relations support ongoing interpersonal interaction. As ties develop, they provide motivation for ongoing interaction and help online learners identify desirable partners for interaction. Also, ties provide a basis for collaborative activity in the development of shared purposes, rapport, group cohesion and interdependence. Finally, the development of networks of ties is essential to the development of a sense of community which transcends collaboration to create highly interconnected activity systems.

When the conditions exist for the full development of positive relations, rapport develops between individuals and high degrees of cohesion exist within groups. Interactions may be frequent and intense. The conditions promote the development of collaborative activity in which participants share responsibility and activity in order to create shared products. They also create the potential for the development of a sense of community, including the interdependent relationships that exist between community members and the explicitly shared purposes of members.

Notably, respondents highlighted that the development of interpersonal relations requires a combination of time and a certain level of intensity in interaction to achieve. Relations and ties do not develop instantly and they require attention in order to be cultivated and maintained. Likewise, ties can weaken and wane as a result of changing content and strength. Cultivating productive relations and ties within the limited timeframe of a unit of study remains one of the challenges for online learning in formal education.

Implications for further research and practice

These findings are significant to practitioners insofar as they inform decisions about the design, development and implementation of particular aspects of online learning as well as the use of computer mediated communications (CMC) tools in the service of learning. Based on the information collected in this exploratory study, no firm recommendations can be made. There are, however, indications for further research and development around these ideas, including some suggestions for online teaching and learning practice.

Firstly, the findings indicate a need to acknowledge the importance of social presence in text-based online learning environments in enhancing learners' experiences, particularly within designs which emphasise learning as a social process. Participants were explicit about this point:

SP[social presence] is important because you can't build a real community of learners without it. It is impossible to just interact about the course in a "neutral" kind of way, without revealing one's underlying values, beliefs and "self", and still achieve real, meaningful and deep learning. Interactions that do not allow for or involve the building of SP are superficial.

"Julie", one of the respondents

In terms of online teaching and learning practice, the development of social presence must be considered in designs which incorporate interpersonal interaction and collaborative learning. All participants in online learning environments, including teaching staff, support staff and learners, must learn to cultivate a social presence as part of productive learning activity. Further research is needed into the nature, role and function of social presence, particularly in light of ongoing developments with online learning communities and other online social networks.

Secondly, there is a need to understand the developmental progression of relational states and the effects of this progression on productive learning activity. Progression implies a stepwise process, not instant production. Designers must consider the time required for this progressive development and temper their expectations regarding online learners' abilities to engage in complex productive processes within groups of relatively unknown peers. This point is particularly significant for designs which seek to stimulate learning within limited timeframes such as single academic terms. Moreover, while productive relations and ties might develop spontaneously, the findings in this study indicate that they may also be actively cultivated through the efforts of skilled designers and facilitators. In order to realise productive collaboration within any context, there is likely to be a need for preliminary work on establishing and cultivating relations between participants. This implies further investigation of teaching and facilitation practices in amongst cohorts of online learners. Moreover, while this development may be aided by practical considerations in the design, development and implementation of online learning, it may also be hampered by these considerations. One respondent described his experiences this way:

... about the lack of a sense of community in this course and the reasons for this. My thinking is that this course is very task focused and not a lot of effort has gone into trying to build a sense of community or opportunities for its development. To some extent it represents the tension and challenge of finding a balance between the needs of the curriculum and fitting in the learning activities [...] I also think that the course facilitators either aren't paying much attention to this aspect, or that they are under such tight time constraints that they have sacrificed this aspect in order to get through the material.

"Kevin", one of the respondents

Suggestions for online teaching and learning practice include the cultivation of a strong presence model by the online facilitator, inclusion of presence-building tasks into early course activities, supportive activities for novice online learners, and designs which require, rather than suggest, interpersonal interaction. Therefore, further research is needed on fostering the developmental progression of relations. This should include some 'fit-for-purpose' matching of learning objectives, learner needs, instructional design, learning environment design and development of supportive social structures.

Thirdly, and further to the previous point, there is a need to identify conditions which foster the progressive development of relations and ties through the relational mechanisms identified above. This is about informing good online teaching practices. For example, regarding *commonality* as presented above, there is a need to provide opportunities to identify points of commonality in online learning processes and the tasks which constitute them. This entails more explicit identification of particular learner characteristics which allow participants to identify others with common traits. While many online learning experiences feature introductions and 'getting to know you' type activities, these may lack meaningful structure or purpose. Given the constraints of most formal education a more purposeful use of such activities may benefit learning processes. Moreover, there is a need to create structures within the course which capitalise on particular sorts of commonality as a basis for developing relationships and ongoing interaction (e.g., interest groups). In one of the four cases within the study participants were grouped at the start of term according to their professional contexts. In this situation, members of any particular group had commonality of professional experience, and in some cases, training or professional

histories. This served to stimulate interaction and the development of relationships as the course progressed. There is a need for similar analyses of all of the social-relational mechanisms identified above in order to inform practical decisions about using the progressive development of relations to best effect within online courses and programmes.

Summary conclusion

According to online learners, social presence plays an important role in text-based online learning environments to (a) provide information about individual social actors in the environments and (b) indicate the content, direction and relative strength of relations between pairs of actors. This relational information is critical to the progressive development of relations and ties between actors and the promotion of interpersonal interactions between them which feed the development of relations. As relations and ties develop strength and relationships between actors gain depth, richness and stability, collaborative production is enhanced. This collaborative activity may extend to the development of online communities and other supportive social structures which not only improve learners' productivity in terms of meaningful learning activity, but also add value to learners' experiences by linking individuals to one another and improving access to supportive resources. These resources include not only those required for academic work (e.g., content expertise, conceptual frameworks, analytical tools) but also those which provide other types of support, including affective (e.g., from mentors and more experienced peers), technical (dealing with technology, using it as a productive tool) and administrative (i.e., navigating the particular administrative structures of the institution or provider).

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Benjamin Kehrwald is the E-learning Facilitator in the College of Education at Massey University. He has been studying, teaching and researching education technology for the last 14 years in the USA, Japan, Australia and New Zealand. His research interests include online community, mediated social processes and social learning theory. Correspondence at B.A.Kehrwald@massey.ac.nz is welcome.

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