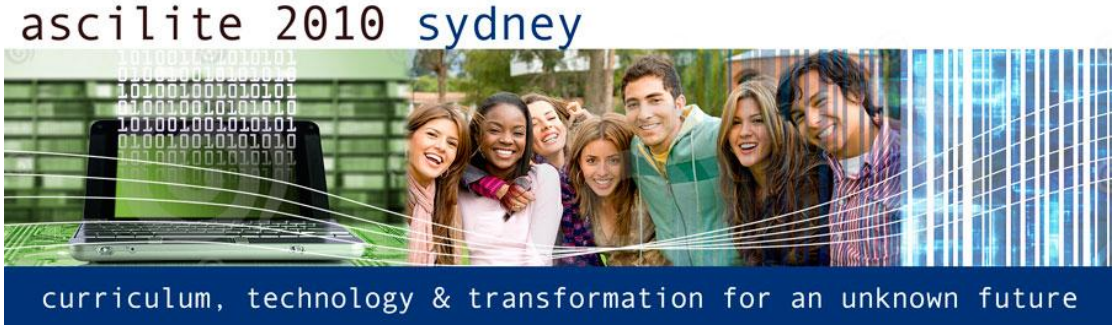

Conceptualising social networking capabilities: Connections, objects, power and affect

Christian Voigt[1], Sandra Barker[2], Sharron King[3], Kit Macfarlane[4], Tim Sawyer[3] & Sheila Scutter[3]
[1] Learning and Teaching; [2] Management; [3] Health Sciences; [4] Communications
University of South Australia

The following paper discusses the implications of introducing social networking into a university teaching environment and suggests that further understanding and investigation into the role technology plays in such an environment is needed. In examining in-class technologies such as Clickers, online teaching tools such as Centra and Moodle and social networking sites such as Facebook, the paper considers the benefits for teachers and students, as well as examining the drawbacks that may need to be addressed for successful implementation in relation to learning outcomes. After discussing the growth of networking in an educational setting, the paper presents four major aspects that describe the working of networks, and then applies this discussion to specific examples of Facebook and Clickers. While the move towards technological implementation is supported, it is emphasised here that it cannot be done without in-depth examination of the position of both teachers and students in relation to technological innovation in the classroom.

Keywords: social networking, object-centred sociality, clickers, facebook

Introduction

With the launch of Social Networking Site such as SixDegrees.com in 1997, social networking has been brought to a new level by bundling multiple networking functionalities (e.g. personal profiles, list of friends or followers and various forms of addressing ones network) (Boyd & Ellison 2007). Sites such as Facebook and MySpace had over 200 million registered users each by 2009 (Maranto & Barton, 2010) and approximately 50% of Internet users worldwide have adopted blogging, photo - and video-sharing, social networking or social gaming (Pascu, 2008). The popularity of social networking sites has also been noticed by educators, who argued that the pervasiveness of social media shapes new learning styles with the current generation often referred to as 'digital natives' (Prensky, 2001) or 'new millennium learners' (Prensky, 2010). However, even though simplified conceptualisations of online learners might help to raise awareness of important issues – see digital literacy and Prensky's (2001) coinage of 'digital natives' – overly flat depictions of online learning can also lead to distorted perceptions of students' reality (Selwyn, 2009). Against such simplifications, Goodyear and Ellis (2008) make clear that a serious approach to student-centred learning requires us to acknowledge students' diversity in (a) adopting educational innovations, (b) having multiple rationalities for or against adopting innovations, (c) being supported or limited by their institutions and (d) forming part of power relationships that may dictate the use of educational technologies to teachers and learners alike. We argue that student centeredness requires us to seriously challenge common assumptions about what social network tools can contribute to the social side of the teaching and learning process.

Taking Goodyear et al's (2008) notion of 'serious student-centred learning' as a starting point, the objective of this paper is to provide a set of networking related perspectives that can inform design and

analysis efforts related to the use of networking tools in education. Such work seems to be even more necessary as innovations in teaching and learning are often confronted with difficult conditions. Universities frequently project educational technologies as remedies to increasing student-to-teacher ratios and learner disengagement (Attwood, 2009). However, we cannot simply hope for social networking to 'fix' issues that have systemic origins. An account of concerning developments can be found in Lynch (2010), who reports a startling discouragement of academics who care for students' progress beyond what is mandated by official policies. If we consider that innovative forms of learning require innovative approaches to teaching, then it becomes evident that we cannot neglect teachers' roles (Hanson, 2009). Hence, we are aware that technology is only a small part of a more comprehensive discussion about education. By focusing on aspects closely related to capabilities of educational technologies, i.e. functionalities and configurations, our paper can only be a first step, putting a stake in the ground for student-centred social networks.

We start with highlighting the general success of social networking and the need for more in-depth conceptualisation of networking in an educational setting. We are then going to identify four major aspects that describe the working of networks. After that we discuss these four aspects in the context of using two concrete applications (Clickers and Facebook) for networking. Clickers are thereby seen as the low-tech end of social networking tools opposed to Facebook which labels itself explicitly as social network. Finally, we hope to move a step further towards Conrad's (2008) new mindset that 'connects the dots' between learners' technologically inclined expectations, the needs of a 21st century society and the means provided in ever more versatile learning environments.

What makes networking work?

Although networked learning and social networking have been researched in different contexts and from a variety of angles, our understanding of networking in an educational context is still limited. We are not yet sure whether we ask the right questions and look at data that matter, rather than choosing questions that suit the available data (Goodyear & Ellis, 2007). Hence, by asking 'What makes networking work?' we aim to identify aspects with which to review uses of technology for the purpose of networking. At a later stage, we hope to operationalise and verify these aspects through a set of empirical questions. For now, our suggestions are derived from a review of the literature as well as our own teaching experience. We start with the general notion that any social network is made of *connections* between people, with some people being more connected than others. We then introduce the need for *objects*, as people relate to each other through objects of interest or knowledge objects such as a shared user profiles on www.linkedin.com or a shared stream of events on www.facebook.com. Looking at different levels of empowerment, we then discuss *power structures* in networks. Power structures can be formally implemented through the allocation of administration rights to some members but not all, in which case a minority has the power to determine who joins the network and which objects (e.g. applications, content, ideas, etc.) are allowed. Finally, we argue that a network's ability to facilitate growth of connections, multiple types of objects and balancing of power differentials is largely dependent on the network's ability to integrate members with varying *values* and motivations.

Following these four aspects (relationships, objects, power and values) are discussed independently of any specific type of technology. Rather, each aspect concludes with requirements any technology would need to address in order to facilitate effective networking experiences.

Growth of relationships in networks

Networking students can improve the learning or teaching experience, not only for providing a sense of community but also because networks add robustness to learning processes (cf. Barabasi, 2002, p. 120). The more peers to whom students can turn for advice or clarifications, the more robust a learning environment becomes in providing information and exchanging feedback. While networking in learning environments can lead to a faster and more reliable exchange of information, we are aware that networks can be used to spread any type of information: be it correct or misleading, important or irrelevant.

However, simply encouraging networking among students is not sufficient. Growth of social networks outside education has shown to be crucially dependent on hubs (Barabasi, 2002). Hubs are those members in networks that are extremely well connected compared to the connections an average

member of the network would have. The reason for the emergence of well connected hubs are preferential choices, i.e. people do not connect randomly (Barabasi, 2002). For example, a blog written by a well-known expert has better chances to attract visitors than a blog of a less known author and, by gaining new followers, the expert's blog becomes even more visible and attractive. The fact that connectivity in most networks is not random has been described through power-law distributions (Andriani & McKelvey, 2007). A normal distribution would suggest an average number of connections for the majority of network members whereas a long power-law tail indicates 'extreme data points', i.e. few members having unusually many connections. So what are the implications for social networking within an education context? Hubs can be students who contribute substantially to initiating or maintaining networks. Hence, most networks display the activity level of their members because this is an indicator of status and because loyalty with networks increases with increasing numbers of followers, postings or group memberships (Lampel & Bhalla, 2007). Consequently, ***visualising networking*** activities is a first requirement for technologies wanting to facilitate networks.

Another implication of power-law distributions in student networks is the fact that personal networks are likely to be rather small for some time at the beginning but would grow logarithmically if given enough time (cf. Barabasi, 2002). Hence, we cannot expect social networks to emerge over night and activities with different ***horizons of interaction*** (a day long workshop, thirteen weeks of group work or a community of interests with no externally set expiration date) will result in different types of networks. Of course, there is no seniority principle in networks and members will not gain hub status by simply being around for long enough. Barabasi (2002) refers to 'intrinsic qualities' members of a network must have in order to stand-out from the crowd.

Object-centred sociality

Engeström (2005), co-founder of a micro-blogging service and product manager with Google, raised the question of why some social networks thrive and others do not. He suggested that people in networks are linked through objectified interests, illustrating his point by comparing Facebook and LinkedIn. At the centre of the former are personal experiences members can share and comment upon, whereas the latter is missing such a focus – contacts are accumulated and not much else happens. Engeström is challenging a view of networks as being made up of people only (cf. Barabási & Albert, 1999) and emphasises the need to include the objects social interactions are about. A similar point is made by Kaptelinin (2005) who argues that collective activities are structured, directed and motivated by objects, which capture the ***purpose of networking***. However, activities can have a variety of motives, e.g. combining a desire for knowledge with an interest in socialising and a general enjoyment of team work (ibid). Hence, objects in networks need to help individuals to express the cognitive, experiential as well as affective dimensions of their relationships – a process Knorr Cetina (1997) refers to as 'object-centred sociality'. What is needed are different ***means of objectification,*** comprising different multimedia formats (e.g. audio, video, interactive simulations) or different configurations of interactive spaces (e.g. secret and public facebook sites or a group's data repository).

Power structures in educational networks

A fundamental difference between networks in the public sphere (facebook, YouTube, etc.) and networks as we might see them in an educational context is the role of power exercised by universities who can emphasise the use of networking technologies in situations where students might not have used them voluntarily (Selwyn, 2007). Discussing power structures goes contrary to an understanding that puts end-users into the driver's seat or put differently, sees learners as having an active role in changing and configuring their learning environment in ways that best fit their current needs – a view also referred to as 'person-plus systems' (Perkins, 1997, p.106). Perkins (1997, p.98) argues that in person-plus systems, the same learning environment is perceived differently depending on learners' needs and creativity in using what is available. The person is at the centre and uses technology as needed rather than as prescribed. However, Goodyear and Elis (2007) argue that we cannot simply categorise learners as 'compliant users' or 'media savvy experts' without taking into account what priorities are communicated by their teachers or future employers. If students think that using technology will not provide sufficient benefits in a course or for future job applications, they may well forego the use of technology even so they would have the necessary skills (Goodyear & Ellis, 2008).

This means that in an educational context, teachers can seldom make neutral recommendations – the power to open up, shape and configure learning technologies remains mostly with teachers who then

set standards for what is allowed in a network and what is not. Hence, even though institutions want to harness social networking among students, they are still interested in ***setting 'rules of interactions'*** and defining appropriate content. Whereas public social networks are often informal, organically grown networks with shifting agendas; traditional education systems are largely formally designed institutions with a set curriculum (Young, 2008). Differences between public and educational networks are also conveyed through the technological set up of networks in education. Teachers might be the ones deciding who can or cannot join the network and by deciding who can see, they effectively control *'who will have **access to members' digital footprint** and who has not'.*

Affective support in networks

Theories on collaborative learning frequently emphasise the importance of social or affective interactions to support group work and critical dialogues (Motschnig-Pitrik & Mallich, 2004). Their argument goes that critiquing the work of peers, for example, requires a level of trust that is most likely to develop if students interact intellectually as well as socially (ibid). However, passion and affect in education are rarely researched concepts, yet being passionate about one's own teaching is a crucial condition to get students excited or interested (Miller, 2009). Being networked rather than isolated is seen as a crucial support mechanism when one has to cope with substantial stress and change. Following two examples where affect has been shown to be an essential success factor.

- Students need to develop a sense of belonging to a wider community, particularly during the *first year of university*, in order to get that informal support that helps them to understand what can be considered as 'normal stress' (Krause & Coates, 2008) or where they stand in relation to what they aim to become.
- Maintaining a link to their student communities becomes important again when students go on placements where they need to adapt to a different environment with yet another set of expectations. In these situations, sharing experiences with other students is beneficial as a debrief for students who may be feeling isolated.

In researching the literature on the affective domain we found two distinct approaches: one focusing on of learning (Krathwohl, Bloom, & Masia, 1956) and one on teaching (Cranton, 2006).

Affective domain of learning
Krathwohl's et al (1956) described the affective domain in terms of the internalisation of values. The authors suggested that internalising values involves five processes: (1) building up awareness, (2) attaching emotional significance, (3) committing to a value, (4) developing a more complex set of values and (5) integrating values into a more general world view (Krathwohl, et al., 1956, p. 35).

Preliminary thoughts on the affective domain of teaching
Although previous work on the affective domain of learning can inform the meaning of the 'affective domain of teaching', a definition that relates to the role of affect in lecturers' work environment is indispensable. Cranton (2006) makes clear that, unlike affective learning in schools, academics already have a firm value-basis that motivates their teaching. How well teachers' individual values match the values reflected in their environment is a crucial factor shaping the affective domain of teaching (Lynch, 2010). More specifically, teachers need to balance their teaching values against the expectations of other stakeholders within the University system including students, colleagues or line managers.

What seems to be shared by both approaches is the importance of developing, practicing and negotiating individual values in regards to the values of one's community. One way technology can contribute to the formation and negotiation of values is by **capturing members' arguments** in favour or against a given value, revealing the level of **agreement achieved**. Both functions – capturing arguments and documenting agreements – seem crucial because they create transparency about the state of a community and the wellbeing of its members. An example of such a situation has been given in a study by Cecez-Kecmanovic (2001) where academics were encouraged to discuss a new funding allocation scheme. Although management saw the forum's primary function in disseminating information, academic staff used the forum to give feedback, suggesting changes. When management ignored staff input, the obvious discrepancy between an 'updated' funding allocation plan and the preceding counter arguments highlighted the inconsistency in management's approach (Cecez-Kecmanovic, 2001). A similar process of argumentation and negotiation might become necessary when

students use a wiki to work on group assignments. The final text may not represent everyone's thoughts, but the process that led to the inclusion or exclusion of an idea is documented in the wiki's discussion pages (Wheeler, Yeomans, & Wheeler, 2008). Hence, networks do not necessarily end up creating uniformity; however, as a result, all network members became aware of the level of diversity within their community, an important first step in the negotiation of values.

Examples of technologically enhanced networks

Networks of people (or communities) often emerge around shared interest. Communities of practice (CoPs) as described in Wenger (2003) are one type of community whose practices around a common purpose shape the relationships and learning that takes place within the community. Analogously, communities emerge in an educational context, where students have similar professional aspirations, need to fulfil the same learning objectives within a course or simply share a passion for the same topic.

However, engagement in communities can happen through virtual or physical world interaction. Avoiding technology determinism, i.e. assuming technology to be a prime cause of social change (Surry & Farquhar, 1997), we argue that community members can use any technology in ways that support the formation of networks. The virtual realm is just one medium among many and networking in a university context can quickly shift from virtual activities to activities in the real world. For example, Sawyer & Scutter (2009) reported that interactions in virtual communities triggered group activities off-line, helping to retaining first year students. Table 1 surveys several educational technologies with regards to their capacity to support networking. Horizontally, technologies are ordered according to their similarity to what we would see as a typical social networking sites (SNS), and vertically, we have listed the four aspects of networking (relationships, object-centred sociality, power structures and affective support) as identified in the previous section.

Table 1: Educational technologies and their capacity to support networking

Example	Clicker	Centra	Moodle	Mahara	Facebook
Context of application	In-class network	Virtual classroom, group based network	LMS-based, Course-based network	E-Portfolio, Open-source based network	SNS, Web 2.0 based network
Relationship-centred perspective on networking					
Time scale of interaction	Minutes	Hours	Weeks	Indefinite	Indefinite
Monitoring of networking interaction	On-demand, anonymous	None, networking happens mainly offline	'Who is online' and class lists, Stats for teachers	Most active groups list, Latest postings	Friends list, Shared events, Group pages
Object-centred perspective on networking					
Support for multi-purpose networking	Event specific	Event specific	Focus on learning	User-defined	Focus on socialising
Means of objectification	Pre-defined answers	Application sharing & recording	Multimedia	Multimedia & Community outlets	Multimedia & Community outlets
Power-related aspects of networking					
Power to define rules of interaction	Teacher only	Mainly Teacher	Mainly Teacher	Teacher & Students	Teacher & Students
Power to control access to objects	Teacher only	Mainly Teacher	Mainly Teacher	Mainly Students	All
Ability to enable the negotiation of expectations and values					

Capturing arguments	See ‘means of objectification’ under Object-centred perspective on networking
Documenting agreements	

Since discussing all five technologies in detail is beyond the possibilities of this article we decided to focus on the two applications that seem least and most likely to support networking: Clickers and Facebook.

In-class network: Clicker

Clickers are small transmitters about the size of a television remote control. They are usually used in classroom settings and provide a way for students to answer multiple choice questions, which can be embedded in PowerPoint presentations. The receiver summarises the responses of students and the results can be displayed in a variety of graphs. Clickers can be allocated to individual students and can be used in-class for formative or summative assessment.

Relationship-centred perspective
Clickers are very useful for providing feedback to both students and the teacher about student learning. Networking through Clickers can be facilitated on two levels: whole class- and inter-group interaction. When used for class-wide interaction, clickers can provide students with an awareness of their learning environment, by asking simple questions about academic background, expectations and ambitions of class members and displaying the (anonymous) responses of students (Premkumar, 2008). Students find sessions using clickers to be ‘dynamic and interactive’ and appreciate the immediacy of feedback from a question as well as knowing how they went in relation to the rest of the group (Stupans, King, & Scutter, 2007). Additionally staff are able to use clickers to gauge student’s background in a topic before they start the lecture which enables them to ‘pitch things at the correct level’ (ibid).

However, allocating clickers to groups of students introduces a whole new element into the benefits of using clickers. If a clicker is shared by a small group of students, then the students need to discuss the possible responses before deciding which response to transmit (Caldwell, 2007). For example, as well as allowing time for students to discuss the question and decide which response to transmit, allowing students to ‘debrief’ when the correct answer is revealed is also important. In both cases – class-wide and group-based use – interaction would be typically limited to a few minutes over the duration of a tutorial or a lecture. It is, however, conceivable to use Clickers at the beginning and at the end of a study period in order to visualise and discuss the development of a certain aspect (e.g. individuals’ argumentation skills or groups’ internal collaboration climate). Hence, even though actual interaction time and visualisation of networking activities is fairly limited – and Clickers are not usually thought of as networking devices – teachers can use Clickers to promote awareness of peers (e.g. the expectations and experiences others bring to the class) and discussions within groups.

Object-centred perspective and power-related aspects
Use of Clickers is clearly initiated by teachers; it is also the teacher who determines the purpose of usage, the questions asked and what response options are presented. Under the heading of ‘object-centred sociality’, however, we argued that objects in networks need to balance the interests of those who are supposed to network. Students can easily disengage (e.g. opt to not respond), if they perceive Clicker questions as unrelated to their concerns and needs. A second aspect of ‘object-centred sociality’ was the possibility to ‘objectify’ interests using different media. We would argue that this is the area where Clickers are most limited. Not only is the output of a Clickers-event necessarily a chart of some form or other, Clickers also require predefined response options with which the audience can agree or disagree. The latter illustrates the danger associated with the fact that the ‘power’ to shape Clicker interactions lies exclusively with teachers who may ‘lose’ their audience without noticing due to the excessive or irrelevant use of Clickers. A remedy could be to frequently monitor the appeal of Clickers as done in Stupans et al. (2007) where 80% of students confirmed Clickers’ usefulness for their learning. Clickers are not without their disadvantages. Technical failure is not uncommon, causing frustration for the lecturer and annoyance of students. Unless students own their own clickers, and maintain these for the duration of their studies, the clickers need to be handed out and collected for each session. This can be a time-consuming exercise in a large class. Overuse of clickers can slow

down a large class considerably, as each clicker response has to be registered, and with hundred of responses coming in this can take several minutes for each question.

Ability to enable negotiations of expectations and values
Although students can agree or disagree, negotiation would always need to be around easily definable and categorisable data. Clickers, for example, may have a use in a humanities English literature classroom, but to what extent this can be incorporated into the in-depth appreciation of the material is problematic. Whereas heavily 'cognitive' areas may use this technology to accentuate the affective element in the classroom, the pre-existing affective concerns of an English classroom may simply find that these re-enforce a focus, potentially a misleading focus, on the cognitive domain.

Similarly, Clicker technology may be used to further establish a sense of community, but carries the risk of alienating or simplifying varying or minority views or backgrounds when used to demonstrate 'personal' data: for example, how many works by Shakespeare students have read, what genres they prefer, how often they read, etc. While offering useful background information, this approach again relies on predetermined categories and responses which may not be able to properly encompass the views and variations inherent in any given body of students with a variety of backgrounds, values and perspectives.

On–line social network: Facebook

Facebook is a popular online social networking site, with 60% of university students accessing facebook daily (Ellison, Steinfield, & Lampe, 2007). Facebook users can connect online with their friends, make new friends who share similar interests and expand their personal network. For students commencing University, Facebook or similar sites offer an opportunity to find other students in the same program or with similar interests. On-line social networking groups can be created to provide opportunities for students to interact in a virtual community, which has shown to lead to physical communities being developed (Sawyer and Scutter, 2009). Using facebook as an online networking site targets the student cohort in a communication style that they can relate to, bearing in mind that the vast majority of students are using facebook regularly. A student based Facebook group also allows the community to stay in touch after graduation, when their university email account has expired. Thus providing important enticements in terms of job prospects and business opportunities (Ellison, et al., 2007).

Relationship-centred perspective
Students can interact with peers online to get to know other students, ask an academic question, form study groups or to organize and participate in social events. As demonstrated by a survey of first year university students, figure 1 shows that the main use of a social networking site (SNS) created for students, was to get to know other students (79%), followed by finding out about social events (44%).

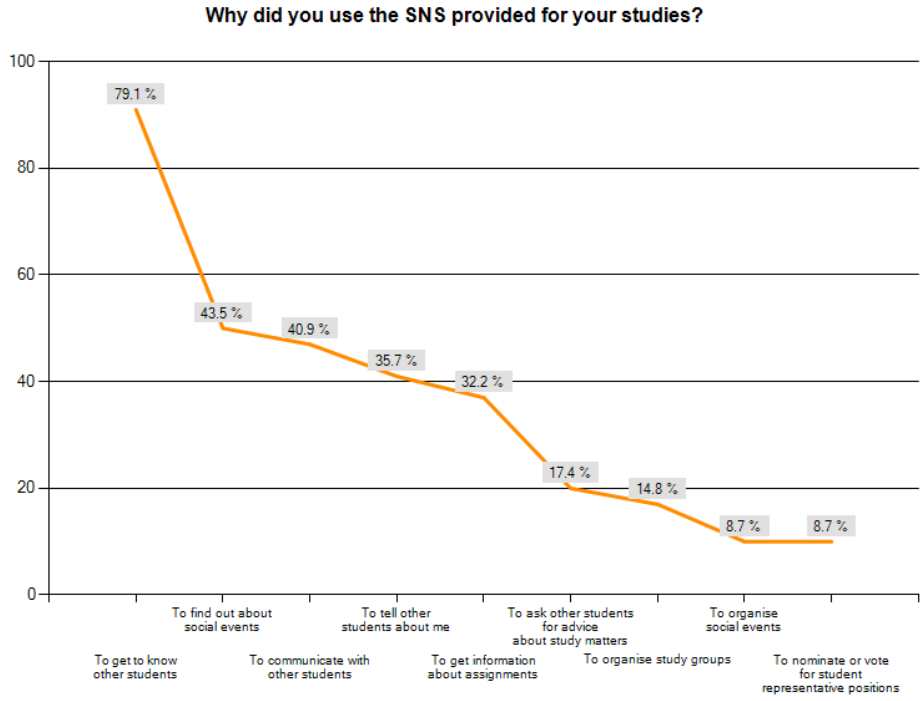

Figure 1: 2009 survey of undergraduate students (N= 238)

Members can organize social events, such as a formally-planned pub-crawl with colourful t-shirts, or spontaneous events, like posting a comment on the wall calling for a ten-pin bowling game that afternoon. Indeed it is important that students connect over a common activity that is of interest to them so that a relationship-centered perspective is maintained to avoid having the user becoming bored with the service and eventually discontinue using it (Breslin & Decker, 2007).

Object-centred perspective and power-related aspects
As pointed out earlier, networking happens around objects. Objects in facebook are most often events such as social gatherings or academic meetings as in the formation of study groups. To alleviate privacy concerns the facebook group can be set as a 'secret group' with membership by invitation only, and only members can see the group information. A 'secret group' will not appear in a search result and only administrators can invite members. The initial creation of a facebook group is by the teacher who invites the student cohort to become members. But after a period of time the administration rights can be delegated to a suitable student who would have equal control to maintain the site, with the teacher taking a more hands off approach. This process would empower the student and give the group ownership of the site.

Ability to enable the negotiation of expectations and values
Unlike Clickers, Facebook provides a wide range of means to objectivise one's interests. Networks on facebook can share opinions about recent events or they can express their agreements and affections through facebook applications such as 'hugging' and 'x likes this'. Furthermore, postings can include pictures and YouTube videos which allow for richer expressions of one's values.

However, not everyone might be inclined to use web 2.0 applications such as facebook for networking and this resistance can carry over to networking technology's presence in the classroom. With different disciplines not necessarily sharing or promoting the same values related to networking and learning, this may go so far as to question the underlying assumption of 'learners' technologically inclined expectations' and 'the needs of a 21st century society' (Conrad, 2008). While it may be assumed that teachers re-evaluate their value systems over time and in a changing environment (Cranton, 2006), there is no reason to believe that most teachers or students end up buying into technologically enhanced networking. Consequently, non-users of facebook or other digital networking media may find themselves excluded from negotiations if they cannot find alternative ways of making themselves heard (Selwyn, 2006). Further, while relationships within networks may allow for peer discussion and clarification, potentially non-specific, possibly primarily affective, outcomes may not be aided by a

group approach, especially when the core focus is on the affective notion of integrating the object of study into one's own notion of self. The focus on the group approach to this may, once again, marginalise differing and minority viewpoints or prevent self-exploration for those who immediately find superficial group validation. This superficiality may be accentuated if the network is spread over multiple media, potentially allowing for an active presence over a variety of platforms, but not necessarily demanding an in-depth one on any one platform.

Conclusion

This paper has attempted to demonstrate that various educational technologies have networking qualities regardless of whether they are branded as social networking tools or not. In this sense networking can happen low- or high-tech and most likely through a combination of both. The simple in-class use of an audience response system such as Clickers can already spur the development of networks among students whereas using actual social networking applications can show disappointing results if certain requirements for successful networking were not considered.

In order to get a better understanding of these requirements, or put differently, of what it might be that makes networks work, we analysed four aspects of networking: growing personal connections, connecting around objects, balancing power differentials and integrating individual values with community values. We believe that being aware of the mechanics of networking from a learner's perspective is at least as important as improving existing or developing new networking applications. Or as Selwyn puts it "showing an increased awareness of the critical aspects of technology-based education would certainly go some way towards lessening the disparity between the 'rhetoric' of educational technology scholarship and the 'reality' of educational technology practice" (Selwyn, 2010, p. 72).

Eventually, higher education is "to inspire and enable individuals to develop their capabilities to the highest potential levels throughout life, so that they grow intellectually, are well equipped for work, can contribute effectively to society and achieve personal fulfilment" (Ramsden, 1998, p. 348). Replicating some of the engagement social networks have achieve outside the educational sector would be a significant gain in achieving the objectives of higher education as described in the preceding statement.

References

Andriani, P., & McKelvey, B. (2007). Beyond Gaussian Averages: Redirecting organization science toward extreme events and power laws. *Journal of International Business Studies, 38*(7), 1212-1230. https://doi.org/10.1057/palgrave.jibs.8400324

Attwood, R. (2009). The personal touch. *Times Higher Education*

Barabasi, A.-L. (2002). *Linked: the new science of networks*. Cambridge, Mass: Perseus Pub.

Barabási, A., & Albert, R. (1999). Emergence of scaling in random networks. *Science, 286*(5439), 509.

Boyd, D. M., & Ellison, N. B. (2007). Social network sites: Definition, history, and scholarship. Journal of Computer-Mediated Communication, 13(1), article 11. http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html

Breslin, J., & Decker, S. (2007). The future of social networks on the internet: The need for semantics. *IEEE Internet Computing*, 86-90. https://doi.org/10.1109/MIC.2007.138

Caldwell, J. E. (2007). Clickers in the Large Classroom: Current Research and Best-Practice Tips. *CBE Life Sci Educ, 6*(1), 9-21.

Cecez-Kecmanovic, D. (2001). Organisational discourse via CMC: What enables and what prevents knowledge sharing. *Journal of Systems and Information Technology, 5*(1), 115-134.

Conrad, D. (2008). Reflecting on Strategies for a New Learning Culture: Can we do it? *Journal of Distance Education, 22*(3), 157-162.

Cranton, P. (2006). *Authenticity in teaching.* San Francisco, Calif: Jossey-Bass.

Ellison, N., Steinfield, C., & Lampe, C. (2007). The benefits of Facebook" friends:" social capital and college students' use of online social network sites. *Journal of Computer-Mediated Communication, 12*(4), 1143-1168.

Engeström, J. (2005). Zengestrom Blog: Why some social network services work and others don't http://www.zengestrom.com/blog/2005/04/why-some-social-network-services-work-and-others-dont-or-the-case-for-object-centered-sociality.html

Goodyear, P., & Ellis, R. (2007). *Students' interpretations of learning tasks: Implications for educational design.* Paper presented at the ICT: Providing choices for learners and learning. Ascilite Conference 2007, Singapore
Goodyear, P., & Ellis, R. A. (2008). University students' approaches to learning: rethinking the place of technology. *Distance Education, 29*(2), 141 - 152.
Hanson, J. (2009). Displaced but not replaced: the impact of e-learning on academic identities in higher education. *Teaching in Higher Education, 14*(5), 553-564.
Kaptelinin, V. (2005). The object of activity: making sense of the sense-maker. *Mind, Culture, and Activity, 12*(1), 4-18. https://doi.org/10.1207/s15327884mca1201_2
Knorr Cetina, K. (1997). Sociality with objects: Social relations in postsocial knowledge societies. *Theory, Culture & Society, 14*(4), 1. https://doi.org/10.1177/026327697014004001
Krathwohl, D., Bloom, B. S., & Masia, B. B. (1956). *Taxonomy of educational objectives: the classification of educational goals; Handbook II: Affective Domain*. London: Longman.
Krause, K., & Coates, H. (2008). Students'engagement in first-year university. *Assessment & Evaluation in Higher Education, 33*(5), 493-505.
Lampel, J., & Bhalla, A. (2007). The Role of Status-Seeking in Online Communities: Giving the Gift of Experience. *Journal of Computer-Mediated Communication, 13*(1).
Lynch, K. (2010). Carelessness: A hidden doxa of higher education. *Arts and Humanities in Higher Education, 9*(1), 54. https://doi.org/10.1177/1474022209350104
Maranto, G., & Barton, M. (2010). Paradox and Promise: MySpace, Facebook, and the Sociopolitics of Social Networking in the Writing Classroom. *Computers and Composition, 27*.
Miller, M. A. (2009). Transmitting Passion. *Change, 41*(2), 7-8.
Motschnig-Pitrik, R., & Mallich, K. (2004). Effects of Person-Centered Attitudes on Professional and Social Competence in a Blended Learning Paradigm. *Educational Technology & Society, 7*(4), 176-192.
Pascu, C. (2008). An empirical analysis of the creation, use and adoption of social computing applications. *Report No. EUR, 23415*. http://ftp.jrc.es/EURdoc/JRC46431.pdf
Perkins, D. N. (1997). Person-plus: A distributed view of thinking and learning In G. Salomon (Ed.), *Distributed cognitions : psychological and educational considerations* (pp. 88-110). Cambridge; New York: Cambridge University Press.
Premkumar, K., & Coupal, C (2008). Rules of engagement-12 tips for successful use of "clickers" in the classroom. *Medical Teacher, 30*(2), 146-149. https://doi.org/10.1080/01421590801965111
Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1 *On the Horizon 9*(5), 1-6.
Prensky, M. (2010). *Teaching digital natives: partnering for real learning*. Thousand Oaks, Calif: Corwin Press.
Ramsden, P. (1998). Managing the effective university. *Higher Education Research & Development, 17*(3), 347-370. https://doi.org/10.1080/0729436980170307
Sawyer, T., & Scutter, S. (2009, 6-9 July). *Using a Wiki to develop first year engagement.* Paper presented at the 32nd HERDSA Annual Conference The Student Experience, Darwin.
Selwyn, N. (2006). Digital division or digital decision? A study of non-users and low-users of computers. *Poetics, 34*(4-5), 273-292. https://doi.org/10.1016/j.poetic.2006.05.003
Selwyn, N. (2007). The use of computer technology in university teaching and learning: a critical perspective. *Journal of Computer Assisted Learning, 23*(2), 83-94.
Selwyn, N. (2009). The digital native–myth and reality. *Perspectives, 61*(4), 364-379.
Selwyn, N. (2010). Looking beyond learning: notes towards the critical study of educational technology. *Journal of Computer Assisted Learning, 26*(1), 65-73.
Stupans, I., King, S., & Scutter, S. (2007). Evaluating the usefulness of an audience response e-tool in the context of teaching tomorrow's health professionals. *Focus on Health Professional Education: A multidisciplinary journal 9*(2), 101-104
Surry, D. W., & Farquhar, J. D. (1997). Diffusion Theory and Instructional Technology. *Journal of Instructional Science and Technology, 2*(1).
Wenger, E. (2003). Communities of practice and social learning systems. In D. Nicolini, S. Gherardi & D. Yanow (Eds.), *Knowing in organizations: A practice-based approach* (pp. 76-99): ME Sharpe Inc.
Wheeler, S., Yeomans, P., & Wheeler, D. (2008). The good, the bad and the wiki: Evaluating student-generated content for collaborative learning. *British Journal of Educational Technology, 39*(6), 987-995. https://doi.org/10.1111/j.1467-8535.2007.00799.x
Young, M. (2008). *Bringing Knowledge Back In: From social constructivism to social realism in the sociology of education*: RoutledgeFalmer. https://doi.org/10.4324/9780203073667

Author contact details;
Christian Voigt
Email: voigt.cmc@gmail.com

Please cite as: Voigt, C., Barker, S., King, S., Macfarlane, K., Sawyer, T., & Scutter, S. (2010). Conceptualising social networking capabilities: Connections, objects, power and affect. In C.H. Steel, M.J. Keppell, P. Gerbic & S. Housego (Eds.), *Curriculum, technology & transformation for an unknown future. Proceedings ascilite Sydney 2010* (pp.1020-1030).
https://doi.org/10.14742/apubs.2010.1993