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Tapping the educational potential of Facebook: Guidelines for use in higher education

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Abstract Facebook is a frequently used Computer Mediated Environment (CME) for students and others to build social connections, with identities and deposited self-expression. Its widespread use makes it appropriate for consideration as an educational tool; though one that does not yet have clear guidelines for use. Whether a social networking site can be used for educational objectives remains largely unexplored as a research question. This paper discusses a study conducted at the University of Auckland and at Manchester Metropolitan University on how their students use Facebook, and its impact on their social and academic lives. Using theories of social capital and knowledge management, we explore some potential educational uses of Facebook. Guidelines are included for the educational use of Facebook by tutors in a university environment. These include both positive recommendations and activities and approaches to avoid; and include educational, administrative and legal issues.

Keywords Facebook · Computer Mediated Environment (CME) · Social networking · Social capital · Knowledge management, guidelines

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1 Introduction

Despite the recent changes in the rate of growth in different geographical areas: US, UK, Canada, Norway and Russia (Arthur 2011) Facebook has many millions of members. Facebook allows a user to create and share a rich online identity with his/her networking friends, through pictures, wall posts. Users can create and join groups based on interests, and can connect to others through a range of channels. It has also been used for information, knowledge and document sharing through the built-in applications (Mack et al. 2007; Cho and Lee 2008).

Universities are important venues for the formation of social networks. Educational researchers have argued that interaction between students from different backgrounds, cultures, and social groups provides a better learning and effective collaborative environments to prepare students for an increasingly diverse workforce and society (Bowen and Bok 1998; Kreijns et al. 2007). However, the asynchronous computer-supported collaborative learning environments adopted by most universities can be characterized as functional and task-oriented, disregarding explicit support for the social aspect of learning in groups (Kreijns et al. 2007; Stone and Posey 2008). In contrast, social networking sites, as CMEs, emphasize the social aspects of group learning but have been given less attention by formal educational learning. To date, the reactions to the use of social networking sites for educational purpose are mixed. There are concerns related to legal issues and anxiety about interacting with educators in this environment, a belief it does not serve an academic purpose (Charnigo and Barnett-Ellis 2007) and the opinion that universities and colleges should avoid "educationally appropriating" these social spaces (Selwyn 2007). However, other studies have supported notions of using SNS such as Facebook in education; for instance, about 70 % of students surveyed in one study feel "comfortable" with their faculty being on Facebook (Hewitt and Forte 2006).

The significant adoption rates of Facebook by students makes it essential to have a deep understanding of the role of Facebook within and across cohorts, from both social and academic perspectives. There are limited numbers of features that make Facebook amenable to educational pursuits; for instance, it is equipped with bulletin boards, instant messaging, email and the ability to post videos. Nonetheless, Facebook has opened up the development of downloadable applications, which can further supplement the educational functions of Facebook (Munoz and Towner 2009; Skeels and Grudin 2009).

Most published research papers focus on social networking sites in general (Kreijns et al. 2007; Boyd and Ellison 2007a; Dwyer et al. 2008; Wang 2008), and there is little or no formal research conducted on the role that Facebook plays in levels of higher educational. In addition, even though some studies mention that the social capital in Facebook is closely associated with social identity and educational pursuits in Facebook, the linkage among the social capital, social identity, knowledge management and educational pursuits in Facebook remains untouched. Alongside this, it is important to note that students give high value to face-to-face interactions in an educational context (Deakin and Deakin 2010). Thus whilst we may seek to maximize the potential for using the virtual world to achieve educational aims we must not forget that it is only one of a set of tools available to the educator, and must be used in balanced combination with others.

The research question of this paper is: 'What guidelines should be applied by academics in Higher Education to maximise the educational potential of Facebook and similar social networks?' The question takes cognizance of the inherent *social* intent of Facebook and other social networks or CMEs which may be inconsistent with full adoption for academic uses.

2 Literature review

2.1 Facebook

In the span of a little over 3 years, from 2005 to 2008, the Facebook users count increased by over 20 times in size. In 2005, Facebook.com took its first steps, with a mere 3.5 million members (Arrington 2005), further growing steadily as more college networks were added to eventually encompass them all. By October 2008 Facebook was reported to have more than 120 million registered members, meaning users who had returned to the site over the past 30 days (Facebook-Press-Room 2008a). With an enormous number of members, Facebook was ranked as the most trafficked social media site in the world and the 4th most-trafficked website in the world (Facebook-Press-Room 2008b). Even though sources vary in the report, it is considered that so far university network membership saturation has ranged between an average of 85 % and 95 % (Lampe et al. 2006; Golder et al. 2006; Ellison et al. 2007; Facebook-Press-Room 2008b) at most colleges in the US.

It comes as no surprise that Facebook friendships mirror interaction on campus. According to Mayer and Puller's (2008) quantitative research studies, students describe their Facebook friends as acquaintances made at school or through social activities. To illustrate this argument, some of the main channels for meeting friends, studied in Mayer and Puller's research paper, show the following figures: about 26 % are co-members of a school organization, 16 % meeting through another friend, 14 % attending the same high school, and 12 % taking a course together, and very few friendships as merely online interaction. Thus, Facebook users are likely to include not only close friends, but also the "weak ties", including alumii and others with similar interests".

2.2 Social capital

The theoretical debate of 'concept of social capital' was introduced primarily by three authors who have prestige in the field of social capital: Pierre Bourdieu, James Coleman, and Robert Putnam (Schuller et al. 2000). Bourdieu (1986) defines social capital as *"the aggregate of the actual or potential resources which are linked to possession of a durable network or more or less institutionalized relationships of mutual acquaintance and recognition…which provides each of its members with the backing of collectively-owned capital"(pp.248).* Like all forms of capital, social capital is accumulated labour. It has its own capitalists who accumulate it in the form of relationships, networks, and contacts. "*The network of relationships is the product of investment strategies, individual or collective, consciously or unconsciously aimed at establishing or reproducing social relationships, which are directly usable in the*

short or long term (pp.249)" (Bourdieu 1986). Bourdieu (1986) additionally explains that different forms of social capital shape the social world.

On the other hand, Coleman defines the significance of social capital primarily as a way of understanding the relationship between educational achievement and social inequality (Schuller et al. 2000). More clearly in the educational context, Coleman refines the concept of social capital as the set of resources that inhere in family relations and in community social organization, which is why these resources are beneficial for the cognitive or social development of a child or young person (Coleman 1988). While differing in the scope of their definitions, both of these authors highlight the close interaction between social and human capital.

The question about the usefulness and appropriateness of computer-mediated communication or environments (CMC/CME) has been hotly debated in recent years. Arguments against CME highlight the ways the reduced cues of the environment make it inappropriate for building trust and close friendships. At the same time, arguments in favour of CME celebrate the release from cues associated with offline bodies, personal status, and gender (Haythornthwaite and Wellman 1998; Haythornthwaite and Nielsen 2007).

More recently, the debate has moved to the social level, for instance, Nie (2001) argues that a rapid increase in the use of the Internet might diminish an individual's social capital (Nie 2001). In contrast, some researchers claim that online interaction supplements the interactions among individuals (Wellman et al. 2001). Recent research has emphasised the formation of weak ties through the Internet, while serving as the foundation of bridging social capital. This issue has generated a great deal of debate among researchers in relation to whether Internet has increased social ties. The concluding idea would be that different online activities may be differently related to the formation and maintenance of social ties.

Bridging social capital and bonding social capital are clearly distinguished by Putnam (1995). The former is linked to what the network researchers refer to as "weak ties", i.e. loose connections between individuals who may provide information to others but not typically emotional support (Granovetter 1983). Bonding social capital generally happens between individuals in an "anchored relationship" (Zhao 2006a), emotionally close friendships, such as family members, college mates, offline based online relationship or close friends. Further to this distinction, Ellison et al. (2007) introduce the third dimension of social capital named "maintained social capital", which deals with the issue of whether web network techniques enable individuals to keep in touch with a social network after physically disconnecting from it. Zhao (2006a, b), on top of that, names two levels of social ties by distinguishing between institutionally based relationships and voluntarily based relationships. Institutionally based relationship are "involuntary" (Goldstein and Warren 2000; Zhao 2006b), which implies that the social ties are not formed by personal choice but by institutional arrangement, apparently not reflecting the participants' sociability, in contrast to the social ties in voluntarily based relationships, which are established and maintained by participants' own choice according to their common interest.

With rapid Internet development, people are more anxious to belong to virtual communities, i.e. groups who interact primarily through CMEs identify themselves with a group, and have developed relationships, feelings of belonging and attachment to each other. These subjective feelings are known as the "sense of community" (McMillan and Chavis 1986). Blanchard and Horan (1998) contend that virtual

communities can either be place-based, in which the virtual groups are centralized around a particular geographic place, or dispersed, in which the virtual groups are scattered (Blanchard and Horan 1998). For instance, a place-based community could be a bulletin board or a discussion board in an organization, a university or an association; a dispersed virtual community includes a discussion board for movie lovers, or for viewers of popular TV shows.

Face-to-face communities may have an effect on the formation of virtual communities. High density of the face-to-face social network community relationship is more likely to result in a place-based community; on the other hand, the place-based virtual community may increase the density of the Face-to-Face social community relationship. This means that people within a place-based virtual community may be friends and/or have some relationship in the Face-to-Face social community. This, similarly, does not mean all the relationships in a place-based community have been built through the Face-to-Face community. Accordingly, there will be some people in the virtual community network who are not in the Face-to-Face network and vice versa. The fact that information about norms and trustworthiness is considered to flow more easily within this more densely connected network (Coleman 1988; Putnam 1995) implies that the virtual community has actually increased social capital and strengthened social ties.

Huysman (2004) extends Nahapiet and Ghoshal's (1998) dimensional classification of social capital, by developing three dimensions in terms of: structural opportunity to share, cognitive ability to share, and relation-based motivation to share. These dimensions each have their components. There are four main elements identified within the first component "structural opportunity to share" in terms of general issues, information technology, activities of the network, and structural affordances (Cummings et al. 2003). As well, the second component "cognitive ability to share" is divided into four elements – inputs, cognitive affordances, outputs and outcomes. For instance, Facebook users, like members of other CMEs, share stories, music, and other items of common interest. The "relation-based motivation to share" is concerned with human relationships in online networking, including bridging, bonding and linking capital (Cummings et al. 2003). The theories of three dimensions can be employed here to expound why Facebook strengthens social ties, and supports educational objectives. More recently, Cummings et al. (2003) propose a framework for understanding the functioning of online networks in development. This framework is founded on the three dimensions of social capital identified by Huysman, additionally incorporating elements of the MOTA model (Cummings et al. 2003).

Research has begun to surface showing just how important Facebook can be in the production of social capital (Lampe et al. 2006; Ginger 2007). As an illustration, the result of a quantitative research (regression analysis of survey) of MSU undergraduate students indicate that Facebook has a significant impact on students' abilities to maintain bridging social capital at college (Ginger 2007). One focus of this study is on the exploration of social capital on Facebook. In typical use, social ties are voluntarily formed on Facebook according to members' mutual likes and interests. Even though some studies speculate about whether the Internet supplements or supplants strong ties, there is little empirical work explicitly examining the effects of the Internet on bonding social capital. In addition, the review of the current literature cannot provide clear evidence of how social capital formation occurs when online and offline connections are closely coupled. This has particular significance if

Facebook is to become an infrastructure resource exploited by HE teachers. If joining a Facebook learning group is going to be a requirement, a strong indicator or pre-requisite of successful learning, then membership is no longer truly voluntary. However, at this stage, it is not known if this is a significant drawback.

On Facebook, the meaning of "friend" has a different connotation from the traditional one, which Tong et al. (2008) explore as to outline several meanings (Tong et al. 2008):

- "Friend" often reflects that individuals have some forms of associates based on offline interaction. Social networking sites can facilitate mixed-mode relationships. Walther and Parks (2002) define mixed-mode relationships as those that move from a face-to-face setting to an electronic context or vice versa (Walther and Parks 2002). Owing to social networking systems, many relationships frequently hover between the virtual and physical world. Donath and Boyd (2004) argue that online social networking systems, such as Facebook, can help individuals to maintain a large number of close ties as the system allows people to check one another's profile for updates and new activities, as well as to facilitate brief verbal exchange through both asynchronous wall postings and instant messages.
- The label "friend" in Facebook does not correspond to the same label offline, and this difference inflates the potential size of a friend network. Similarly, Ellison et al. (2007) note that "friending" a large number of people proves to be one of the main activities of Facebook, and a large network of weak social ties via Facebook becomes a source of social capital. The size of one's ostensible friend network on Facebook can easily become much larger than traditional offline networks because technology facilitates more connection and interaction at some levels, enabling friendship to be in some cases more superficial in the virtual world.

If Facebook is to be used to support interaction within cohorts we should be clear about the nature of the interactions. Being friends on Facebook is a voluntary activity, that is an analogue of real-world/face-to-face interaction. It seems reasonable to conclude that requiring Facebook friendships to be established to undertake learning activities is not something that can be justified. In an educational context we may require "soft" interactions, such as general information sharing; or a "harder", more focused interaction, such as is required for group work focused on achieving a specific goal, e.g. a group assessment. Requiring all participants in either type of interaction to become "friends" may be considered unreasonable. Thus Facebook mechanisms need to be found to support hard and soft educational interactions without requiring friendship (Table 1).

The impact of virtual communities is increasingly pervasive, with activities ranging from marketing and economics, to social and educational. Many individuals purposefully participate in virtual communities, social or professional,, seeking knowledge to resolve problems in either sphere of life. The virtual community has a limited value without rich knowledge, the *content* of the virtual community is important (Chiu et al. 2006). As forming a community memory and knowledge base, the digital repository should be expanded from the virtual community's digital library to support computer-mediated communications (Bieber et al. 2002). Much of the knowledge generation and social learning in development are available increasingly in online networks, which is why virtual communities have played an important role in facilitating social learning and the improvement of development practice (Cummings et al. 2003).

Table 1 Applying Cummings et al. (2003) social capital framework to Facebook

Structural Opportunity to Share	General	Facebook constitutes a rich social network: Complexity (membership of Facebook covers various nationalities, colleges, organizations, cultures languages and backgrounds), Members (a large number of members on Facebook, over 68 million registered members, and around 250,000 new registers per day since Jan/2007, involving different ages, genders, educational levels. Members of Facebook were originally college students, but now it includes anyone with an email address who wishes to join). Strategy (Facebook provides members with a platform to share their stories, music, pictures, and common interests. It is used not only for social networking, but also for educational and business objectives.) History (Facebook is a young CME, but is becoming one of the top popular social networks in the world, originally founded in the U.S, but now expanding to worldwide)
	InformationTechnology	Platform/workspace (Facebook can be identified as a powerful CME, updating applications/functions assists members in maintaining social connection and developing their social relations, additionally providing many applications to fulfill members' requirements for entertainment, business, friendship seeking, music, travel, reading etc.).
	Activities	Whereas research in traditional social networks (formal and informal F2F meetings) suggests that an individual normally maintains close relationships with 10–20 people, and social relationships with around 150 people (Dunbar 1993; Gladwell 2000), one recent study finds that a sample of Facebook users at one university reports a mean of 246 friends (Walther et al. 2008). The users normally spend around 9 min on Facebook everyday (Facebook-Press-Room 2008b).
	Structural Affordances	Facebook provides powerful communication applications, which support members in making both synchronous and asynchronous communications.
Cognitive Ability to share	Inputs	• The release of new applications not only allows users to integrate Facebook with their operation system and Internet Explorer, but also with their course management system (see application "course feed").

Table 1 (continued)

	Cognitive Affordance	• Easy to access the contents of Facebook.
	Outputs	• Social capital in Facebook is based on the "Shared language".
	Outcomes	• Facebook promotes "social learning" through virtual teams, shared readings, links or blogs, among the social networking.
Relation-based motivation to share	Bonding, Bridging and linking capital	• Facebook is used by individuals to keep in touch with family members (bonding social capital)
		• Facebook is used by individuals to re-build friendship with former school mates, lost-contact friends (bridging social capital)
	Relational Affordances	Facebook provides good functions to their members to easily gain new contacts, and an easy access to experts and peers. Members can find information about a particular field/ interest/group through Facebook. Members of Facebook can also take part in different groups (either academic or social).

Virtual communities are online social networks in which people with common interests, goals, or practices interact to share information and knowledge, and engage in social interactions; consequently, social interaction and the set of resources are embedded within the networks that sustain virtual communities (Chiu et al. 2006). Unlike general Internet users, members of virtual communities are brought together by shared interests, goals, needs or practices. This may solicit the question of whether social capital in virtual communities is powerful enough to stimulate members to overcome the barriers of a complex knowledge sharing process, and thus share valuable knowledge (Chiu et al. 2006). Checkland and Holwell (1998) explain a sophisticated distinction between information and knowledge (Checkland and Holwell 1998; Urquhart et al. 2008). Information is defined as meaningful facts surrounded by a context that helps make sense of that information. Knowledge is defined as larger and longer living structures of meaningful facts. In an educational context both information and knowledge are significant assets, the gaining of which is the purpose of learning activities. That such gain is expected may help to overcome the barriers to participation perceived by any given individual.

The community's knowledge has both explicit and tacit components (Bieber et al. 2002). The community's explicit knowledge includes its documents, recorded discussions, decision strategies, conceptual models, and defined workflows, whereas its tacit knowledge resides in the minds of the community members but can be shared with others through the processes of socialization, externalization, combination, and internalization. Polyani (1966) defines tacit knowledge as 'persona, context-specific and thus, not easily visible or expressible – not easy to formalise and communicate to others (Urquhart et al. 2008), though specific educational goals will encourage knowledge to be made explicit, even if originally tacit.

From the social networking perspective, knowledge is a social and collective outcome and is always embedded in a social context – both created and sustained

through ongoing social relationships (Cho et al. 2005). This is why Nahapiet and Ghoshal (1998) argue that, in order to understand how individuals attain and build knowledge, it is necessary to analyse how they are situated in networks of social relations, resource exchange and social support.

Following Nahapiet and Ghoshal (1998)'s theoretical model, social capital is defined in terms of three distinct dimensions: structural, relational, and cognitive. The structural dimension of social capital is manifested as social interaction ties, the relational dimension is manifested as trust, norm of reciprocity and identification, and the cognitive dimension is manifested as shared vision and shared language. According to the social capital perspective, tacit knowledge resides in the relational dimension (people are interacting over the network) (Urquhart et al. 2008). Within the communities of practice, people with shared practice feel a need to share what they know and to learn from others (Cummings et al. 2003). Thereby, members of the community of practice construct knowledge by actively participating in discussion and sharing knowledge with their learning partners.

2.2.1 Relationship between learning and community

In order to examine the role learning plays in the community, Hoadley and Kilner (2005) explicitly propose four major learning models in terms of behaviourist learning, development learning, cognitive learning and socio-cultural learning (Hoadley and Kilner 2005). Behaviourist learning theory explains learning as a result of conditioned responses, developmental learning theory describes learning as a result of interaction with the world plus biologically mediated maturation, cognitive learning theory sees learning as a result of active cognition that yields new mental representations and predispositions, and socio-cultural learning theory explains learning as a result of appropriation of social practice.

The key concept of Pool and DeSanctis (1990) adaptive structuration theory is the interplay between technology, human interaction, and the social structure, and a tension between stability and change (Cho and Lee 2008). According to this theory, the use of new communication technology is situated in social contexts and structures, is socially influenced, and is appropriated by various groups, and social and cultural factors. Similarly, current studies indicate that computer mediated learning environments can facilitate collaborative knowledge building processes by requesting students to engage in activities beneficial for learning when cooperatively solving a problem task in a project or discussing and elaborating test material (Weinberger, et al. 2006). They further expound that working in small groups should prepare learners for life-long learning activities, which are largely embedded in a social context (Weinberger et al. 2006; Urquhart et al. 2008). Collaborative learning has gained in popularity, with several studies demonstrating positive motivational and learning outcomes in higher education contexts (Alavi and Dufner 2005).

That social environment has an impact on finding information and acquiring knowledge is not a new concept. Huysman (2004) proposes a theory of social capital dividesd into three dimensions. This approach is largely compatible with the Pool and DeSanctis (1990) adaptive structuration theory, and appears to provide a useful foundation for enhancing our understanding of CME interactions, social context, and collaborative information seeking activities. According to the theory of three

dimensions of social capital, "structural opportunity to share" as a strategy for educational objective allows students to work together over the online CMEs, also known as collaborative learning (Cummings et al. 2003; Janssen et al. 2007a, b). Collaboration is defined as a process in which two or more learners need to work together to achieve a common goal, usually the completion of a task or a project (Beatty and Nunan 2004). The positive effect of collaborative learning has been studied and well documented, enhancing students' cognitive performance (Cummings et al. 2003; Janssen et al. 2007a, b) explicated the development of teams in an online course setting using Knowles & Knowles storming, forming, norming, and performing model of small group evolution, which tends to have more communication, and more identifiable leadership compared with face-to-face groups. Similarly, recent research has shown that existing social relationships significantly affect the ways individuals seek information from others. Social capital theory has noted that people tend to look for information from within their social networks and extract knowledge from that information because it is easily accessible, quickly retrieved, and contextually rich (Borgatti and Cross 2003; Cho and Lee 2008).

Placing Facebook in an educational context gives another dimension to its utility. McFadden and Munns (2002) examine the significance of social relations in the educational process. They do this from both student-teacher, and, the student-student perspectives. Both are considered to be important factors in determining student engagement in the learning process. An important factor is student association with a peer group, whether in the class, or amongst a wider society, for example, perceived social-class membership. This may result in feelings of inclusion with the educational group, leading to engagement; or of exclusion and disengagement. From this perspective it can be seen that Facebook could be a tool for manipulating feelings on the inclusion - exclusion dimension; though exactly how this could be done remains to be determined. However, Pheiffer et al. (2005) consider that matching teaching styles to learning styles "can increase achievement and retention". In the current context, where Facebook is used by students to exchange information of many different types, then it would seem that including Facebook in the set of teaching tools would be appropriate. It may be possible to use the work of Åkerlind (2004) to determine the role of the lecturer/teacher in using social spaces such as Facebook. Central to their argument is that teaching, from the teachers perspective, should not be separated from research but should be seen as an integral part of it. Internalising this view overcomes the reluctance of research oriented individuals to engage in teaching, and it reflects a change in attitude to those being taught; which in turn would have implications for any use made of social spaces in a teaching context. Many student interactions would then cease to be perceived as overheads, and become part of research, helping to develop ideas and ways of presenting them. The outcome of this could be that teacher interactions on Facebook could be seen more positively by teachers and students alike if they are an expression of being a teacher, rather than merely undertaking some teaching function. A development of this can be seen in the work of Park (2003) that considers the educational benefits of learning journals, diaries or logs, to students. The core task for students is to record reflections on themes, tasks, and the approaches the student takes to them. A parallel can be seen between the works of Park and Åkerlind - the student undertakes to be a student, not just undertake student type tasks. In a Facebook context the journal would be formed from the record of the interactions between

students and others: fellow students, teachers, and other experts. An advantage that Facebook may have over a journal is that it may be undertaken in a less self-conscious way if Facebook is already something that the student does - the necessary transformation in activity would be relatively small. If successful then it should result in a cohort of students that are more reflective, insightful, and coherent as a learning community.

2.2.2 Using Facebook for knowledge management

Using Nahapiet and Ghoshal's (1998) three dimensions of social capital, Lave and Wenger (1991), Cox (2005) have summarised a new model for learning through the community of practice (Cox 2005), which illustrates how learning is performed in the web-based virtual community, and is different from the traditional class format (Table 2).

Wang et al. (2010) report a number of insights from their work on Facebook and social capital (Table 3).

3 Methods

The guidelines are developed from data gathered from the literature, and from data collected in relation to student behaviours at the University of Auckland. By combining these data sources it is expected that the guidelines will have both theoretical and ecological validity.

This paper draws on two studies to explore the educational potential of Facebook. The first is a study using interviews and focus groups at the University of Auckland. The second is a study using focus groups at Manchester Metropolitan University.

In the first study, both students and faculty were interviewed about their uses of Facebook. Two separate focus groups, one for students and one for faculty, were then held looking at the educational potential of Facebook. Details of data collection are given below. By using these sets of participants we were able to collect data from both main educational user groups, but excluding administration. Collecting data across two institutions helps to balance for possible cultural differences between institutions. This should make the results more representative of English speaking HE as a whole, though it is admitted that a greater range of institutions would increase

Table 2 Model for Learning (Adapted from Cox 2005)

Old model (Cognitive)	New Model (Constructivist, Social Relational)
Teaching	Learning
Classroom	On site
By teaching	By observation
	By peripheral participation
(Individualized) pupil learns from teacher planned in a curriculum	Learning from other learners
	Informal, driven by the task
Learning is a mechanistic, cerebral process of transmission and absorption of ideas	Learning is as much about understanding how to behave as what to do, and is an identity change.

Table 3 Facebook and Social Capital

Themes	Key insights
Facebook as CME	• Status Update is one of the favourite applications in Facebook, and assists users to get to know what their friends are doing, and how they are feeling
	• Facebook seems more structured than others SNS
	• The structure and functionalities of social networking sites are associated with the types of the users (users' education and age)
Social Capital	• Facebook helps user to reconnect with old friends (Bridging social capital) – Internet strengthens weak ties
	• Facebook helps users to keep in touch with family members and close friends (Bonding capital)
	• Users of Facebook influence their friends to join, and use Facebook, as a tool for social connection.
	• The actual Internet strengthens weak ties; respondents were not interested in adding people with loose ties (strangers or friends' friends)
	• Forming virtual groups with common interests
	• Facebook benefits fostering "Ambient awareness"
	• Facebook is good for alumni
Social Identity	• Users are more likely to share information in the networking with strong ties, but unlikely to share in the networking with weak ties.
	• The virtual groups, quiz, pictures, wall postings are second hand description of users' presence or personality
	• Users may emphasize or even exaggerate the part of their possible selves that are socially desirable
	• Sharing with cautions when including both social friends and colleagues in Facebook networking
Knowledge Management	• Structural capital is positively associated with knowledge exchange
	• Relational capital is positively associated with knowledge management
	• Individual motivation is positively associated with knowledge exchange
	• Weak ties are more apt than strong ties to link people with different social characteristics
	• Utilise Facebook functions for project and knowledge exchange, e.g. FB e-mail, wall posting
Educational CMEs	• Students might benefits from reading through using FB for learning
	• Facebook strengthens the interaction in both teachers-students and students-students
	• Facebook is useful for group work, especially in forming groups and discussion
	• Portable Facebook often benefits from reading, awareness of course announcement, or even group works)
	• Integrating Facebook with the course management system might allow more time to students for learning purpose
	• Three issues have been discussed regarding success in learning system, interface, functionality and reliability
	• The limitation in using Facebook for education is related to legal issues,and equity of access
Legal Issues	• Privacy was a key concern and prevented people from giving more information to support their social identity
	• Two legal issues need to be considered when utilising FB for education: Intellectual Property and Privacy Act

robustness of generalisability. For example, it may be helpful to collect data from North American institutions, and from other institutions where English is not the first language.

The primary data collection was supported by secondary sources. These sources were used for both cross-checking data, to confirm or refine focus group findings; and to identify errors of omission.

4 Findings: guidelines for the use of social networks in higher education

What is presented here is a set of potential guidelines for the use of CMEs in higher education. They have been developed from the literature and data above, but have yet to be tested in live educational situations. The guidelines are presented in the table below. They fall into two parts: guidelines related to purpose of interaction via social network environments, and guidelines related to the process of interaction using this medium (Tables 4 and 5).

5 Conclusion

This paper has focused on the uses of Facebook, as representative of Computer Mediated Environments (CMEs) and social networks in general, in Higher Education. Its selection was based on its relative popularity in the Social Network arena. However, in the context of teaching in Higher Education and shared virtual space, we also need to consider how the guidelines might apply more generally to the now ubiquitous Virtual Learning Environments (VLE). It could be argued that a VLE is a specialized form of CME, with the addition of software tools supporting assessment and administration. A VLE fit for purpose will have facilities for supporting group work, such as chat rooms, shared and private file repositories. A significant difference between VLEs, and more specific CMEs is that VLEs are much more under the control of individual teaching staff rather than either the CME owner (e.g. Facebook Corp.) or the individual user, in our case this would be the individual student. Teachers using VLEs, along with faculty administration, are typically responsible for adding students to the VLE, establishing the view of the VLE each student has – including setting privacy levels, and adding content. Facebook users are much more responsible for content and privacy. All of that said, it is our belief that the above

Table 4 Primary Data Sources for the studies

	Focus
In Depth Interviews	
Educators (3), Students (4) Business Faculty, university of Auckland	How Facebook contributes to Social Capital
Focus Groups	
Educators (5), Students (5) Business Faculty, university of Auckland	The educational potential of Facebook
Students (47) from all 7 faculties	The educational potential of Facebook

Table 5 Guidelines for using Facebook, and other social networks, in higher education

Purpose guidelines	1. Establish a clear purpose.	Establish the purpose of Facebook in the teaching context. This is to ensure that use is focused and that there is a match between what teaching staff and students require and the facilities available.
	2. Specify the extent of collaboration.	Make the extent of collaboration clear so that all users have a similar expectation of use on the soft-hard interaction scale. For example, for hard interactions, sharing work required to achieve specific learning objectives for a group assignment. At the softer end it, may be suggested that students view e-notice boards at least once per week to keep up-to-date with less critical general announcements.
	3. Make any contribution to assessment explicit	Students need to know if the shared space is a repository for shared work, or if the extent and quality of their group interaction is also part of the set of assessment criteria.
	4. Be explicit about the voluntary or mandatory requirement for membership.	If membership is to be mandatory then all users need the necessary access infrastructure. If it is voluntary, then those choosing not to join must not be unreasonably disadvantaged. It is possible that individuals may not want to join Facebook for reasons of ideology, lack of confidence, limited infrastructure, etc.
	5. Make explicit how the modes of teaching will support each other.	SocialNetworks, such as Facebook, are only part of the learning experience. It should be understood by students how work done in the virtual world will link to face-to-face learning and teaching. This will help students to understand that the work they do on Facebook is supporting the face-to-face teaching they most value. This is then less likely to result in resentment of students of educational time spent on Facebook and not with tutors.
Process guidelines	6. Participation should not be based on "friending"	Set up a distinct user group; do not rely on the establishment of Facebook friendships. This is to enable all stakeholders access to the Facebook learning environment without having to become Facebook-friends and share personal information that would not otherwise be shared. This practice is a compromise. There are some individuals who see no problem with being completely open with their peers and with students or staff who are not their peers. However, there appears to be a significant group of individuals for whom such sharing is not a comfortable experience. This group tends not to be concerned with achieving high "friend" counts, and

Table 5 (continued)

		who are selective within their peer group, and would not want to include others outside that group. This compromise should enable all teachers and students to participate without a perceived imposition and resultant discomfort. While this may limit potential dissemination benefits, the balancing advantage is the potential inclusion of those with a stake in the specific area of teaching and learning. Avoidance of friending as a key mechanism also helps maintain an appropriate distance between teachers and students.
	7. Ensure that all members of the group have the necessary basic competence and aptitude to use Facebook	Do not assume all students and staff are comfortable with technology. Be aware of the group proclivity for technology. An obvious factor here is the age profile of the group. Additional factors can include disability, and technophobia where this might seriously limit effective Facebook access. These factors need to be identified, and corrective training and/or infrastructure put in place prior to the main use phase of the social network.
	8. Ensure that users are aware of relevant copyright issues	Be aware of copyright issues. This is to ensure that potential breaches of copyright law are avoided by making copyright materials available globally. For example, video with a commercial sound track can be used for educational purposes, but is not to be freely distributed.
	9. Have a clear policy on what constitutes misuse.	The details of misuse may vary from project to project. While there may be consistent legal requirements there may be some variety according to use, for example, over off-message (spam) contributions. In different situations creativity might be a help of a hindrance, according to the need for focus.
		A clear part of a misuse policy will be sanctions to be applied where misuse occurs. Withdrawal of facilities might have negative educational implications that out of proportion to the infringement.
	10. Consider the emotional intelligence of the group	Expectations of the quality of interaction might be moderated by the emotional intelligence of the group. For example, marketing students might be expected to interact differently to mathematicians.
		Consider using Facebook to improve group cohesion, through the sharing of a common experience. However, factors affecting prior group cohesion are also a consideration. Linguistic and ethnic issues may be present, particularly where groups are highly heterogenous. There is the potential for majority groups to take control of the user group, with the effect of excluding, fully or partially, others in the group. Widely diverse

Table 5 (continued)

	groups may not be able to share a common experience, but may experience a shared facility in very different ways.
11. Make social capital issues explicit	Ensure students know what is expected of them by way of contribution; and how they might gain as a group and as individuals. This should support motivation, and should help students make the best use of the range of facilities.
12. Provide advice on privacy settings	Ensure all users have an awareness of the range of privacy settings and use these appropriately.

guidelines apply to both VLEs and CMEs, as the similarities are more significant that the differences.

The above guidelines are yet to be tested. Even if these guidelines are refined or significantly modified, through experimentation or application, it can be seen that a clear set of guidelines will be useful in maximizing educational gains and improving the student experience; both key areas for HE policy makers. However, the balance between on-line and virtual teaching may need to be adjusted according to student needs and expectations (Deakin and Deakin 2010) which will vary within and between cohorts. This will make the setting of hard-and-fast rules inappropriate, something already known to many teachers in higher education. In examining the need for guidelines it has become clear that there are a number of potential pitfalls to trap the unwary.

The higher education teacher who plans to use Facebook, or other CME, would do well to consider the guidelines we propose in advance of adoption of the technology. Institutional policy makers may find the guidelines useful when considering the adoption of new technologies that may emerge. This will make it more likely that the teaching and learning experience will be more controlled and focused,; and less likely to be diverted by unwelcome surprises as uncertainty should be reduced. Social networks provide a versatile and powerful infrastructure with great educational potential. The adoption of appropriate guidelines should enable that potential to be maximised, legal risks to be minimised; and student experience and achievement to improve.

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