FACEBOOK: A TOOL TO ENHANCE TEACHING AND LEARNING FOR POSTGRADUATE RESEARCH STUDENTS

S.M. O'NEIL & H. WELS
UNIVERSITY OF PRETORIA

Abstract

The popularity of social networking sites has boomed in recent years and the number of registered users continues to increase. Existing literature reports on the vast impact of these online sites not only on numerous areas of everyday life but also on the realm of higher education. In spite of the potential use of these sites as education and communication tools, few academics use them. In the current study, various Facebook elements were introduced to a group of postgraduate research methodology students with the purpose of exploring and describing the ways in which Facebook could be used to enhance learning from a student's perspective. A mixed-methods design was followed in that data were collected using pre- and post-module questionnaires and semi-structured interviews. It was found that the use of Facebook in the postgraduate research course was perceived as beneficial, but the social presence of the students on the page was low. Although the students felt that its use promoted their ability to grasp complex concepts, which is particularly relevant to the research methodology classroom, it was evident that improved student participation on Facebook could only be achieved through required participation and a heightened teaching presence.

Keywords: connectivism, Net Generation, postgraduate student, social networking sites, Web 2.0 technologies

1.   INTRODUCTION

Social networking sites (SNSs), such as Facebook and Twitter, have become immensely popular, especially amongst the Net Generation (Wodzicki, Schwämmlein & Moskaliuk, 2012). This generation of students have a need for convenient and quick access to information, and avidly use technology when learning and combining social and academic lives (Chelliah & Clarke, 2011; Kirschner, 2015; Lippincott, 2012). However, research shows that academics are less likely than students to make use of SNSs for educational communication (Gilliam, 2010; Manca & Ranieri, 2016), which points to a potential communication gap between faculty and students of the Net Generation (Bosch, 2009).

1.1   SNSs and higher education

In this era, learning is no longer simply a process of knowledge consumption, but is also one of knowledge creation (Kop & Hill, 2008). Connectivism is particularly helpful in understanding learning that occurs through Web 2.0

technologies (Siemens, 2005). Accordingly, learning occurs when learners connect online and share learning content, which often leads to the formation of learning communities (referred to as nodes). Nodes are clusters of learners who have similar interests and who interact by, for instance, sharing ideas, having conversations and thinking as a team. Every node is part of a larger network, which may share resources (Del Moral, Cernea & Villalustre, 2013). Knowledge, therefore, does not reside in one location, but consists of a gathering of information generated by multiple individuals (Kop & Hill, 2008). Hence, an approach to learning that is more network-centric rather than content-centric is suitable.

In a network-centric approach, learning is more participative than perceptive and it builds on the idea that small contributions made by all the connected learners may contribute greatly to the learning of their community as a whole (Siemens, 2005). SNSs, in particular, have certain characteristics that promote a socially interactive learning approach, for instance, the personal and contextual nature of online tools and their ability to support a process-orientated approach to learning make it possible for students to share their experiences and context with the learning community (Halse & Mallinson, 2011; Poellhuber, Roy & Anderson, 2011). As such, SNSs may have the potential to radically change the role of a learner from that of a passive observer to that of an active participant (Selwyn, 2009). Active participation in the learning process is one of the tenets of the situated learning theory. This theory emphasises the importance of social participation in the learning process and holds that learning occurs mainly through social interaction instead of through cognitive processes as is traditionally theorised (Hung & Yuen, 2010). Linked to this there is the view (support for which is growing) that the establishment of communities of practice within formal education courses facilitates learning (Hamilton, 2013). The concept of communities of practice is based on the idea that social practice is the primary means of learning and that learning requires collaboration and cooperation within a community of practice in order to facilitate this social process of learning (Summers & Svinicki, 2007; Hemmi, Bayne & Land, 2009; Roblyer *et al.* 2010).

Critical thinking, which traditionally is a desired outcome of higher education (Liu, Mao, Frankel & Xu 2016), is also likely to be encouraged through the use of SNSs in higher education instruction. Selwyn (2009) argues that critical thinking can be achieved through re-engaging with the learners after the initial communication or delivery of material. Re-engagement as described by Selwyn is very similar to the collaborative idea of a community of practice as discussed by Hung and Yuen (2010) or the ideas of constant feedback and peer evaluation through interaction, conversation and negotiation of information put forward by proponents of the connectivist view (Del Moral *et al.* 2013). Based on the above discussion, it is clear that learning is no longer limited to what happens inside a classroom but that a lot of informal learning occurs outside the walls of the classroom as well.

1.2   Using Facebook for educational purposes

Facebook is the most popular and well-known SNS at present (Bodroža & Jovanović, 2016; Vangeel, e*t al.* 2016), also for educational purposes (see, for example, Cuesta, Eklund, Rydin & Witt 2016; McCarthy 2013; Wang, Woo, Quek, Yang & Liu 2012). The most prominent reason for its popularity in the educational sphere is the degree to which it has already become entrenched in the lives of more than a billion users around the world (Karpinski, Kirschner, Ozer, Mellott & Ochwo, 2013; Wang, Scown, Urquhart & Hardman, 2014). Although some learners might not be registered Facebook users, most will be familiar with its functions (McCarthy, 2013). Facebook has become an altogether remarkable means for people to communicate and build and maintain their social networks. As such, the inclusion of Facebook in a higher education curriculum is unlikely to have a significantly disruptive effect on students' normal means of communication and networking. Students are already spending approximately 30 minutes a day on Facebook for social purposes (Bellur, Nowak & Hull, 2015).

When students engage in Facebook activity in class and homework time for purposes other than educational use, and therefore have to multi-task, it may decrease their academic performance (Junco, 2015). However, when it is used specifically for educational purposes, it has been positively linked to academic achievement (Lambić, 2016). Higher achievement may possibly be brought about by students' increased participation and engagement in the learning content as well as by their connectedness to the larger learning community and by their tapping into one or several communities of practice (Barczyk & Duncan, 2013).

Although Kirschner (2015), argues that Facebook is used more often as a broadcasting tool than as a social networking tool and may, therefore, not be ideal for educational purposes, it has some elements that may enhance teaching and learning. The most popular element is the "Timeline" function, which is the main tool for promoting collaboration in the form of public discussion within the Facebook group (Nemec, Holbl, Barkeljica & Welzer, 2011; Schoenberg, 2011). On the Timeline, users can not only share verbal messages but also multimedia (e.g. website links, videos, pictures) (Bower, 2015). Other elements include the private messaging function, an instant messaging (IM) tool and an "events" function which allows users to create events to which they can invite either group members or other contacts.

Of course, many tools, of which some are exclusively designed as learning management systems and tailored to specific universities' needs, are available and may be preferable to SNSs such as Facebook. Nevertheless, Facebook's popularity among the Net Generation provides reason enough to consider its use over other SNS applications (Wang, *et al.* 2012).

Camus, Hurt, Larson and Prevost (2016) have found that Facebook is better at fostering participation in online discussion and encouraging peer-to-peer interaction than online discussions via university-sponsored learning management systems. Some research in this regard shows contradictory results; for instance, Hermann, Pollock and Wilson (2012) note that students are less willing to engage in online discussions about their studies on Facebook and also do not see how such discussions can enrich their learning. Nevertheless, the potential of Facebook as a learning aid is widely acknowledged (Lambić, 2016; Wang *et al.* 2014), which justifies further investigation.

1.3   Problem statement and related questions

In spite of the potential of social networking to be an education and communication tool, few academics use sites such as Facebook for academic purposes (Gilliam 2010). The reason could be the lack of empirical research on exactly how this SNS should be employed to attain the maximum benefit (Hung & Yuen 2010; Camus, *et al.* 2016). The literature that provides practical guidelines on implementing Facebook in a higher education setting is limited (Nemec et al. 2011; Wang, *et al.* 2014). In a review of the existing literature, Yang et al. (2011) come to the same conclusion and suggest that the "niche" currently using Facebook for educational purposes has yet to be identified.

This study sought to explore the way in which the different elements of Facebook were used and perceived by students enrolled in a postgraduate research methodology module. Students are known to show little interest and motivation to engage in research methodology per se (Sizemore & Lewandowski 2009; Brew 2011). In this regard it may be important to take note of the finding of Camus, *et al.* (2016) that online discussions may encourage student engagement with course material: in this way, traditional learning may be supplemented by informal learning that occurs outside the classroom. From a connectivist point of view, fostering informal learning opportunities becomes especially important owing to the shift away from formal classroom learning to informal learning outside the classroom. According to Siemens (2005), informal learning is a significant aspect of the learning experience and may be facilitated through personal networks. In the context of a postgraduate research methodology class, this study focused specifically on (i) the way students perceived the use of Facebook, (ii) the way students experienced the different elements of Facebook, and (iii) whether the different elements optimised teaching and learning from the students' point of view.

2.   RESEARCH METHODOLOGY

2.1   Sample and data collection

The rationale for the proposed study revolved largely around the improvement of teaching and learning in a research methodology module, specifically the honours module in research methodology at a large residential university in Gauteng, South Africa. This module forms part of a Bachelor of Commerce honours degree with a specialisation in Human Resource Management.

The specific module was selected on the basis of its reportedly challenging nature in terms of content, as well as the fact that Facebook was to a certain extent already integrated into the learning content of the module. Data were gathered during the first semester of 2014. The whole class (N=29) was invited to participate in the study and all of them subsequently agreed.

Students were invited via e-mail and Facebook to complete a closed ended, online questionnaire before the module started. The objective of this questionnaire was to obtain students' current perspectives on the use of Facebook, especially in terms of education. Different elements of Facebook, including the public messaging forum (Timeline posts and comments), resource- and information-sharing tools and private messaging, were utilised during the semester. At the end of the semester, another questionnaire, focusing on students' experience of the use and value of Facebook as part of the course content, was sent to the respondents. To better understand students' experiences, semi-structured interviews were conducted with five students, who were selected on the basis of convenience and availability.

Twenty-six respondents completed the initial questionnaire, whereas only 17 completed the final questionnaire (See Table 1 and 2 for the gender and race compositions of the sample). The low number of respondents at the end of the semester may be explained by a reduced feeling of involvement in the module as the semester drew to a close or the fact that students were busy preparing for exams. All the respondents were between 21 and 26 years old.

Table 1: Gender composition of the sample (initial survey)

Gender	Frequency	
	Initial questionnaire	Final questionnaire
Female	20	14
Male	3	2
Not specified	3	1
Total	26	17

Table 2: Race composition of the sample

Race	Frequency	
	Initial questionnaire	**Final questionnaire**
African	1	1
Caucasian	14	13
Asian	2	0
Other/not specified	9	3
Total	**26**	**17**

2.2 Instrumentation and data analysis

The questionnaire included two different types of rating scale, "yes" or "no" questions to identify for instance previous exposure to SNSs, as well as Likert-type rating focused mainly on the perceived usefulness of the Facebook elements. Descriptive statistics were used to analyse these ipsative items. The non-parametric Wilcoxon test was used to test for significant deviations from the hypothesised median (3.5 in the Likert-type scales) of the responses of students, reflecting their attitudes toward the different Facebook elements. Deviations from the median would indicate positive or negative attitudes, and the degree of positivity or negativity would be indicated by means of using descriptive statistics. The final questionnaire contained open-ended items to obtain further insight into the students' experiences, and the results were analysed by means of content analysis.

Semi-structured interviews were conducted to explore the perceived usefulness of the different elements of Facebook. The semi-structured interviews added a qualitative dimension to the study and provided a means of exploring the potential trends uncovered in the analysis of the questionnaires (Welman, Kruger & Mitchell, 2005). Content analysis using the steps provided by Beck, Campbell & Shrives (2010) was carried out to analyse data. Both data triangulation (Bryman, 2006) and member checking were used to ensure the quality of the qualitative data and the findings (Golafshani, 2003; Flyvbjerg, 2006).

3. RESULTS AND DISCUSSION

3.1 Previous exposure to SNSs within a higher education setting

As pointed out by Jones, Graffney-Rhys & Jones (2011), the popularity of SNSs has led to their wide adoption in a range of diverse settings. Therefore, the exposure of the participants of this study to similar uses of SNSs as teaching and learning aids, was assessed to contextualise the data.

All the students had an active Facebook account, and 86,96% of them indicated that their use of social technologies was not limited to Facebook, since they also used SNSs such as Instagram, Twitter and Google+. In addition, 56,52% of the students had made use of SNSs in previous higher education courses or modules.

3.2 Initial attitudes and perceptions towards Facebook as a tool for improving teaching and learning

Table 3: One-sample Wilcoxon signed rank test results of initial questionnaire

Item	Mean	Standardised test statistic (z-score)	Significance value
1. I believe social network sites can improve learning in higher education.	4.86	3.547	0.000***
2. Social network sites should only be used for private purposes.	2.23	-3.120	0.002***
3. Social network sites can improve communication in a higher education course or module.	5.10	3.5	0.000***
4. I would like to use Facebook as part of a higher education course or module.	4.38	2.561	0.01**
5. I would be comfortable communi-cating with my lecturer on Facebook.	4.05	1.622	0.105
6. I am uncertain how Facebook can be used to improve teaching and learning in higher education.	2.43	-2.884	0.004***
7. I enjoyed using Facebook as part of a higher education course or module. (Only if you have used Facebook in this manner before.)	3.93	1.004	0.315
8. I regularly communicate with peers and classmates on Facebook.	3.90	1.217	0.224
9. Being able to use F acebook as part of a research methodology course could potentially help me grasp challenging concepts.	4.64	2.900	0.004***

H_0: Md = 3.5, for all tests.   ***Significant at α = 0.01   **Significant at α = 0.05

In the initial survey a significant difference (p = 0,000) was found between the hypothesised median of students' responses and the item pertaining to students' belief that SNSs could improve learning in higher education. Further inspection of the descriptive statistics indicated a mean of 4.86 (SD = 1,125), which showed that students felt significantly positive that SNSs improve learning.

Responses to the item "I would like to use Facebook as part of a higher education course or module" illustrated a statistically significant deviation (p = 0,01) from the hypothesised median (x= 4,38; SD = 1,284), suggesting that, prior to the intervention, students felt a need for these tools to be incorporated into their learning experience (see Table 3).

In the initial survey, the students indicated that they believed they could benefit from using Facebook in the specific course identified for the purpose of this study. This was confirmed by a statistically significant difference (p = 0,004) from the hypothesised median. The sample's mean of 4,64 (SD = 1,432) for this item indicated a positive attitude in this regard (see Table 3). One respondent suggested during an interview that Facebook was especially helpful to enhance understanding as the relevant course was a practical one and memorising the theory would not be sufficient.

The survey aimed to identify whether students would be comfortable using popular SNSs, such as Facebook, not only for private or social purposes. The results indicated a significant difference (p = 0,002) from the hypothesised median, and further inspection illustrated a mean of 2,23 (SD = 1,412) for the item stating "Social network sites should only be used for private purposes". Thus, the majority of responses indicated agreement with the belief that the use of SNS could and should be extended beyond the conventional and possibly intended spectrum (Boyd & Ellison 2008; Roblyer, *et al.* 2010). One interviewee's response relating to the academic potential of Facebook summed up the survey results in this regard:

> If one could use it for more than to pass your time or to go and look what is happening in other people's lives, and maybe use it a little to benefit your academics then it may be a good idea.

The interview responses largely confirmed the initial survey finding that students had a positive attitude towards the use of SNSs in the postgraduate course under study. Three of the interviewees confirmed they had entertained positive expectations about the use of SNSs prior to the module, citing as their reasons the increasing incorporation of popular technology (Churchill, Wong, Law, Salter & Tai 2009; Poellhuber, *et al.* 2011), the resource sharing potential it had (Mazman & Usluel 2010) and the fact that they were already using Facebook in their everyday lives (Selwyn 2009; Chelliah & Clarke 2011; Wang *et al.* 2012). Initially, one respondent felt fairly ambivalent towards the application of Facebook in the course and another admitted to feeling sceptical when the topic was introduced to the class. She felt negative about the idea because the institution was already using a similar platform on the official BlackBoard Learning System (Chelliah & Clarke, 2011) that incorporates Web 2.0 technologies and allows communication and resource sharing. As discussed in the following section, the respondent felt much more positive after the intervention about the addition of Facebook to the existing resources.

The results pertaining to students' perceptions and expectations before the module started about using SNS seemed to support the idea that students of the Net Generation expected the social technologies associated with Web 2.0 to have a positive effect on their learning experience (Cassidy, Britsch, Griffin, Manolovitz, Shen & Turney, 2011; Wodzicki *et al.* 2012).

3.3 Post-module attitudes to and perceptions of Facebook as a tool for improving teaching and learning

There were no significant statistical differences in the group's overall responses before or after exposure to Facebook (see Table 4). The lack of change in their attitude could be attributed to several factors, for instance, the difference between the sample sizes of the pre- and post-intervention groups or some respondents' previous exposure to the use of SNSs for educational purposes. Another factor could be that Facebook was not used optimally in the module (either by the lecturers or the students or both) and its use did not convince students of its contribution to their learning. The semi-structured interviews yielded additional insight in this regard.

As indicated previously, all the interviewees were fairly optimistic about the tool's potential to contribute to the learning experience of the class, a perception that remained unchanged until after completion of the module. The main aspect of the tool that the interviewees highlighted as beneficial was the assurance that it was an additional resource. Having this tool meant that students had additional help at their disposal without having to make special arrangements to meet with their lecturer, as highlighted by one respondent's reply:

> And when I actually started using it, I didn't even have the need to go and talk to [the lecturer] because everything I needed or had questions about there was a video or something that would help me.

The pre- and post-module survey items were identical, but the post-module survey contained additional items to establish the sample's attitudes (after the completion of the module) toward the use of SNSs (see Table 4). The aim of these items was to explore students' perceptions of how Facebook was applied within this particular module. As indicated in Table 4, the items pertaining to whether students found the tool useful showed a significant deviation from the hypothesised median. Further investigation of the descriptive statistics for each item indicated that students had a positive experience. In this regard the interviewees responded as follows: they enjoyed using Facebook as part of the module; they did not find its application in this context inappropriate; using Facebook added value to the teaching and learning experience and made difficult concepts easier to grasp. The group's sentiment that the Facebook page helped clarify complex ideas supports the future use of Facebook in a conceptually and practically challenging module such as research methodology.

Although no previous research is available on its application specifically in a research methodology classroom, similar results were found in studies done in foreign language teaching (Akbari, Pilot & Simons, 2015; Lantz-Andersson, Vigmo & Bowen, 2013).

Table 4: One-sample Wilcoxon signed rank test results of final questionnaire

Item	Mean	Standardised test statistic (z-score)	Significance value
1. I believe social network sites can improve learning in higher education.	4.94	3.447	0.001***
2. Social network sites should only be used for private purposes.	2.69	-1.909	0.056
3. Social network sites can improve communication in a higher education course or module.	5.19	3.318	0.001***
4. I would like to use Facebook as part of a higher education course or module.	4.50	2.368	0.018**
5. I would be comfortable communicating with my lecturer on Facebook.	4.06	1.663	0.096
6. I am uncertain how Facebook can be used to improve teaching and learning in higher education.	2.38	-3.090	0.002***
7. I enjoyed using Facebook as part of a higher education course or module. (Only if you have used Facebook in this manner before.)	4.33	1.797	0.072
8. I regularly communicate with peers and classmates on Facebook.	3.81	0.688	0.492
9. Being able to use Facebook as part of a research methodology course could potentially help me grasp challenging concepts.	4.75	2.739	0.006***
10. I enjoyed using Facebook as part of this higher education course.	4.43	2.068	0.039**
11. I regularly communicated with peers and classmates on Facebook.	3.81	-0.636	0.524
12. I communicated more with peers using other social technologies, such as Whatsapp or Twitter, than Facebook.	5.29	3.119	0.002***
13. I have actively participated in the Facebook-related tasks of the module.	4.14	2.218	0.027**
14. The use of Facebook improved my learning experience.	3.93	1.849	0.064
15. The use of Facebook made difficult concepts easier to grasp.	4.43	2.323	0.020**
16. I found communication with other students on Facebook during the course useful.	3.86	0.932	0.351

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17. I found communication with the lecturer and/or assistant on Facebook during the course useful.	4.07	1.728	0.084
18. I would rather contact the lecturer on Facebook than through e-mail.	1.93	-3.090	0.002***
19. I found the use of public "Timeline" posts and discussions useful for learning.	4.29	1.975	0.048**
20. I found the use of private messaging on Facebook useful for learning.	3.07	-1.150	0.250
21. Facebook adds value to teaching and learning in higher education.	4.50	2.748	0.006***
22. I participated in resource sharing (videos, links, etc.) on Facebook during the course.	3.07	0.773	0.439
23. I found resource sharing (videos, links, etc.) on Facebook useful during the course.	4.62	2.388	0.017**
24. I regularly visited the group for course-related information.	3.54	0.319	0.750
25. I feel the Facebook page was optimally made use of during the course by the lecturer and/or assistant.	3.86	0.928	0.353
26. It is inappropriate to use Facebook as part of a higher education course or module.	2.07	-3.099	0.002***

H_0: Md = 3.5, for all tests.   ***Significant at α = 0.01   **Significant at α = 0.05

3.4   Facebook as a tool to promote communication and socialisation in the class

The value of SNSs as tools to promote dialogue (Roblyer *et al.* 2010; Camus *et al.* 2016) and socialisation (Poellhuber *et al.* 2011) in higher education settings is often one of the most important reasons for making use of them. As such, the sample's perception and experience of Facebook in this regard were investigated through some of the items included in the post-module questionnaire.

On the Facebook page itself, minimal communication between students could be discerned: only a few likes and comments were made through Timeline posts on material posted by one of the researchers. An item included in the final survey shed more light on this finding. The results indicated a significantly positive response to the item "I communicated more with peers using other social technologies, such as Whatsapp or Twitter, than Facebook" (see Table 4). The interview phase of data collection was used to ascertain the reasons for this response. Most interviewees recommended pairing an IM application, such as Whatsapp, with Facebook as this would provide a more immediate and direct communication channel. The same logic was evident when the respondents explained why they preferred to make use of a Whatsapp group rather than a Facebook group as a communication platform:

> It is much easier to quickly go on Whatsapp and to read a message than to go on Facebook... not everyone has that (Facebook notification) on their phones, so, yes, it is obviously much faster… to read a Whatsapp message.

Students responded neither significantly positively nor negatively to items relating to whether they would be comfortable communicating with lecturers on Facebook (initial survey) and whether they found communication with lecturers or the assistant on Facebook useful during the module (final survey). Except for a single inbox message from a student to the class assistant, no other communication in this regard was evident. Furthermore, results from the final survey indicated that the sample would prefer to communicate with the lecturer through e-mail rather than through Facebook. These survey results do, however, diverge somewhat from the responses of the interviewees. Two of the interview respondents confirmed that they would rather contact the lecturer through e-mail because they perceived it as a more formal tool and as "kind of the norm; and I may have e-mailed her already and then remembered 'oh, but wait, I could have communicated it with her through Facebook as well'". The other three interviewees indicated they would feel comfortable using Facebook instead of e-mail: two of them did not mention a preference whereas the third one said, "it is the same for me as e-mail". In the light of the purpose of this study, it is important to take note of one student's response that her attitude in this regard would vary depending on the lecturer. Two respondents emphasised that they would only be comfortable with this arrangement if the communication was related to academic work.

According to most of the respondents, the group was useful for introducing the students to each other, although in a somewhat covert manner. The respondents indicated that the group could be used to learn more about their new classmates by exploring their profiles, and finding out about their background and interests. One respondent enjoyed being able to check personal information to become familiar with her classmates through the Facebook profiles. However, browsing through personal information may invade the privacy of others. Although it was not mentioned by the students in the current study, mention has been made in previous studies that privacy stifles engagement on Facebook (McCarthy, 2013; Camus *et al.* 2016).

3.5   Students' experience of the use of different elements of Facebook for teaching and learning purposes

According to the final survey, the students found the resource-sharing aspect as well as the ability to start and contribute to discussions on the Timeline to be the most useful functions on the page. Students' responses about the usefulness of the private messaging function showed no significant variation from the hypothesised median (see Table 4). These findings were further investigated as part of the interview process.

In the interviews, it became apparent that the respondents deemed the SNS platform for sharing videos, links to articles and other online resources to be the most useful element. All the respondents indicated that they had made use of this element at least once and that these resources had contributed to their learning experience. One respondent's view in this regard hinted at the evolving learning needs of the Net Generation (Wodzicki *et al.* 2012):

> Especially the types of video links and stuff which were posted, it did make it easier and faster to, say, understand something or how to do something with an assignment to quickly watch a video how someone explains than to go and read up on it and stuff. So I think it definitely did make it easier, yes.

Four of the interview respondents indicated that they had found the ability to communicate on the Timeline function through posts and comments useful as this reassured them that assistance would be available if needed. Finally, the use of the inbox function was also experienced as a positive means to contact fellow students for module related help.

3.6   Recommendations for Facebook use

One may expect active, self-directed involvement in the Facebook page from students at a postgraduate level (Cleveland-Innes, Ally, Wark & Fung 2013). However, the main challenge the respondents in this study seemed to experience was being aware when new information or resources had been posted on the page. One respondent mentioned that "a lot of people's Facebook is not linked to their phones directly; they do not know directly that there is something placed on Facebook". Judging from the responses to the open-ended items in the final survey, most respondents concurred that they were affected by this challenge. One respondent suggested that the page manager could "[s]omehow notify the students that important information has been posted". Four of the interview respondents and one survey respondent suggested that the lecturer should make use of a Whatsapp group as a notification medium. It is clear from these comments that the students did not actively initiate participation on the Facebook page but wanted to engage in a post-hoc manner after others (presumably the course coordinators) had placed material on the page. Insights gained from a community of inquiry framework indicate that the foundation of an online learning community is a social, teaching and cognitive presence (Akyol & Garrison, 2008). A social presence characterised by the risk-free expression, collaboration and dialogue of participants was absent in this study (Cui, Lockee & Meng 2013), and this might be attributed to a lack of making the purpose of the online group clear (Akyol & Garrison, 2008). Purpose could have been established through increased teaching presence, which would have enhanced both cognitive and social presence; for instance, the need and extent of collaboration on Facebook could have been specified and reiterated in the classroom (Wang *et al.* 2014).

McCarthy (2013) suggests that assessments should be linked to online participation and that applications, such as quizzes or opinion polls, should be used in instruction to enhance participation.

Another point of criticism raised by students was the lack of participation on the page by the lecturer and the assistant. One respondent suggested that "It should have been used more continuously and with more resources to share". This reiterates the importance of a teaching presence on the Facebook page (McCarthy, 2013). However, the perceived lack of the lecturers' involvement might not have been the only reason for the students' lack of participation. Even though it was made clear to the students prior to the intervention that they were expected to take ownership of their engagement in discussions (Camus *et al.* 2016) and to contribute to the contents of the page actively (Halse & Mallinson 2011; Poellhuber *et al.* 2011), their inputs were minimal. On the other hand, discussions could have been stimulated by posting specific tasks the students were required to participate in or by establishing more concrete connections between real face-to-face discussions and online discussions (McCarthy, 2013).

3.7   Credibility and responsibility of lecturer

A number of authors have discussed the use of SNSs by lecturers in higher education and the potential of these tools to increase these lecturers' credibility and acceptance from the students' point of view (Godwin-Jones, 2009). After the current intervention, the interview respondents were asked whether a lecturer's willingness to use Facebook as an educational aid would increase the credibility of the lecturer or alter students' perception of the lecturer or the course. Their responses were all resoundingly positive. The predominant view was that they would feel more comfortable communicating with a lecturer who had started a Facebook page and that they would put in more effort to engage with the lecturer and the subject. One interviewee indicated:

> I think it says a lot about them (lecturers) because they will try and accommodate you in any way, to be there for you more and … I think it tells one that they try and come to your level and they try to meet you halfway to make this thing work.

Most respondents indicated they would prefer a class representative or student assistant to start the page. Receiving invitations to join the page from someone who was perhaps more familiar to them than their lecturers would make them feel more at ease. However, most of them agreed that the lecturer should have access to the page to monitor the themes of the discussions and posts and to intervene where necessary.

4. CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The survey and interview results illustrated a general and significantly positive attitude towards the implementation of Facebook as a learning tool. The study confirmed that institutions and lecturers should no longer ignore the evolving educational needs of the Net Generation and that the failure to meet these needs might lead to entire institutions becoming irrelevant in the changing higher education environment (Hemmi *et al.* 2009; Jabr 2011). A willingness to implement innovative teaching aids, such as Facebook, seems likely to become an important factor in institutions' ability to attract prospective students, improve academic performance and contribute to students' overall practical learning experience. In addition, perhaps the greatest benefit for lecturers considering the implementation of new technological resources in their own courses or modules revolves around the issue of lecturer credibility. The study confirmed findings that students perceived lecturers who implemented SNSs in their courses as more credible and approachable (Poelhubber, *et al.* 2011; Yang, *et al.* 2011) owing to the lecturer's perceived effort to accommodate the unique needs of the Net Generation (Wodzicki, *et al.* 2012).

Similar to findings in the existing literature, students generally found the most useful contributions to come from the information- or media-sharing capability of Facebook (Bosch, 2009; Chelliah & Clarke, 2011; Veletsianos, 2012) by means of which they got access to additional information to which they would not readily have had access outside the course on a multimedia platform. This proved useful for the unique needs of the Net Generation (Wodzicki, *et al.* 2012). Students also found reassurance in the fact that another dimension was available to them through the multimedia resources posted to the group, which could help them make sense of abstract concepts. The Timeline was perceived as useful and indeed critical for inclusion in future exercises. Discussions on the Timeline should, however, be facilitated through other tools such as multimedia sharing.

In the current study, as well as in previous research, it has been established that the use of Facebook for teaching and learning has the potential to enhance both formal and informal student engagement, especially for conceptually complex and challenging subject matter like research methodology. Although the students expected Facebook to enhance communication among students and between students and their lecturer, Facebook's communication elements were not used regularly in the course of the study. In fact, the levels of social presence were low, which could be due to a lack of self-directed learning and to errors in instruction (for instance, low levels of teaching presence). Increasing the social presence and co-authorship of students on a Facebook page should be explored in future research studies.

Based on the current study, it is recommended that if Facebook is used for teaching and learning, students are made aware of the purpose of the Facebook discussions. Furthermore, clear links should be established between the virtual discussions on Facebook and discussions in class. Clearly outlining the purpose of the educational use of Facebook is also important, as this would facilitate student ownership of the content and discussions on the page and enable the students to become co-authors of the course material. Co-authorship may need to be encouraged through specific tasks posted on the group page, such as introducing a rotational system according to which each student or group must upload certain information relevant to a week's topic. In this study, student contributions to the Facebook group did not count towards the module assessment. Assessed contributions, or more active input with regard to assessment on Facebook, increase active participation in the group. Finally, there should be assurance that students receive notifications of Facebook on their phones or that notifications be made by another application such as Whatsapp.

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