

Identifying Social Presence in Student Discussions on Facebook and Canvas

Monica Johannesen · Louise Mifsud · Leikny Øgrim

OsloMet – Oslo Metropolitan University

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Abstract

This study examines student discussion fora in a Master's programme. Previous student evaluations of the course highlighted the students' dissatisfaction with the technology chosen for communication and recommended the use of Facebook instead. In this article, we raise the following question: 'How do various digital discussion fora engage students in academic discussions?' The collected data material consists of student evaluation reports and dialogues on Facebook and Canvas. The data were gathered from two courses that used Facebook or Canvas as their primary communication technology. In analysing these interactions, we identified several categories: social issues, academic discussions, practical issues, information flow, teacher information, and crossover discussions. The findings, which address the interplay between the social and the material nature of communication in academic discussions, are analysed from a sociomaterial perspective. Our conclusions indicate that the sociomaterial nature of the various discussion fora influences the students' social presences, which consequently influence the academic discussions.

Keywords: Facebook, Canvas, social presence, sociomaterial, dialogic learning

Introduction

The research presented in this article focusses on student discussion fora in a Master's programme in technology-enhanced learning. Previous course evaluations highlighted the students' dissatisfaction with the chosen virtual learning environment (VLE) and their preference to use a social network service (SNS). One group of students even refused to use the VLE for discussions and used Facebook instead (Johannesen, Mifsud, & Øgrim 2016; Johannesen, Smørddal, & Øgrim 2016; Johannesen & Øgrim 2015), an action that can be described as a *student mutiny* (Johannesen, Mifsud, et al. 2016). To meet the students' demands, we designed two courses, one using Facebook and the other using Canvas, a new VLE. When designing the courses, we questioned how the different digital discussion fora engaged students in the academic discussions that pertained to the course literature. Consequently, we examined the discussions that took place on the two platforms over the course of one semester.

The remainder of this article is organised as follows: In the next section, we review the research related to the use of VLEs and SNSs in higher education and present the concepts we used for the analyses. Then, we present the data, discuss our findings, and propose several educational implications.

Related Research

A considerable amount of research has examined the use of VLEs in higher education. VLEs refer generally to learning management systems such as Fronter, a learning platform developed in Norway and used in schools and universities worldwide, and Moodle, an open

source learning platform. Canvas is a recently-developed VLE, used mainly for delivering Massive Open Online Courses.

A review of literature on VLEs indicates that these kinds of systems provide instructors and students with tools that improve their efficiency and timeliness, strengthen their learning task orientation, allow them to express their individuality, and are ubiquitous (Mueller & Strohmeier 2011). In general, VLEs are reported to be well-designed for the purpose of studying (Petrovic, Jeremic, Cirovic, Radojicic, & Milenkovic 2013) and are perceived to be authoritative and valid media for course material (Maleko, Nandi, Hamilton, D'Souza, & Harland 2013). Although VLEs promote student interaction and collaboration, they have been increasingly criticised for their pedagogical limitations (Bennett & Segerberg 2011), which include the limited possibilities for social engagement in collaborative learning.

To overcome the limitations of traditional VLEs, many educators employ SNSs to engage students in a virtual learning community. A considerable number of studies have investigated the use of SNSs for educational purposes (see Manca & Ranieri 2013; Manca & Ranieri 2016), either as a supplement to existing VLEs or as a stand-alone technology (Birkeland, Drange, & Tønnessen 2015; Crook & Cluley 2009; Durkee et al. 2009; Hollyhead, Edwards, & Holt 2012; Kurtz 2014; Meishar-Tal, Kurtz, & Pieterse 2012; Miron & Ravid 2015; Siemens & Weller 2011). Despite the proliferation of studies, issues such as the structure of learning spaces, open content, informal learning, privacy and security, the blending of personal and professional life, and learner/educator control still need to be addressed (Siemens & Weller 2011).

Students find SNSs like Facebook more attractive than traditional VLEs (Maleko et al. 2013; Miron & Ravid 2015) when it comes to exchanging logistical and factual information

(Selwyn, 2009). In contrast to VLEs, SNSs work well as arenas for social interaction and peer-to-peer feedback (e.g., Aaen & Dalsgaard 2016; Madge, Meek, Wellens, & Hooley 2009; Maleko et al. 2013; Miron & Ravid 2015; Petrovic et al. 2013; Selwyn 2009). These studies have demonstrated that SNSs are useful for academic purposes (Meishar-Tal et al. 2012) and as a supplementary technology for collaborative academic activities (Birkeland et al. 2015; Miron & Ravid 2015). Hollyhead et al.'s (2012) findings suggest that students' 'voluntary use of SNSs as a complement to formal learning is culturally embedded in the HEI [Higher Education Institution] and constitutes a widely accepted "integral" part of the learning experience' (p. 369). Additionally, Kurtz (2014) concludes that SNSs are especially successful in providing 'a protected environment that fosters social learning processes while emphasizing learner involvement, active contribution and frequent interaction with peers and instructors' (p. 253). This kind of sociality is opposed to websites, which tend to support individual learning processes.

A related distinction between the use of VLEs and SNSs involves differences not only in the kind of communications but also the kind of presence that instructors have (Anderson & Dron 2011; Crook & Cluley 2009). Crook & Cluley (2009) found that teachers are more 'socially muted' (p. 208) in VLEs than in SNSs (though this difference can be overcome). Anderson and Dron (2011) suggest that SNS technologies support a connectivist approach and predict a future generation of distance education pedagogy. Salmon, Ross, Pechenkina, and Chase (2015) found that some students refuse to use SNSs in their formal learning processes because they believe that SNSs already occupy too much of their time. One reason for their refusal may be that they link SNSs to their private spaces and assume that SNS discussion fora are not designed to support structured academic discussions (Salmon et al

2015). Research by Manca and Ranieri (2013) reports that students have a rather traditional vision of learning and still resist using SNS as a formal tool in educational environments. Furthermore, Siemens and Weller (2011) argue that the successful usage of SNS blends professional and personal life. However, Aaen and Dalsgaard's (2016) study suggests that Facebook acts as a third type of space in which students blend their personal and social lives with academic work.

The research on the use of VLEs and SNSs has guided the process of designing and implementing online learning environments that meet students' expectations of immediate presence in their VLEs (e.g., Durkee et al., 2009). Mueller and Strohmeier (2011) argue that knowledge about the design characteristics of learning environments are crucial for understanding their value for learning purposes.

From these studies, we can identify several differences between the use of VLEs and SNSs in higher education institutions, especially in technology-enhanced communication. The research suggests that there is a trend for using SNSs, either as an alternative or as a supplement to VLEs. Interestingly, these studies also present divergent findings regarding the use of SNSs for academic purposes. Given the contradictory conclusions, we explore, in this article, the use of VLEs and SNSs in dialogic conversations and examine how they influence academic communication between students.

A sociomaterial approach to social presence

From the sociocultural perspective, dialogic conversation is regarded as a prerequisite for students to form insights and develop understandings (Dysthe 2013). In dialogic pedagogy, understanding is based on collaboration; in particular, it involves a

student searching for and testing ideas and values against, for example, those of peers and mentors (Flitton & Warwick 2013; Matusov & Miyazaki 2014). This perspective holds student-active forms of learning to be important methods in compulsory school and higher education (Imsen 2014). Understanding the role of dialogue in online discussions is crucial to gain insights into how students learn. When studying a situation involving digital-mediated communication, it is essential to examine the relationships between technology, human actors, and learning.

In this article, we employ a sociomaterial perspective of learning and social interaction (Fenwick, Edwards, & Sawchuk 2011; Sørensen 2009), focussing on the relationship between technologies as material tools and as social frames (Johannesen, Erstad, & Habib 2012). A sociomaterial approach emphasises the materiality of situations that include both humans and nonhumans. *Nonhumans* include the objects, artefacts, and tools around us. Thus, materiality is intertwined with various aspects of learning (Orlikowski, 2007), which means that phenomena can be understood as entanglements of material and social entities. This perspective considers the effects of the networks of interactions between human and non-human actors: in this case, between students, teachers, course materials, and communication technology (Fenwick et al. 2011).

Engagement is closely related to the concept of social presence in digital learning environments (Gunawardena & Zittle 1997). Social presence is defined as the degree to which the participants in digital learning environments create a sense of other participants being physically present. Tu and McIsaac (2002) extended the concept by (1) suggesting a conceptual framework that can be used to understand social presence in digital interactions and (2) defining the importance of intimacy and immediacy in online learning environments.

Using the community of inquiry model, Garrison et al. (2000) identified three categories of indicators of social presence: expression of emotions, open communication, and group cohesion. Garrison (2000) elaborated that social presence is a process of (1) acquiring social identities, (2) having purposeful communication, and (3) building relationships. Kreijns, Van Acker, Vermeulen, and van Buuren et al. (2014) distinguish between social presence and social space, where social presence is determined by the physical characteristics of the communication medium and by social factors, such as social contexts and social processes.

From a sociomaterial perspective, and building from the preceding discussion, our interpretation of social presence takes in account the degrees of intimacy, immediacy, purposeful communication, and the establishment of relationships in online learning environments. We chose not to include 'social identity' (see Garrison et al. 2000) because this term is too difficult to operationalize in an analysis of student discussions in academic fora. We employ the preceding conceptions of social presence to illustrate and analyse the dialogic dimensions of, and those created through, technology-enhanced learning.

Prior studies have used various characteristics to examine social presence in online learning environments (Lambropoulos, Faulkner, & Culwin 2012; Leafman, Mathieson, & Ewing 2013; Mykota 2015; Salmon et al. 2015; Uzunboylu, Bicen, & Cavus 2011). For example, Son, Kim, Na, and Baik (2016) measured intimacy between learners using an algorithm that processed social feedback.

In a study of VLE use, Mathieson and Leafman (2014) compared students' and instructors' perceptions of social presences. Based on a survey completed by 282 students and 92 instructors, they concluded that the students and their instructors experienced high

social presence (Mathieson & Leafman 2014). However, the students reported significantly lower levels of social presence than their instructors. Furthermore, the students felt uncomfortable when interacting in the VLE or when participating on the discussion fora. Mathieson and Leafman (2014) suggested that these findings were caused by the nature of VLE, which does not have an open atmosphere that is governed by the assumption that all participants are equal. The participants claimed that the VLE was impersonal and was not conducive to forming distinct impressions of others.

Additionally, the study revealed that more than one-third of students and instructors were willing to use SNSs in addition to the VLE. The authors concluded that VLEs have social connection limitations; for example, they lack spaces to present personal contexts. Lambropoulos et al. (2012), using the term *social awareness* synonymously as *social presence*, argued that VLEs are not able to fully support a user's social presence because they were not designed for that purpose. They also identified the teacher's importance in creating an environment in which social presences can be visible and proposed a framework for analysing social presence in collaborative e-learning activities. Leafman et al. (2013) argued that, because students consider social presence to be integral to collaboration, the absence of the necessary tools for establishing social presence in traditional VLEs increases their interest in employing SNSs in their learning environments.

Though the studies covered in this literature review highlight the important elements of creating opportunities for social presence, they fail to address the particular qualities of students' social presences in technology-enhanced learning, especially regarding the interplay between the social and the material in online discussions. Consequently, we argue that, when researching technology-enhanced dialogical learning environments, it is essential

to investigate social presence in order to understand how different kinds of digital discussion fora engage students in their academic dialogues.

Research Design

This study used a case study research design (Eisenhardt 2002; Yin 2003) to investigate online communication practices among students and teachers who were participating in a Master's programme in technology-enhanced learning. Case studies focus on understanding the dynamics present within single settings (Eisenhardt 2002, p. 8). In the cases presented in this paper, two groups of students used Canvas and Facebook to discuss and collaborate on work. The aim of the research was to examine how these two tools engage students in different ways. This study can be regarded as a series of nested case studies (Patton 2002, p. 298) with overlapping units of analysis.

Fenwick and Edwards (2010) stated that research on learning and education can be characterised as an examination of a complex reality. By introducing technology into educational settings, new challenges emerge that cannot be addressed simply by stating that technology is 'just another tool'. It is necessary to go beyond the traditional ethnographic studies in education and look into a hybridity of classrooms, cultures, and online communities (Hetland & Mørch 2016). The social and material entanglements must be unpacked, and the relationships between the social and the material must be investigated. The cases described in this paper involve actors who use communication technologies both on campus and online. Hine (2015) distinguished an ethnography for, of, in, and through the Internet. Following Hine (2015), we adopt an ethnography for the Internet, one that considers blended (i.e., virtual and physical) worlds and focusses on 'the embedded,

embodied and everyday Internet' (p. 19) where these three worlds overlap as research arenas.

Case descriptions

To examine how different digital discussion fora engaged students in their academic discussions, we studied two courses within a Master's programme where the students were from the same cohort but used different technologies for online communication. Twenty-two students were enrolled in the course based on VLE technology, and 13 students were enrolled in the course using SNS technology. Eight students were enrolled in both courses.

The course that employed Facebook for communication and dialogue, *Introduction to Technology-Enhanced Learning*, was partly based on campus. The lectures and dialogues were recorded and streamed in order to accommodate the part-time students who could not follow the course in real time and the students who were geographically distributed. One of the aims of this particular course was to establish a learning community among the participating students and faculty. Consequently, the mechanisms of social interaction were viewed as an integral part of the course design. Based on previous experiences from other course deliveries, it was decided to use Facebook to build an active learning community (Johannesen, Smørdal et al. 2016).

In the online course that used Canvas, *E-assessment*, the students presented assigned texts to each other, and these presentations formed the starting points for online discussion. To ensure active participation, students were required to comment on at least two of their peers' presentations. Follow-up discussions were conducted in an asynchronous discussion forum on Canvas. Later in the course, the students were asked to collaborate to perform two

practical tasks and share information and experiences with their peers. The course was conducted completely online, and the participants did not meet in person. In addition, since the dialogue was always asynchronous, the participants were not online simultaneously. Finally, instruction and dialogue were conducted in English, which created additional challenges for the students because they were all non-native speakers of English.

Data collection and analysis

The data were gathered from the two courses during the autumn of 2016. This study uses triangulated data collection by analysing the course-specific online discussions on the VLE (Canvas) and the SNS (Facebook) and the data from the course evaluation reports. The data material is comprised of 12 student evaluation reports, 388 Facebook discussion posts, and 617 Canvas discussion posts. Our qualitative analysis of the Facebook posts included entries from the whole semester. Due to the large number of posts on Canvas, we chose to focus on the dialogues that took place at the beginning of the course period (mandatory task, 28 posts), during the middle of the course (not mandatory task, 11 posts), and at the end of the semester (not mandatory task, 77 posts). The introductory discussions in both courses focussed on outlining the course expectations. The other two periods included mandatory and voluntary activities. Student evaluations, in the form of a survey, were administered at the end of each course.

Law (2004) argued for the use of methods that can represent complexity, clarify material, highlight the 'performative' focus of the research, and produce realities. Using the sociomaterial perspective, we concentrated on a given 'network' (i.e., the two courses) and investigated the effects of the networks of interactions on the various material actors, including the students' engagement in academic discussions. The discussions were

downloaded and analysed, using document analysis to identify categories of social presence (Bowen 2009; Silverman 2004). Document analysis was deemed appropriate because it enabled us to gather insights into how different digital discussion fora engaged students during their online discussions. The discussions were read carefully, and each post was given a descriptive token according to its content (such as 'discussing social issues') and then reiterated. We translated the discussions that had been conducted in Norwegian.

Selwyn (2009) identified five main themes of conversation that emerge from the use of SNS: recounting and reflecting on the university experience; the exchange of practical information; the exchange of academic information; displays of supplication and/or disengagement; and 'banter', or exchanges of humour and nonsense (p. 161). Every post in the Facebook and Canvas discussions was coded according to Selwyn's categories. However, we found that these categories did not fit our data well. The categories of 'recounting and reflecting on the university experience' and 'exchange of practical information' did not appear as separate categories in our data. Consequently, we merged the two into one category named 'practical issues and information flow relevant to the studies'.

The category of 'exchange of academic information' was useful. However, we also needed a category for academic discussions. Consequently, we changed 'exchange of academic information' into a new category, which we named 'academic discussion'. We did not identify statements that fit into Selwyn's categories of 'banter' or 'displays of supplication and/or disengagement'. Consequently, we chose to categorise statements that focussed on social issues within a broader category named 'social issues'. In addition, two new categories emerged: 'crossover discussions', which describes discussions about one or both of the courses under investigation, and 'teacher information', which relates to the

teachers' practical instructions and their answers to practical issues. In the coding process, each post was viewed as a single unit of analysis, even when it contained multiple statements. Consequently, we categorised the posts according to their main topics. In order to increase the robustness of the identified categories, we reiterated the process. Table 1 presents the categories, indicators, and examples.

Category	Indicator	Example
Social issues	Expressing praise or appreciation, discussing or reporting social arrangements or events	'Great presentation, I learned a lot'; 'Thank you for all the good feedback'; 'I believe a good cup of coffee clears the mind and forms a splendid basis for good cooperation (said by a coffee addict.) Would anyone like to pool in on a coffee machine?'
Academic discussions	Presentations or discussions on the course literature or topics, or referring to relevant links	'My understanding is that cooperative learning is the same as "traditional groupwork/cooperation", while collaborative learning is "mediated group work" or "electronic cooperation". I guess there are better expressions, but I think I would choose words like this'; 'Here is my presentation <link>'
Practical issues and information flow relevant to the studies	Information on times, rooms, technology, exams, student internal administration, etc.	'Hello Peter, I will be with you on the 20th. I am not on the list, and have been a bit slow'; 'You have to be logged on to a uni computer or use Ebsco Host with "access from home". Alternatively, as a librarian'
Teacher information	Like 'Practical issues...' from the teachers	'Information on how to follow lectures synchronously or watch the recordings, can be found on "Memex"'
Crossover discussions	Issues regarding the other course	'Can anyone help me find the Canvas link?'

Table 1: List of categories, indicators, and examples

To ensure that our data-analysis process is transparent, we present the number of statements that form the basis for our chosen excerpts by showing the number of posts

identified within each category and the total number of posts for each course. Table 2 presents the overview of the categorisation.

	Facebook ¹	Canvas
Social issues	96 (25 %)	61 (10 %)
Academic discussions	89 (23 %)	461 (75 %)
Practical issues and information flow relevant to the studies	146 (38 %)	74 (12 %)
Teacher information	32 (8 %)	21 (3 %)
Crossover discussions	25 (6 %)	0 (0 %)
Sum	388 (100 %)	617 (100%)

Table 2: Overview of the number of discussion posts

The teachers' summaries and comments represented 55 of the 461 Canvas posts categorized as academic discussions.

The categories were also used to examine the course evaluations. Twelve students returned their course evaluations: 4 of the 13 students in the Facebook course and 8 of the 22 students in the Canvas course. The responses in the course evaluations consisted of statements that addressed issues that are captured by the categories. The students' responses usually consisted of multiple statements and addressed various issues. Each statement was individually analysed and coded using the aforementioned categories. Table 3 presents the results of the categorisation.

	Facebook	Canvas
Social issues	25 (32 %)	14 (11 %)
Academic discussions	20 (26 %)	40 (31 %)
Practical issues and information flow relevant to the studies	26 (34 %)	65 (50 %)
Teacher information	2 (3 %)	8 (6 %)
Crossover discussions	4 (5 %)	4 (3 %)
Sum	77 (100%)	131 (100%)

Table 3: Overview of statements from student evaluations of the course

¹ Percentages are used for illustrative purposes, making the numbers more readable.

Ethical considerations and potential biases

At the beginning of the semester, the students were informed that their online dialogues and discussions would be studied but were assured that we would not link their personal information to the discussions. Every student voluntarily signed a letter of consent.

We were the instructors of the courses for this case study, and we recognise our agency. Therefore, to create distance from the data, we separated the analyses from the instructors by switching who analysed the material (i.e., teachers did not analyse the material from their own class).

Another potential bias in this study involves the languages used in the courses. While the Facebook course was taught in Norwegian (the mother tongue for most of the students), the Canvas course was taught in English. Consequently, when analysing our data, we accounted for the fact many students might have had difficulties using the English language.

Findings

Each course started with a discussion of expectations for the discussion fora. In analysing interactions during the initial discussions and the more contentious discussions that took place later, we identified several categories of dialogic conversation: (1) social issues, (2) academic discussions, (3) practical issues and information flow relating to study, (4) teacher information, and (5) crossover discussions. These categories structure the presentation of the findings and analysis. The data presented below were chosen as examples of typical or atypical dialogues.

Social issues

Initially, the student discussions on Facebook primarily involved social issues, such as investing in a coffee machine. Social issues appeared only twice in Canvas, and these were woven into academic discussions, as when this student expressed himself: 'My time is up for today. I will come back later. Just a quick "well done", before I have to go shopping for tacos :-)'. In contrast, discussions on social issues appeared almost weekly on Facebook (e.g., '[I'm starting the weekend now. Thanks for your awesome presentations! Good repetition of the course materials']).

Social issues also focussed on more personal factors, such as learning about one another and posting encouraging exclamations of 'hurrah' as the exam date neared: 'Nice getting to know you! I look forward to working with you!' The Facebook discussion about coffee was a result of an initiative from the teacher asking the students to offer their expectations for the technology-supported dialogues in the course. This dialogue included posts such as 'I believe a good cup of coffee clears the mind and forms a splendid basis for good cooperation (said by a coffee addict.) Would anyone like to pool in on a coffee machine?' The discussion was placed back on track by the teacher and continued as an academic discussion: 'I think this is a channel for all participants in the course. This is a meeting spot for both campus and remote students. We should define a common digital for[u]m for academic discussions'.

Here, we see that one student is encouraging other students to use the forum as a 'common' digital meeting place for academic discussions. From a dialogic learning perspective, we see that the discussion about investing in a coffee machine and the relative

merits of coffee in improving academic discussions facilitated a high level of social presence. This highly social discussion eventually evolved into an academic discussion.

In contrast, Canvas appeared to suppress social discussions, except in specific situations where these kinds of discussions were seen as legitimate, such as offering feedback to academic posts. These legitimate social issues included posts that said ‘well done’ or ‘thank you for [the] constructive comments’. As with the Facebook course, these posts were integrated into the discussion. From a sociomaterial perspective, our findings indicate that Facebook, as a platform that students voluntarily join, encourages users to share private information; however, academic platforms like Canvas appear to delegitimize personal discussions unless they serve as an excuse for the lack of further participation.

Academic discussions

The discussions on Canvas were mainly of an academic nature, involving only the issues that pertained to the course. One student highlighted in the course evaluation that Canvas functioned well for academic conversations because it allowed academics to interact with one another: ‘Really, Canvas worked as a support for academic discussions because it brought together the circle of academicians to interact with one another’. The teachers’ posts mainly confirmed, corrected, and/or summarised what the students had presented in their discussions, guiding them when necessary.

In the Facebook course, we saw traces of academic discussions about the meanings of concepts: ‘My understanding is that cooperative learning is the same as “traditional group work/cooperation”, while collaborative learning is “mediated group work” or “electronic cooperation”. I guess there are better expressions, but I think I would choose words like

th[ese]'. Here, students discussed the differences between cooperative and collaborative learning, terms that were essential parts of the course. These discussions were student-initiated and were not mandatory, which was not the case for the Canvas course.

The students commented that they used Facebook for academic discussions when they were studying for the exam: 'Somewhat fascinated – we have a proper academic discussion now'. Furthermore, the students posted links to articles and websites that were not part of the curriculum but that were relevant to the course. The students who used Canvas did not share this kind of information.

Canvas was widely viewed to be a trustworthy arena for academics: 'And Canvas seems to be trustworthy'. However, our analysis reveals that the mandatory nature of the Canvas discussions was not conducive to social presence. Still, student participation in Canvas discussions expanded beyond the mandatory ones. One such example was a discussion about the various tools used for assessment (particularly "Moodle") in the context of limitations for developing countries:

Post 10: Yes, I agree with you that these kinds of tools based on Internet computer technology may have some limitations for the users, especially in the develop[ing] countries. But what I see is that in these countries they usually have access to the Internet through their mobile devices. So have you tried Moodle Mobile (app)? Can this be an alternative for users in the rural side?

Post 11: Of course, NN. Mobile can be one of the very useful device[s] for such contexts. As LL suggested looking at M learning (mobile learning), I am studying about it in the article by Carm and Øgrim.

Every student contributed in this discussion; in fact, several wrote more than one post. In the end, there were 23 posts that referred to relevant articles and applications. From a sociomaterial perspective, student engagement in various fora can be understood in terms of negotiating power, where an obligatory discussion acts as a material actor with less influencing power than the inscribed social nature of Facebook technology. These observations were supported by the student course evaluations. Students expressed mainly positive opinions about the use of Facebook for discussions because of its immediacy as a push (i.e., web-generated information) and informal technology.

Practical issues and information flow relating to studies

The data indicated that the students discussed mainly practical issues in the Facebook posts, focussing on topics such as what kind of document file to submit, the scheduled time for the student sessions, how to use Zotero/Endnote, and tips for various digital tools and software programs. In the Facebook discussions, these kinds of contributions dominated certain periods of time, such as the run-up to the exam. These were relatively neutral utterings and were easy for students to post. Furthermore, the indicators suggest that the students believed that Facebook was the best place to get answers to practical questions. One student said, 'Absolutely. The tool is absolutely the best and easiest way to communicate with fellow students and provides contact with lecturers in a less formal way. I guess there is a lower threshold for asking "stupid" questions'. The

students suggested that a Facebook group should be set up to function as a repository for frequently asked questions (FAQ) for off-campus students: 'I recommend a Facebook group containing FAQ as a link between students who are present/not present physically on campus. In addition, I see Facebook as a link between the weekly lectures.'

On Canvas, we saw few instances of discussions about practical issues. However, halfway through the semester, a student raised the subject of turn-taking and respect for the progress of individual students: 'I hope we can respect each other by waiting for the one who is assigned to comment before joining the discussion'. This post received several affirming comments, which guided the group towards developing a shared norm for communicating in an asynchronous forum. Notably, in the Facebook group, the students addressed several practical issues regarding the Canvas course, such as why a specific folder in Canvas was closed and who would contact the teacher about re-opening the folder. However, teacher contact was initiated via email and not through either of the two discussion fora.

One student expressed that even though it tended to be chaotic, the Facebook thread often contained interesting information: 'Yet, you could find things there [on Facebook] that you might not have found yourself. It's a good source'. However, as stated by one student, these threads were often difficult to follow:

[Facebook is...] a bit untidy due to the chronological order of the posts, and all kinds of posts are stacked together. You log on to continue where you left off what you were engaged in the last time, and then a lot new stuff appears as 'interference'.

In contrast, several students reported that they preferred Canvas's structure: 'I like the structure of Canvas. It is easy to find previously presented articles and discussions. In addition, I get a message in my mailbox every time there is something happening'.

Students frequently underlined Canvas's tidiness, particularly how it brought students into what can be described as a 'study mode': 'It [Canvas] is tidy and offers a good overview, and it is focused on the course itself, so when you are in there, you are really getting into "student mode". You don't get the same feeling in, for instance, Facebook'.

Our findings indicated that Facebook was considered to be the best way to communicate because it had a low threshold for raising what the students considered to be 'stupid' questions. The number of questions raised on Facebook compared to the number raised on Canvas corroborates this finding. The preference for Facebook can be understood in terms of perceived intimacy and immediacy, which creates a high level of social presence. From a sociomaterial perspective, we can see that the materiality of Facebook allows for these kinds of informal topics, such as 'asking stupid questions', whereas the materiality of Canvas brings students into a 'serious' mode of discussion. Nonetheless, on Canvas, students were faced with occasionally disruptive posting and a lack of respect for their study situations while waiting to post their obligatory entries on the discussion forum. In this case, students attempted to make sense of the system and learn how to use it for discussion. For Canvas, the system was founded on turn-taking and time. Since the discussions on Facebook were organised around the person who initiated the discussion, rather than around topics, it was highly unlikely for a focus on turn-taking to develop.

Teacher information

Another category that emerged from the data was teacher information, where teachers posted information relevant to the class, which included, for example, notices that certain assignments had been graded. Other examples of teacher information included comments on discussions and questions that were directed to the teacher. In the Facebook discussion forum, a student reflected on the issue of having teachers (or academic staff) engaged in the discussion: 'I believe we benefit from having a group [in] which the teachers are also members'. The information provided by the teachers was mostly informative or summative in both discussion fora. Informative posts, such as 'Information is now posted [...] on how to follow streamed lectures synchronously or watch video recordings afterwards via Adobe connect', were typical.

As the data indicate, the teachers acted differently in the two discussion fora. The students indicated that questions posted to Facebook were answered by the teacher in a quick and informal manner. In contrast, the teacher's posts in Canvas were characterised as being academic in nature and directly related to the dialogue in the discussion forum. While the Facebook posts were often quite prompt, the feedback through Canvas was provided in a regular and planned manner. Thus, the nature of Facebook was immediate and responses were instantaneous, rapid and informal, while Canvas seemed to encourage planning and reflection.

Crossover discussions

The Facebook discussion forum was used not only for the intended course but also for discussions that pertained to the other course. Examples of this category included questions related to the syllabus and the curriculum:

Hello, I know this is not the group for the [Canvas course], but have any of you found the list showing what article to present? I have looked everywhere but cannot find any overview. Maybe you clever guys have a better overview than I do?

Here, we can see that the discussion topic directly relates to the other course. It is not social in nature; rather, it is a search for information. Other questions focussed on information such as finding the specific link for the Canvas course: 'Can anyone help me find the Canvas link? I cannot find my way....'

The two aforementioned examples confirm and summarize the findings for every category presented in this paper. Facebook's immediacy and intimacy contribute to a high degree of social presence, and, consequently, Facebook is superior to Canvas when addressing urgent matters. Since the students knew it would take several days for the teacher to respond if they posted their questions on Canvas, they likely considered where to post their questions and decided to create a new discussion thread on Facebook that allowed for their questions and practical issues to be addressed more quickly.

Discussion

In analysing how different digital discussion fora engage students in academic discussions, viewing posts on the two platforms chronologically illustrates the students' engagement.

Our findings indicate that there are no clear boundaries between social and academic discussions, and the boundaries, such as they are, fluctuate. This aligns with Aaen and Dalsgaard's (2016) 'third space', where students blend their social and academic lives. We observed that, even though concrete academic questions were posed in order to engage students in academic discourse in the SNS, the dialogue frequently took social turns. Interestingly, the social turns differed in content between the VLE and the SNS. While the social posts in the VLE were usually short and encouraging comments to participants in the academic discussions, the social posts in the SNS only infrequently referred to the ongoing academic discussion. Arguably, the focus of fluctuating dialogues might be considered problematic. However, these fluctuations can serve another important element of learning dialogues: namely, that of social presence, or getting to know each other.

Other important issues in studying student engagement in academic discussions are the identity the person who initiated the discussion and why the discussion was initiated. Our findings indicate that dialogues in SNSs that began as teacher-initiated academic discussions often turned to the 'everyday', with, for example, chats about coffee machines and upcoming exams. For the sake of social presence, these chats are important. However, from an academic perspective, these dialogues are counterproductive. The teacher's monitoring role is important in order to lead the discussion back to its intended purpose (Crook & Cluley 2009). However, these informal and social chats are important in establishing and nurturing relationships. They underline the interplay between the social and the material in online discussions.

The students' feedback in the course evaluations indicated that they believed that the VLEs were reliable and that the SNSs were informal because of their everyday presence

and their push notices. Our findings support previous research that conclude that VLEs are perceived as authoritative (Maleko et al. 2013) and that SNSs work well for peer-to-peer feedback (Aaen & Dalsgaard 2016; Madge et al. 2009; Maleko et al. 2013; Miron & Ravid 2015; Petrovic et al. 2013; Selwyn 2009). Additionally, from a sociomaterial perspective, these inscribed features act as powerful agents in the studying process. While SNSs provide immediacy, VLEs provide order and reliability. The students gain the immediacy and informality of SNSs but at the cost of chaos. For example, it is very difficult to search for earlier discussions on the SNS threads. In this sense, while the materiality of SNSs may serve the immediacy necessary for studying, it may be counterproductive to the process of reflective learning.

Hence, the data indicate that, while SNSs may work well as a medium for academic discussions, VLEs were more efficient in searching for, reflecting on, and making use of the discussions. However, both types of academic discussion serve a communicative purpose. It must be noted that the natures of the academic discussions on the two platforms were different. While the ones in the VLE used terms and concepts and discussed academic content, those in the SNS went in different directions, from sharing interesting articles without discussing them to discussing course concepts. To a certain extent, each platform served the key dimensions of dialogic learning: sharing and reflection.

Furthermore, our study shows that obligatory discussions (VLE) functioned as material actors, but with less influencing power than the inscribed social nature of the SNS. This finding highlights an interesting conflict between the materiality of the two platforms. The immediate and intimate nature of SNSs, compared to the planned and organised nature of VLEs, allows both teachers *and* students to engage in academic discussions more

informally and instantaneously. Consequently, in SNSs, both teachers and students were more socially articulate, while, in VLEs, both teachers and students were 'socially muted' (Crook & Cluley 2009).

Our study supports the findings from Kurtz et al. (2014) about the success of SNSs in learning environments that emphasise active learner involvement and frequent interaction between peers and instructors/teachers. One of our significant findings is that the materiality of SNSs (i.e., push technology) is superior in addressing urgent matters. The inscribed nature of immediacy grounds the establishment of a 'tighter' relationship and leads to expectations of 'prompt' answers. Consequently, SNSs force communications to be immediate.

Our findings indicate that VLEs, perhaps because of its authoritative nature (Maleko et al. 2013), not only lacks a feature for social discussions but seems to suppress discussions that are not academic. Our research suggests that SNSs, to a certain degree, invite users to share private information, and we found no evidence that students were reluctant to use an SNS as an academic platform, as previous studies have reported (Manca & Ranieri 2013; Salmon et al. 2015; Johannesen, Mifsud et al. 2016).

Conclusions

In studying how the different digital discussion fora engage students during their academic discussions, we found that the inscriptions inherent in the tools played significant roles in not only student engagement but in their social presence throughout the courses. The dialogic nature of SNSs works well when the students are engaged more-or-less synchronously. The materiality of VLEs engages the students in a well-structured study mode

and offers a way of easily searching for previous posts and discussions. However, the asynchronous mode of debate may require rules and regulations, such as turn-taking.

Our findings suggest that obligatory discussions function as material actors. However, they appear to have less influencing power than the inscribed intimate and immediate nature of SNSs. Newly-designed VLEs have not yet managed to emulate the immediacy, intimacy, and possibilities for establishing relationships that are inherent in SNSs. To meet a variety of online learning pedagogies (Anderson & Dron 2011), as well as student expectations for immediate and applicable presence (Durkee et al., 2009), the design of online learning environments needs to take into account the inherent materiality of learning technologies in order to fully engage students in discussion fora.

From a sociomaterial perspective, we can see that the entanglement of the social and the material can be viewed as a stepping stone for designing different dialogic learning environments. Hence, we suggest that both sociomateriality and social presence should be considered when designing discussion fora for technology-enhanced learning environments.

Our study brings into focus the interplay between technology and student engagement. One of our critical findings is that the inscribed features inherent in learning technologies play essential roles in student engagement. However, our study does not take into account how course content might play a role in student engagement. Similarly, the use of different languages in the courses might have affected the discussions, the number of posts, and the degree of intimacy. Consequently, further investigation is needed in the study of students' and teachers' attitudes to different technologies and the interplay between attitudes and degree of use.

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