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Digital Network as a Learning Tool for Health Sciences Students

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Abstract

An online learning module for health sciences students with various educational backgrounds was implemented at the University of Tromsø (UiT). The purpose of this article is to examine how participation in a joint, web-based course can be a didactic tool that promotes motivation and contributes to interactions among health sciences students. The study is based upon findings from focus group interviews with students who participated in a joint online course, as well as on recordings of activity in online discussions.

Keywords: qualitative method, web-based course, motivation, interaction, health care education

Introduction

The division of professions and labor cause cooperation problems in the health sector, and to help improve these problems, health care workers must interact and learn from each other's knowledge and skills (Chang et al., 2001; Sidhom & Poulsen, 2006; Zwarenstein & Reeves, 2002). Interdisciplinary professional education and learning increase the possibility for health care workers to collaborate more effectively with professionals from other professions in the future, which is a strategy for better health services (Barr et al., 2005; WHO, 2010). Computer-supported collaborative learning (CSCL) is a form of learning that emphasizes cooperative learning and how technology can provide support for teaching (Dillenbourg & Fisher, 2007). The technology helps to expand physical space as an arena for learning and provides new opportunities for learning. CSCL is based on learning theories elaborated on by Vygotsky (1986), who believes that learning takes place within the framework of human interaction and through social practices. Group collaboration involves individual learning (Stahl, Koschmann, & Suthers, 2006).

Motivation is an important factor in learning. Students who show motivation, initiative and personal responsibility often achieve a particularly favorable result (Zimmerman, 1990), with many educational institutions using different forms of web-based instructions to motivate students to interact with each other and work towards common goals. Westbrook (2012) describes how the implementation of three online collaborative initiatives for a course in

radiography enabled the students to work together and learn from each other, further noting that there is an urgent need for further research in similar collaborative activities. Bechina and Hustad (2010) describe how the faculty staff at two Norwegian universities involved in their investigation regards the platform of the Learning Management System Fronter as being beneficial for structuring the learning environment in terms of having all the needed information in one place, and how Fronter enables a flexible speed of learning. A framework consisting of the socio-technical factors facilitating or hampering the usage of Fronter is delineated. Social features such as discussion forums are seen as a good way to increase the collaboration and communication between stakeholders (Bechina & Hustad, 2010).

Health care educationalists should consider collaborative activities for their students (Santy & Smith, 2007), and the purpose of this article is to examine how participation in a joint, web-based course can be a didactic tool that promotes motivation and contributes to interactions among health sciences students. The study is based upon findings from focus group interviews with students who participated in a joint online course, as well as on recordings of activity in online discussions.

An online learning module for health sciences students with different educational backgrounds was implemented at the University of Tromsø (UiT) with the purpose of enhancing the interaction across professional boundaries. The course was carried out using Fronter, and the learning path was used as a tool. With learning paths, students follow a curriculum in which new tasks are presented each day. Presentation pages contain films of authentic health science cases, specific questions to the cases, online lectures, discussion forums, texts, links and photos.

Study Design

Joint Course Contents

Six ECTS credits were given for joint courses for first-year medical laboratory scientists, dental hygienist, occupational therapist, physiotherapist, and radiography students. A total of 118 students were divided into 18 groups of six-seven students each, all with different educational backgrounds. 16 groups attended the ordinary joint course, and two groups were randomly selected to participate in an online variant of the joint course. The groups were supervised, and the supervisor for the two groups was responsible for developing this program. The course was completed in three weeks. The topics that were taught are described in a part of the educational programs' curricula, and are related to ethics, communication, state and municipality knowledge and health and social policy, as well as science and research methods. Students who attended the online course shared the same curriculum as the students who attended the regular joint course; however, all teaching was online-based. Figure 1 shows an example of a presentation page of the learning path.

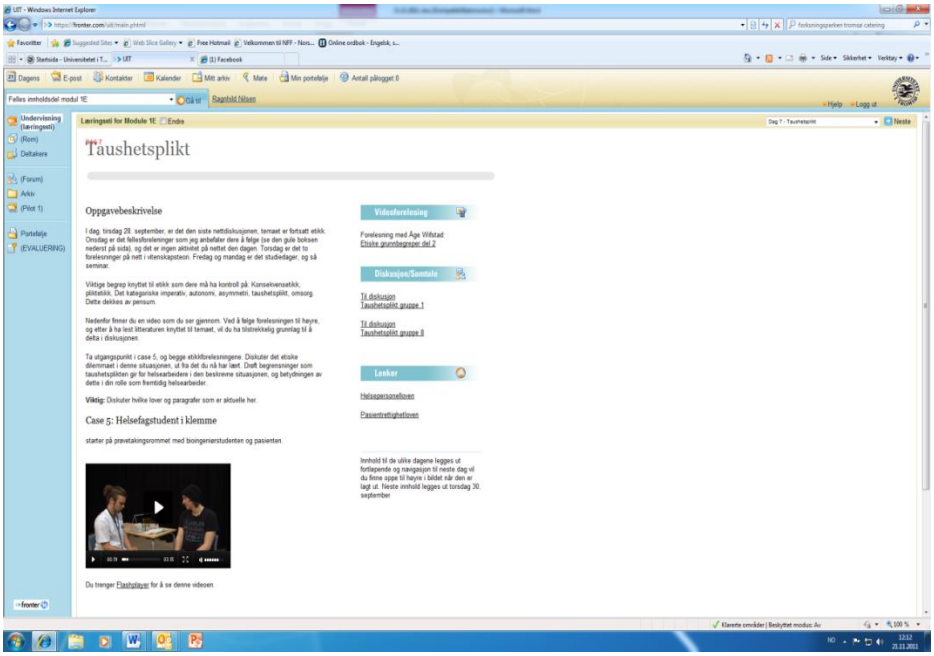

Figure 1: Presentation page of the learning path

The First Students' Group Meeting Was in Person

The students met once in person at the start of the course, at which time they also met the supervisor, who was also present for the online discussions. This meeting was intended for them to become acquainted, which was considered important for the success of the students' online work.

Filmed Case Studies with Relevance to Health

Students were instructed to discuss five actual health-related cases during the course, taken from the book, Samhandling i helsefaglig arbeid (Coordination of Health Care Activities) (Nilsen, 2010). This book is a collection of essays written by second-year health sciences students from the University of Tromsø; in this book, students describe and reflect on a situation that involved interactions from their own practice. Five cases were selected for dramatization and filming, and for this article a picture describing the case of The Role of the Health Care Worker is shown (Figure 2). The screenplay was developed on the basis of the selected cases, around which improvisations were developed. Taken into consideration when choosing the cases was that students should have a starting point for discussing the various aspects of health-related communication (Cases 1 and 2), health-related ethical dilemmas (Cases 3 and 4) and cooperation in health care work (Case 5). Drama students from the University of Tromsø were the actors who participated in the film project. They received counselling on health-related words and phrases, and instructions in health care methods as needed, with each movie lasting two to three minutes.

Figure 2: From the case of The Role of the Health Care Worker

Filmed Lectures

Each case study was accompanied by one or two lectures, with each lasting 10 to 15 minutes. After watching the lectures and reading the literature related to each topic, students should have a sufficient amount of information to take part in online discussions.

Online Discussions with Core Time

Five online discussions were arranged in the forum room, with one for each case. The core time for online discussions was one hour, though the room was open for a longer period of time. Specific questions were provided for each case, and students were instructed to make at least two contributions to each online discussion: a primary posting and a response to a fellow student. In addition, participation and activity in the online discussion was a requirement for entering the exam.

Examination

The course was concluded with an oral group exam, with joint and individual questions. The examination was related to course topics and objectives as outlined in the framework plans and covered by the syllabus, and assessed in accordance with the criteria of "passed/not passed."

Method

Focus Group Interview

Focus group interviews were used as a method to elucidate the problem (Vaughn, Schumm, & Sinagub, 1996). Unlike individual interviews, focus groups provide information from a dynamic group interaction process

(Morgan, 1997; Krueger, 1994), with focus group interviews centered on specific questions about how the online joint course had been developed.

The students in the two groups comprised the two focus groups. The committee consisted of 12 students, with six in each group. These groups constituted the study's informants, and consisted of three radiography students, an occupational therapy student, six physiotherapy students and two dental hygienist students. It was purely coincidental that no medical laboratory scientist student was included in the committee, although this was not considered a weak point in the method since the objective was to observe learning collaboration, and not the similarities/differences between different professions. Each interview lasted one hour, and a combination of open and closed questions was used, with the answers followed up and expanded on. The informants were also given the opportunity to develop their own themes and ideas. The presentation was anonymous, but all the quotes are genuine. The interviews were audio-taped and transcribed verbatim (Malterud, 1996). The words in the transcribed interviews are identical to the original conversations, and represent my data for analysis.

In addition, the number of posts in online discussions, which were counted by the author, was registered by the students in a separate form, which was meant to show the students' activity in relation to work requirements, according to which, the student should contribute at least two entries for each online discussion.

Data Analysis

The analysis method used is the phenomenological hermeneutical method (Ricoeur, 1976), which consists of three phases: 1) Naive reading, an initial interpretation is developed that provides a picture of what the text is about; 2) Structural analysis, the text is divided into various topics and categories; 3) General interpretation, one uses an author's pre-understanding phase, interpretation of results and theories so as to better understand the findings (Lindseth & Norberg, 2004). The transcriptions from focus group interviews were systematically reviewed and analyzed several times. At first, I formed an impression of what the text was about, as I read through the entire text several times and underlined the words educational, learn, learned. My focus was on students' learning experience, and what in their opinion contributed to learning after completing the online course. Spontaneous interpretations and reflections in the material were noted, and I also interpreted what words and phrases were expressed.

It was important to be aware of my own pre-understanding in this research, because as a researcher, I am involved in the project. I must therefore describe my position and my point of view. I have been the technical leader of the joint course at the University of Tromsø for several years, and am responsible for the idea, development and implementation of the online learning module. I guided the students who participated, evaluated them during the examination and conducted focus group interviews with them.

Empirical Analysis

Participation in Online Discussions

Two groups of six students from different health science programs were chosen to follow a web-based variation of the course. The activity in online discussions of the two groups is shown in Table 1, and each group completing five online discussions, one for each case. The first column in the table

indicates the group number (1 and 2), while the second column indicates the number of the online discussion. The third column lists the number of posts per online meeting. In order to fulfill the requirements, students must have at least two contributions in each discussion - a primary post and a response to a fellow student. The fourth column shows that the students, with the exception of two cases in Group 2, had more posts than had been required. Furthermore, Group 1 was more active than Group 2 in online discussions.

Group 1	**Online meeting**	**Number of post**	**Number of posts over requirements**
	1	25	13
	2	27	15
	3	18	6
	4	17	5
	5	22	10
Group 2	**Online meeting**	**Number of posts**	**Number of posts over requirements**
	1	11	-
	2	16	4
	3	15	3
	4	12	-
	5	17	5

Table 1: Participation in online discussions

Focus Group Interview Results

Transcripts of statements from focus group interviews about learning have been analyzed. The students were asked how they experienced the online joint course, with eight statements being selected for analysis that are presented in Table 2. The focus here is on the conversation in the interviews and the students' learning experience in the online joint course.

1: I think the joint course was very educational and very effective because we worked online, it's true. (...) I felt that I had a lot to learn.

2: I also think it was great that you no longer had to show up at scheduled times, and go to school every day. (...) You don't have to be so firmly bound to a schedule in a way, and at the same time we learned equally as much as the others. (...)

3: I also think it was very educational; I could sit down and write down all the lectures, and you could also rewind the recording.

4: (…) I believe it worked quite well studying online and in discussion forums; we learned a lot. It was also nice that you could go back and look at what we had discussed.
5: I agree with what is being said that the joint course was very educational (…)
6: Yes, it was very educational. I did not think it would be like that at all. But everyone made a good effort. And I learned a lot of it, anyway. Very precise things were said, and one could discuss it with the others who had seen the exact same video.
7: It was great that it was very different, people had emphasized different things. (…) So you got several comparisons, you learned a lot better and had a broader view of what it was all about.

Table 2: Statements about learning

The excerpts illustrate findings on learning related to various aspects regarding the flexibility of the web-based course. Efficiency (1) and flexibility (2) as related to time and place represent an important category for the learning experience. The students pointed out that they could control time, and that they did not have to go to school every day. Students were able to rewind the lectures to review the necessary details whenever they studied for the exam, which contributed to learning (3). It was also instructive to go back to the online discussion to review what had been previously said (4, 5). Students also say that the online discussions were instructive, and that all of the group participants were involved in these discussions (6). Lastly, students said they learned a lot from discussing with each other after watching the same cases, and that the discussions provided a broader perspective and greater learning results (7). All of the statements were linked to the flexibility regarding the network as a tool that promotes motivation and contributes to interactions among the students.

Discussion

This article discussed how participation in a digital network can be a didactic tool for health sciences students. The study was based upon findings from focus group interviews with students who participated in the online joint course, as well as upon the recording of activity in online discussions. Table 1 shows students' engagement in the online discussion, revealing that students involved in the study were enthusiastic and likely to come up with more than what was required. By supporting the involvement, one supports the formation of a practice community, and thus the activities, community formation, social energy and expertise of the individual (Wenger, 1998). Learning is a matter of commitment and the ability to contribute actively in the community (Wenger, 1998). Students in the online course were first-year health sciences students who initially participated in a course common to their professional education, but eventually created an interprofessional involvement in an online community practice.

A well-organized course of study helps to keep the focus on the activity that one deems necessary to achieve their goals (Halland, 2004). Various aspects of the online joint course regarding the flexibility contributed to learning, and as shown in Table 2, efficiency [1] and flexibility [2] as related to time and place represent an important category for this. The students could watch the lectures repeatedly [3], and participate in online discussions with students with various educational backgrounds; they were very motivated to write down the lectures and engaged in the study [4, 5, 6]. Students interacted by means of digital print and in a distance education setting - and yet with a contemporary immediacy. The online discussions lasted several hours, which illustrates the particular status and special characteristics of time. Regardless of time, space and place, the flexibility of the online environment made it easier for students to be active in the online discussion. They could add their posts whenever they felt like doing so, and realized they had the time and opportunity for reflection. Students were involved in a transparent system that used computer technology; core time and a clear framework for discussion provided optimal conditions for engagement and knowledge development, and the students felt they gained a broader perspective when discussing with other students [7]. The curriculum stimulated the students' commitment and knowledge development across disciplines, though by nature, a mutual commitment is partial since the participants in a group can have different or overlapping roles (Wenger, 1998). At the same time, this partiality in community practice could be a resource and not a limitation. Wenger shows that common practice does not necessarily entail uniformity, agreement or cooperation, but instead involves a form of difference in which perspectives and identity impact on one another. Learning is the ability to preserve experiences and use them in future contexts (Sæljø, 2001), and our understanding of the world is a process in which our previous understanding is adjusted or amended in light of new experiences. It is the dynamics of learning, according to Sæljø. New requirements are established through our experiences, while they are also subject to reflection and revision in the face of new experiences, thereby providing students with access to new understanding horizons.

One can influence the quality of learning activity and contribute to the desire to learn by facilitating optimal learning. This facilitation may include taking the form of creating motivation, which in turn inspires and contributes to the energy, drive and desire to work (Halland, 2004). Halland further shows how motivation is a key issue for learning, as it is about the forces that have their origins in interest, commitment and past experience. "Motivation is enhanced when students perceive they are making progress in learning" (Shunk, 1991).

I must account for the limitations of this study. A small number of students (12) participated in the study, as a larger number of students would have provided a more nuanced picture. Moreover, the LMS platform Fronter has some technical limitations concerning updating the entries in the online discussions, and students pointed out that it was difficult to discuss because many new posts were generated just as they were writing the first post. One must consider tools other than a "forum" for such online discussions, or else extend the core time.

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