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RESEARCH ARTICLE

External and internal factors influencing self-directed online learning of physiotherapy undergraduate students in Sweden: a qualitative study

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Abstract

Purpose: Online courses have become common in health sciences education. This learning environment can be designed using different approaches to support student learning. To further develop online environment, it is important to understand how students perceive working and learning online. The aim of this study is to identify aspects influencing students' learning processes and their adaptation to self-directed learning online. **Methods:** Thirty-four physiotherapy students with a mean age of 25 years (range, 21 to 34 years) participated. Qualitative content analysis and triangulation was used when investigating the students' self-reflections, written during a five week self-directed, problem-oriented online course. **Results:** Two categories emerged: 'the influence of the structured framework' and 'communication and interaction with teachers and peers.' The learning processes were influenced by external factors, e.g., a clear structure including a transparent alignment of assignments and assessment. Important challenges to over-come were primarily internal factors, e.g., low self-efficacy, difficulties to plan the work effectively and adapting to a new environment. **Conclusion:** The analyses reflected important perspectives targeting areas which enable further course development. The influences of external and internal factors on learning strategies and self-efficacy are important aspects to consider when designing online courses. Factors such as pedagogical design, clarity of purpose, goals, and guidelines were important as well as continuous opportunities for communication and collaboration. Further studies are needed to understand and scaffold the motivational factors among students with low self-efficacy.

Key Words: *Communication; Cooperative behavior; Learning; Perception; Physiotherapy*

INTRODUCTION

In health sciences education today, courses offered online have become common. The advantage with an online setting may be the possibility for students to work independently, as the course material and information are accessible at all hours [1]. Also communication with teachers and peers may occur in an individualized and flexible fashion. An online course design that promotes collaboration, based on the theory of connectivism [2], supporting processes of collaboration and communication, may facilitate the transition from being a dependent learner to an active and autonomous learner, taking charge of one's learning [2-4]. The online courses may thus scaffold the development of problem-solving skills and promote an explorative and interactive collaborative learning opportunity [3-5]. Lund University in Sweden is a diverse university with many faculties. The education is on campus and also offering distance learning education. The physiotherapy program is mainly on campus and in clinical practice. One of these courses is developed and designed for online learning targeting undergraduate second year physiotherapy students.

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To develop an online environment further it is important to broaden the understanding of how students perceive working and learning online [6]. The aim of this study is to identify aspects influencing students' learning processes and their adaptation to self-directed learning online.

METHODS

The 'basic research methodology' course is a five-week full-time online course. It is based on learning theories of connectivism and social constructivism, which postulate that social and cultural interactions stimulate and enhance learning [2]. Accordingly, the students had to collaborate, mainly in pairs, making decisions on learning strategies and what they needed to elaborate on to reach the goals. The learning management system contained assignment guidelines with clearly stated goals, a bulletin board, course library, discussion forum and folders for student created content, to scaffold their learning processes. The course assignments were aligned to the examination task, and included additional structured questions to elaborate on. This self-directed and problem-oriented learning environment was designed to create a notion of a shared learning space where the students created the content and could exchange experiences and ideas, which also included writing peer-reviews.

The structure of the assignments represented different aspects of basic research methodology scaffolding the development of a project plan (final examination task). Each assignment should be elaborated on in relation to a topic of their own choice and their learning needs. It was also mandatory to publish individually written self-reflections at the end of each week during the five weeks. The students were encouraged to reflect on how the assignments during the past week were accomplished.

Participants

All physiotherapy undergraduate students in Lund University enrolled on the mandatory online course from October 2009 to January 2010, were invited to participate to ensure richness and diversity in the data. Thirty-four students (24 women) with a mean age of 25 (min-max, 21-34) years participated in the study. Four students, median age 24 years, declined participation.

Ethics approval

The study was conducted in accordance with the Declaration of Helsinki. Prior to inclusion, all participants gave their written informed consent following oral and written information regarding the aim and procedures of the study. No personal information that would allow any data to be linked to individual participants was used.

Analysis

The data consisted of 170 self-reflections (34 students, five times for five weeks). Qualitative content manifest analysis was performed, i.e., the essence of data was coded and organized in categories describing visible and obvious aspects. Thereafter a latent analysis was done to uncover and interpret underlying meanings as described by Graneheim and Lundman [7].

Data triangulation

The course evaluation survey (85.0% response rate) included ratings and possibility for free text comments. The free text comments were selected and used to triangulate the data. The survey was filled out anonymously after course completion. The course evaluation was chosen as it was written in another context and during a different time period. The intent was to find consistencies and inconsistencies to provide a deeper understanding of the data. All authors analyzed the free text data individually with the main focus on the manifest content as described by Graneheim and Lundman [7]. Next, the data was conceptually integrated with the data from the self-reflections in order to compare the conceptual similarities and differences. These results were then reviewed and discussed amongst all authors.

RESULTS

Two main categories emerged from the elaborated sub-categories: 'the influence of the structured framework' and 'communication and interaction with teachers and peers.' Representative quotes were selected to illustrate the categories and subcategories.

The influence of the structured framework

The first encounter of the online context

To most students, the online context of the learning platform was experienced as interesting and instructive. In addition, the ability to search for scientific information in different environments was perceived as exciting and stimulating as it offered many possibilities and diverse approaches. The pedagogical approach supporting self-directed learning was thus recognized as being different in a positive way from more traditional approaches. Others expressed that the new online learning spaces were unfamiliar and initially stressful. They also found it difficult to get an overview of the information. Some wished to have face-to-face contact with the teachers, mainly to explore a topic more in depth and respond to tricky questions.

"It might be good if the students sometimes had the possibility to meet with a teacher once every week, or every other week so that the teacher face-to-face could provide answers to tricky questions."

The experience of self-directed learning

To have full access to the learning platform a month before the course started was found to be helpful. The students were thereby able to start to plan ahead, do their time management, and create a structure, which facilitated the self-directed learning. For some it initially took some time to create a routine to overcome the challenge of planning their own time, and defining an adequate level of their achievements. To be able to plan one's own work and to decide how much effort each assignment required was found to be interesting and rewarding, but also challenging. Some reported it difficult to set the limits for appropriate depth and time invested in their assignments, which hampered efficiency.

"I also appreciate that we have been permitted full access to the content of the course including all assignments so that one knows what is due during the upcoming weeks."

"It has been a challenge to plan my own time, but after a couple of days I am now starting to get some routines, which feels good."

Clear course alignment

A clear alignment between the course assignments and the examination task was perceived as facilitating the self-directed working process, but perceived as demanding when missing. To early on publish a draft of the examination task was reported to increase motivation and made planning easier. Some students wished for more time to think things through before sharing their ideas.

"… It was a very good thing to publish the draft of the examination task as one of the first assignments. At first, I found it a bit tough, but it immediately made me start thinking of the project we were about to do. It also made me see the point of doing the assignments."

Approaching the topic by structured questions

The structured questions to elaborate on as part of each assignment were perceived as adequate and evoked reflections. The students felt that the questions broadened and deepened the understanding of concepts when they had to apply general concepts to various topics. Some found it challenging to interpret what was expected in terms of the magnitude of the information they were about to present.

"The questions in relation to the assignment were very adequate and evoked lots of thoughts …. It was very positive that the questions were formulated in such a way that the answers were expected to also include examples related to our future profession."

"At first, and after reading the questions, I found it difficult to understand what was expected from us in relation to the assignment. But after a while it became clearer, and I think that I have interpreted and understood the assignment correctly."

Communication and interaction with teachers and peers

Communication with teachers

The timing and the content of the teachers' feedback were perceived as important to scaffold the ongoing learning process. Others found that the teachers' collective feedback was too lengthy and difficult to relate to. These students wished for more individual feedback.

"…I am however a bit sceptical of the collective feedback. It was difficult to grasp several pages of feedback, and one doesn't really know which of the parts that were related to one's own work."

Interacting with peers

Collaboration with other students was perceived as important and instructive for the development of new thoughts and ideas. The discussions and exchange of ideas were perceived as supporting the learning processes and understanding. However, some experienced that collaboration in larger groups made the work being perceived as competing interests between time invested and knowledge gain.

"It is nice to work in pairs in most of the assignments since one tend to get stuck on the usual track of thoughts unless there is someone else to discuss it with."

"I do not know if there was any benefit of being a larger group in one of the assignments. Although having access to more brains when searching for information, the more people involved the more time is required and the result is not by default getting any better."

Giving and receiving peer-feedback

The participants felt uncertain regarding their ability to give feedback to peers on a scientific project early in the course. To receive the written feedback was described as useful when it was constructive and it provided new perspectives both on feedback as a concept, and on the content of the assignment.

"Giving and receiving peer feedback was useful for me in developing my ability to give and receive feedback. I got insight from other project plans and could then compare these to ours. This provided ideas of how to change and further develop our project plan."

"It feels odd giving feedback after having produced the first project plan ever just a couple of days before. I feel in no position to provide constructive feedback."

Adaptation to the requirements of the online environment

The participants described that they gradually had developed more flexible strategies to overcome hindrances when searching for knowledge and analyzing information. They expressed to have gained knowledge and skills which were relevant for their future profession, even in a long-term perspective.

"Sometimes it is good to experience a hindrance, it is at that point you learn to open your mind and learn how to look for relevant information."

"I feel that I have further developed my skills to search for and review articles, which will be very helpful when conducting our research project and also in my future profession as a physiotherapist."

Data triangulation

The data from the evaluation survey was predominantly in accordance with the data from the self-reflections. As such, no new categories were presented, but the data displayed partially new aspects in the subcategories. For example, the participants expressed that it felt invigorating to use modern technique as it made the work go smoother. Also, they appreciated that the teachers' feedback and answers to their questions were not simplified, which brought about feelings of being respected. The participants also stressed the importance of being able to make their own choices regarding the essay subject. In addition, the variation of the tasks and being able to reflect over one's learning was described to retrospectively have had an impact on perceived meaning.

DISCUSSION

When designing the course, we expected that the course structure would facilitate the students' learning and adaptation to the new online environment. However, it was valuable to discover the extent of which internal factors were influencing the students' approaches and adaptation. In the latent analysis it became evident that external and internal factors/aspects were influencing both the adaptation to the online course and the learning processes. External factors were defined as environmental influences, e.g. course structure, learning space, and relationships. Internal factors included internal psychological and emotional manifestations and dimensions of active student engagement influencing their perceptions, attitudes and motivation. Based on these findings, feed-back that actively encourages communicating with peers should be promoted, also suggested in previous studies [2-4]. The experiences of overcoming difficulties were described as supporting the process of becoming more flexible. Overcoming barriers may in fact potentially strengthen the students' self-efficacy. Bandura defined perceived self-efficacy as the ability to sense one's capacity to accomplish a certain level of performance. Some students did express having performance anxiety and low self-efficacy [8]. To promote self-regulated learning, it may be important that these students receive encouraging feedback, stressing the progression of their learning [9], since self-efficacy may have a substantial impact on motivation [10].

'The influence of the structural framework' comprised mostly external factors influencing the learning processes, e.g., the importance of clear guidelines and clarity on purpose and goal. The structural framework of the course was perceived as important, but both facilitating and challenging. In a constructivist perspective the perceived challenges may indicate a need for clear and articulate guidelines, in agreement with previous studies [6]. The main concern is then if the challenge was balanced and reasonable or too much. Students who took advantage of the early access of course guidelines and study aids expressed that it helped them to take responsibility for their learning. A previous study emphasized that the instructional design was important in online learning [6]. There were also evidence in our study confirming that clear alignment and instructions supported active and autonomous learning strategies. The online structure may thus have promoted independent learning processes, based on the student-reported sense of ownership of the course material. Another interesting finding was that the students' described perceived benefits of their newly gained knowledge and skills with respect to their future work and profession. This may suggest a deep approach to learning and motivation found beyond the task.

In addition, the triangulated data showed many signs of increased motivation created by the values of making own choices, being challenged to explore and summarize a topic not previously familiar. The students also expressed the advantage as well as challenge of taking control of time management and study aid selection, various forms of collaboration, and taking the consequences of their own planning. These findings were corroborated with previous findings suggesting

that structural design also may influence intrinsic and extrinsic motivation [11]. 'Communication and interaction with teachers and peers' included several reported internal factors influencing learning and development. An interesting finding was that some students expressed a desire to have face-to-face contact. This may be an expression of previous experiences and limited use of self-directed learning.

What was the impact on collaboration? Students recognized peer communication and interaction as meaningful for their learning. These activities are complex and maybe it is the calibration and assurance by reading others work, or the cognitive processes of giving and receiving feedback, or all these activities put together that creates the meaningful environment. Peer feedback that involved constructive suggestions was perceived as useful. This finding was in line with a previous study, which found that critique and negative comments did not have the same impact as when students explained and justified their views and ideas [12].

How feedback from both teachers and peers is perceived may stem from multiple factors including emotional reactions, self-perceptions and personal goals. Feedback may thus either lower or augment motivation and improvement depending on prior experiences of success or failure [13]. Feelings of pride or shame, positive attitude or hopelessness may also have an impact on the student's motivation and sense of self-worth. Motivation by these processes seems therefore to be influenced by both external and internal stimuli [14]. This may explain the different reactions to the self-directed learning in our study, which were expressed both as personally relevant and motivating by some, and also challenging to others. This finding corroborates with previous studies [4,14].

The results indicated that this self-directed research-based education model, as designed here, may well be a useful approach for higher education. With regard to transferability, we feel that our findings may apply to other university undergraduate students. From the perspective of teaching, the students' self-reflections provided valuable information about how the students perceived their learning processes, the context and the content of the course. Many of the students expressed a sense of personal growth with increased understanding. However, the presence of low self-efficacy and performance anxiety pointed towards a need for more support and encouragement as suggested earlier [12]. To early on encourage and support collaboration among peers may reduce feelings of worry and anxiety among those who may not yet have adapted to the requirements of higher education. This representation of internal factors influencing learning needs to be investigated further.

A potential study limitation may be that the students' self-reflections were published as part of the collaborative environment and thereby available for others to read. This may have influenced the present findings, as the students might potentially have chosen to restrict or in other ways shaped their writing. We acknowledge that the results may be affected by our experiences as teachers in online courses. However, all authors worked separately with the data during the phases of condensing the data to meaning units and the coding. There were continuous discussions when sorting the data to categories and sub-categories to remind us of possible influences of previous experiences [7]. We strategically selected a whole cohort of students in order to have a representative variety of students.

In conclusion, the analyses reflected important perspectives targeting areas which enable further course development. The influences of external and internal factors on learning strategies and self-efficacy are important aspects to consider when designing online courses. Factors such as pedagogical design, clarity of purpose and goals and guidelines were important as well as continuous opportunities for communication and collaboration. Further studies are needed to understand and scaffold the motivational factors among students with low self-efficacy.

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CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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SUPPLEMENTARY MATERIAL

Audio recording of abstract.

REFERENCES

1. Cook DA. Learning and cognitive styles in web-based learning: theory, evidence, and application. Acad Med. 2005;80:266-278. http://dx.doi.org/10.1097/00001888-200503000-00012
2. Kropf C. Connectivism: 21st century's new learning theory. EURODL. 2013;16:13-24. Available from: http://www.eurodl.org/

materials/contrib/2013/Kropf.pdf
3. Jungert T, Rosander M. Self-efficacy and strategies to influence the study environment. Teach High Educ. 2010;15:647-659. http://dx.doi.org/10.1080/13562517.2010.522080
4. Reeves PM, Reeves TC. Design considerations for online learning in health and social work education. Learn Health Soc Care. 2008;7:46-58. http://dx.doi.org/10.1111/j.1473-6861.2008.00170.x
5. Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: a systematic review. Adv Health Sci Educ Theory Pract. 2009;14:595-621. http://dx.doi.org/10.1007/s10459-007-9090-2
6. Ward ME, Peters G, Shelley K. Student and faculty perceptions of the quality of online learning experiences. IRRODL. 2010; 11:57-77.
7. Graneheim UH, Lundman B. Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today. 2004;24:105-112. http://dx.doi.org/ 10.1016/j.nedt.2003.10.001
8. Bandura A. Social foundations of thought and actions: a social cognitive theory. Englewoods Cliffs (NJ): Prentice Hall; 1986.
9. Gikandi JW, Morrow D, Davis NE. One line formative assessment in higher education: a review of the literature. Comput Educ. 2011;57:2333-2351.
10. Li N, Hung KH, Chang CH. A cognitive-situative approach to understand motivation: implications to technology supported education. US-China Educ Rev. 2010;7:26-33.
11. Ryan RM, Deci EL. Intrinsic and extrinsic motivations: classic definitions and new directions. Contemp Educ Psychol. 2000; 25:54-67. http://dx.doi.org/10.1006/ceps.1999.1020
12. Gielen S, Peeters E, Dochy F, Onghena P, Struyven K. Improving the effectiveness of peer feedback for learning. Learn Instr. 2010; 20:304-315. http://dx.doi.org/10.1016/j.learninstruc. 2009.08.007
13. Sargeant JM, Mann KV, van der Vleuten CP, Metsemakers JF. Reflection: a link between receiving and using assessment feedback. Adv Health Sci Educ. 2009;14:399-410. http://dx.doi.org/10.1007/s10459-008-9124-4
14. Ferla J, Valcke M, Schuyten G. Student models of learning and their impact on study strategies. Stud High Educ. 2009;34:185-202. http://dx.doi.org/10.1080/03075070802528288