UNIVERSITETET I AGDER

The differences between tutor and student perceptions of design elements in online courses

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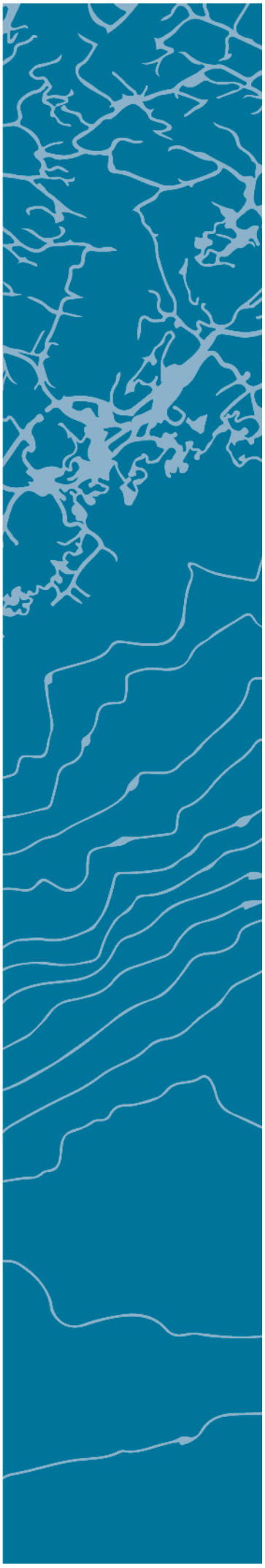

Abstract

The purpose of this study is to examine tutor and student perceptions of how design elements are implemented in online courses. The four elements collaboration, motivation, digital tools and course structure are discussed in an attempt to identify how various ways of implementing them can impact learning in an online environment. The study discusses how course tutors justify the use of the various elements, and then discusses students perceptions of how these elements impacted learning.

The two online courses used in this research are SV-408 E-teaching 1 and MM-106 Nettkunnskap, which are part of a one year program meant for teachers at primary and high school levels. The two courses were chosen as they are both online courses and have implemented the same elements discussed in this thesis but in different ways. There was a total of 5 course tutors and 12 adult students who participated in this research. While qualitative research was used to collect data on tutors' perception, both qualitative and quantitative research methods have been used to gather data on students' perceptions.

Results of the research revealed that there were both similarities and discrepancies in how tutors and students perceive the various elements in the two online courses. While collaborative learning was perceived to be a good tool for learning, it is important to ensure that it is implemented in a way that does not take away students' autonomy and the possibility to learn at own pace. Students also expressed their need for timely and constructive feedback in group discussions and after submissions were made. Results of the study have also shown that using digital tools can increase students' interest and engagement in the course. In addition to this, students expressed the need for a good course structure that makes it easy to navigate and monitor their progress.

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Contents

1 Introduction

1.1 Background

The emergence of new technology has not only impacted the way we live but also the way we learn. The global economy is also advancing and is need of students that can demonstrate skills defined to be critical for the 21st century global market (Rotherham & Willingham, 2010). Among the skills are collaboration, communication, creativity, critical thinking, long-life learning and self-directedness. To keep up with these developments, educators will now need to replace the traditional ways of teaching with new learning technologies that have been constructed to create disruptive innovations (Krokan, 2014).

Online learning as widely discussed is a convenient way for adults who are willing to take part-time studies (Swan et al., 2000; Young & Norgard, 2006; Northrup, 2002). More and more adult students are reported to be taking online courses as it provides flexibility of when to study and enables access to learning content off-campus (Huang, 2002). However, online learning is not only about delivering learning over the internet, it also requires instructors to rethink and restructure the learning models used, so as to ensure that students take on the active role of learning and enable them to interact with peers and mentors in the learning environment. One of the main challenges is to align the instructional methods with needs of the students. When the elements used do not support learning, students are likely to have a hard time completing the course. It is therefore critical to assess online courses and understand how elements such as collaboration, motivation, use of digital tools and course structure impact learning.

This study looks at the different elements used to design online courses and how they impact learning. We first look at how the course tutors justify the use of these elements. Thereafter, we look at it from the students' perspective and attempt to understand their experience and how these elements impacted learning.

In order to perform this research, we have worked together with tutors and students of two online courses at the University of Agder, Grimstad. The two courses are SV-408 E-teaching 1 and MM-106 Nettkunnskap, and are part of a one year program for teachers who want to increase their competencies in using digital tools. More details on the two courses will be provided in chapter 1.3 Resources.

1.2 Problem Statement

Students in E-teaching 1 and Netkunnskap are adults who are qualified teachers and are studying part-time. We had an opportunity to work with these students as we designed and tutored the online course, MM-105 Multimedia, that students took the same semester as they had E-teaching 1. Through interaction with the students, we came to realize that some of the students were struggling with E-teaching 1, and that some also dropped out. We had also been students in the E-teaching 1 course and had to some extent experienced some of the challenges that the students had pointed out.

A semester after designing MM-105 Multimedia, we had a school project where we designed the course Nettkunnskap. The course coordinator created the framework for the course and the course content and then assigned us the task of putting it together. Creating Nettkunnskap was an opportunity to use some of the feedback we had collected about E-teaching 1. We hereby implemented similar elements as used in E-teaching 1 with modifications in some areas, and also used additional elements, such as gamified activities that contain role plays, progress bars, points and badges to make the course interesting and engaging.

Based on our previous experiences and previous data collection as course tutors in MM-105 Multimedia, we realized that collaboration, motivation, digital tools and course structure are important elements in online courses. The way these elements are implemented seemed to impact students experience in the courses. As online course designers, it was important to look at how the tutors in the courses implemented the various elements and if students agreed that these elements led to a positive learning experience. Table 1.1 presents the hypothesis and research questions in this study.

Hypothesis and Research Questions	
Hypothesis	In a system turning towards a student-centered learning paradigm, there is a discrepancy between tutors' perception of the implementation of various design elements in an online course, and what the students perceive as relevant.
Research question 1	In the courses E-teaching 1 and Nettkunnskap, various elements are used for learning. What are the justifications for using these elements according to the course tutors?
Research question 2	Does participants in the earlier mentioned courses recognize the same elements as important for learning?

Table 1.1: Hypothesis and research questions

The objective of this study is to examine online tutors' and students' perceptions of the elements used to design online courses. Research question 1 is used to find out which elements course tutors perceive as vital and how they justify the use of the various elements. The second research question will enable us determine whether the students agree that the elements implemented by course tutors are vital, and if the ways in which they are implemented impact learning. This study is by no means aimed at comparing the two online courses, but to compare how the various design elements are used.

1.3 Resources

In Norway, a school reform called “Kunnskapsløftet” (Sommerseth & Lund, n.d.) has been implemented in the education system for primary and secondary schools and contains five basic competencies that a learner should have achieved at school completion: oral, reading, writing, digital and numeracy skills (Sommerseth & Lund, n.d.). For teachers to be able to help students to achieve digital skills, they will need to have the expertise that can enable them link Information and Communication Technology (ICT) to their own professional practices and knowledge so as to support learners while utilizing technology in their own learning (Spurkland & Blikstad-Balas, 2016). As a result, teachers need to take courses that will enable them increase their expertise within the digital field. The demand for increased digital expertise is one of the main reasons why the University of Agder created the one-year-program “Technology for teachers in elementary education"[1]. This program aims to educate qualified teachers at primary and high school levels on the use of digital tools and technology in education. This research is based on E-teaching 1 and Nettkunnskap which are two of the courses in the study program.

E-teaching 1 is an international online course that is being offered to students across the globe. The course, originally referred to as “Pedagogy in Open Learning”, was founded as a blended course in 1994 (Bjørke, 2017) but is now delivered as a pure online course and offers 10 ECTS credits[2]. The target group for this course includes online educators, tutors at low and high level education institutions, online course tutors, and students at masters or PhD level. E-teaching 1 aims to provide an overview and practical experience in e-learning, e-pedagogy, ICT supported education and online tutoring. The course focuses on the learner developing his/her own skills with tutor support. Group works, negotiations of meaning, peer tutoring, and online quizzes are some of the teaching methods implemented in the course. While 60% of the grade in the course is determined by a written home exam taken at the end of the semester, 40% is determined by the student’s portfolio. Participation in the discussion activities is therefore important as this counts in the 40%. The delivery platform for E-teaching 1 is Fronter[3].

Nettkunnskap on the other hand is an online course meant for tutors at primary and secondary school levels. The course was founded in 2016, runs purely online and offers 5 ECTS credits. Tutors of Nettkunnskap are also the researchers in this study as the course was designed as a school project within the Multimedia and Technology Education masters programme at the University of Agder. Nettkunnskap aims at providing tutors with knowledge of the benefits and challenges that the use of the internet can incur, educates on digital tools that can be used for instructional and assessment purposes, and provides an overview of social media tools that students can use. Passing the course is a continuous process as the students collect points by taking the various activities in the course. Teaching methods involved are individual work, group work, interactive activities, and quizzes. The delivery platform for Nettkunnskap is Neo[4].

[1] Teknologi for lærere i grunnutdanningen (Own translation)
[2] ECTS: *“European Credit Transfer and Accumulation System”* (UiO, 2010)
[3] *https://nor.fronter.com/*
[4] *https://www.neolms.com/*

The two courses E-teaching 1 and Nettkunnskap are used in this study because they are both online courses. The different ways in which the four elements are implemented in the courses will also enable us to find out how these elements impact learning.

1.4 Previous Research in the Field

To be able to discuss the elements that are vital when designing online courses specifically meant for adult learners, it was important to look at previous research work that provides inspiration and an overview of existing findings in the field. Krumsvik (2014) highlights the importance of doing a literature review to identify research that has been done before. Having knowledge on this can help one build a theoretical framework and gain understanding that can be used to critically select viable references (Krumsvik, 2014, p. 84-88). Google scholar[5] and Oria.no[6] are the two search engines that have been used in this research to access research literature. The library at the University of Agder has also largely contributed to access books that have been utilized.

The advancement in technology has resulted in the growth of online learning. According to the research referred to as "Digital tilstand 2014"[7]. carried out by "Norgesuniversitetet" (Gjerdrum & Ørnes, 2015, p. 113), 20% of Norwegian students took online classes in 2014. The research also shows that nine out of ten students have reacted positively to the use of technology in education and many believe that it makes the learning process easier by enabling communication, collaboration and easy access of course content (Gjerdrum & Ørnes, 2015, p. 10). According to this author, more students at the age of 31 and above participate in online courses as compared to their younger counterparts. Most of these are working parents who study part-time (Gjerdrum & Ørnes, 2015, p. 113). Several studies have shown that students prefer to take courses online due to its convenience and flexibility which enables them to continue with their studies despite their busy lifestyles (Swan et al., 2000; Young & Norgard, 2006; Northrup, 2002). As the field of online learning develops, Young (2006) explains that it is important to examine the quality of online courses from the students perspective, and determine which elements are vital to enhance learning in the online learning environments.

Several researchers have looked into the field of online learning and come up with factors that are determined to be vital to student satisfaction in online courses. Some of the factors discussed by Young (2006) include student interaction with instructors, interaction with fellow students, interaction with content, course design, and technical support. The study carried out by Northrup (2002) also showed that students valued discussions with peers and instructors. Students also showed the need for instructor feedback. In addition to showing the importance of interaction with peers, the students in a study carried out by Swan (2000) also emphasized the importance of building a learning community that should be maintained through discussions with fellow students and course facilitators. Vesely

[5] Google's free web search engine. *www.scholar.google.com*

[6] A search engine to search in the university's library *www.oria.no*

[7] "Digital tilstand" is a quantitative national survey conducted every third year in higher education to describe the status and development in the use of media and digital tools. Response groups are students, academic staff and heads of departments (deans) *https://norgesuniversitetet.no/digitaltilstand*

(2007) who carried out a research on the key elements of building communities in online learning has shown that collaborative efforts can help students to achieve their goals. How students relate and assist each other is therefore vital for their learning process (Vesely et al., 2007). This research that was carried out by comparing faculty and student perceptions of communities in online learning has shown that instructor presence is a key factor and the instructor has an important role of modeling the community. The instructor should be in a position to model a learning community by providing a clear structure that guides students through course activities, help the students come in contact with one another, form discussions that will involve the learners and provide timely and constructive feedback. The other element of instructor presence is facilitation of discourse. The tutor in this case leads students in learning course concepts by creating leading questions and making meaningful responses in group discussions. Facilitators in this study stated the importance of dialogue between the students and that following group discussions can enable the instructor to determine the level at which each student understands course material. Both the tutors and students in this study agreed that self-discipline and student's desire to participate in the online course were vital (Vesely et al., 2007).

Research that was conducted by Ausburn (2004) has also shown that learners valued the interaction and communication with peers and tutors. This research aims at identifying the important instructional features and design elements as ranked by a group of employed adults that are taking teacher education part-time. An emphasis on the importance of using the andragogy model[8] (Knowles & associates, 1984; Merriam, 2001) to help identify the principles of adult learning is made. Other key elements discussed as useful to attract and retain adult learners include personalization, variation, autonomy, self-direction, personal relevance in what is learned, learning outcomes based on real-world needs and preferred learning strategies (Ausburn, 2004). Also aimed at identifying components that influence interaction in an online course is research performed by Vrasidas (1999). In that study, course structure, class-size, feedback and computer-mediated communication were discussed. According to the findings, increased structure such as including activities that require students to collaborate in projects can increase interaction (Vrasidas & McIsaac, 1999). Also in regards to structure, students have shown the need for self regulation and a system that makes it possible to monitor own progress and adjust their learning strategies accordingly (Northrup, 2002). Several studies have also shown that students prefer structured schedules with due dates so as to enable them to manage time and complete tasks within given time frames. Poorly designed courses resulted in frustrated students and a negative experience that led to a poor learning outcome (Northrup, 2002; Young & Norgard, 2006). Students also indicated that they were satisfied when the courses had a consistent structure and were easy to navigate (Swan et al., 2000). A study carried out to identify the factors that influence adult persistence and dropout in online learning (Park & Choi, 2009) has put emphasis on the importance of prioritizing learner motivation and implementing design strategies that are likely to increase learners' interest, participation and engagement at course development stage. Thereafter when the course has been launched, course instructors should consider external factors such as financial problems, organizational/family support that may affect learner persistence. This study also shows that learners who were satisfied with the course and found it relevant to their own lives were unlikely to drop out. The use of rewards to enhance motivation, giving learners the opportunity to apply new knowledge, al-

[8] *"The art and science of helping adults learn"* (Knowles & associates, 1984, p. 6)

lowing them to determine own learning strategies, and involving course material that is closely related to learner interests and experiences are some of the ways this author recommends to help achieve motivation (Park & Choi, 2009).

1.5 Limitations

This study has its potential limitations. One major limitation is the small sample size used to represent adult online learners. The other constraint is that the course design elements discussed in this study are limited to the two online courses E-teaching 1 and Nettkunnskap.

Having been students in E-teaching 1 and tutors in Nettkunnskap could mean that we as the researchers in this study have our personal perceptions that might lead to being biased. We are aware of this and try to be as neutral as possible so that the results of the research are not affected.

The two courses used in this research are different in sizes. While E-teaching 1 offers 10 ECTS, Nettkunnskap offers 5 ECTS credits. Another difference is that Nettkunnskap does not give a final grade as students either pass or fail the subject. E-teaching 1 on the other hand gives a final grade based on students' portfolio and a final essay. Nettkunnskap is also a new course that has been running for only one year, unlike E-teaching 1 that was founded in 1994.

The limitations that come with the use of LMSs might also have affected students experience in the two courses. An example is that the chat function in Neo did not function optimally.

Students took Nettkunnskap a semester after E-teaching 1. This means that while most students were new to the concept of online courses when they started E-teaching 1, they had some experience when Nettkunnskap was started.

1.6 Thesis Outline

The purpose of this research is to compare course tutor and learner perceptions of the design elements implemented in E-teaching 1 and Nettkunnskap. Chapter two discusses the theories that are considered as relevant to elements used to design online courses. Chapter three is a presentation of the methods that have been used in this research, followed by chapter four where the research findings are presented and discussed. Finally, a summary and conclusion of the study is presented in chapter five. Suggestions for future research are also discussed in the last chapter.

2 Theory

2.1 Learning and Knowledge Creation

2.1.1 Introduction

The education system has over the last years gone through an evolution which has shown a tendency of transformation from theories that give the teacher the main role in education, to theories that put the student at the centre of the learning process. The two learning models known as Behaviorism (Skinner, 1974) and Cognitivism (Ertmer & Newby, 2013) refer to knowledge as being external to the learner. The teacher in this case has been termed as a “sage on stage” and the student’s role as that of a receiver (Brown, 2006). On the other hand is constructivism (Ertmer & Newby, 2013) which puts focus on students learning by constructing own knowledge. Socio-constructivism which was developed by the psychologist Vygotsky (Ertmer & Newby, 2013) is an extension of the constructivism theory (Brown, 2006) that brings in the fundamental role of social interaction in learning.

The transformation and development in Information and Communication Technology (ICT) has further led to emerging theories; Connectivism (Siemens, 2005) and Navigationism (Brown, 2006). These two theories acknowledge the impact of technology in education, and emphasize that learners should form networks and be in a position to solve real world problems by identifying relevant information. The learner takes responsibility of his/her own learning, while the teacher’s role shifts to being a “guide by the side” (Brown, 2006). The development towards student-centeredness shows how critical it is to assess the design elements in online courses and determine whether elements prioritized by course tutors are effective towards achieving a student-centered way of learning.

This study introduces the learning theories named above because an instructional designer needs knowledge of learning theories to viably select learning strategies and techniques that can be incorporated into an instructional context that best fit various instructional environments and learners (Ertmer & Newby, 2013). However, Behaviourism, Cognitivism and (Socio)-Constructivism have been referred to as theories that were developed before technology made an impact on learning (Siemens, 2005). This study therefore puts an emphasis on the emerging learning theories which have been proposed as theories appropriate for learning in the digital age (Siemens, 2005).

2.1.2 Emerging Learning Theories

The latest development in information and technology that has led to a change of the learning context (Kop, 2011) also means that the educational system has to change its learning strategies (Brown, 2006). Connectivists such as Siemens (2005) emphasize that learning does not only happen within people but can also reside outside of people, such as the learning that is stored and manipulated by technology and within organizations. Learning in this model is explained to be achieved by forming a network that connects different nodes. Connecting to various sources of information and knowledge for example other learners or a database, enables one to collect diverse and conflicting opinions that can be assembled to construct own knowledge. Also defined as key to learning is the ability to maintain and nurture the connections, and to be able to make connections between fields, ideas and concepts (Siemens, 2005).

As the global market is advancing in the 21st century, individuals are more likely to be presented with problems that are complex and are ill-defined. One should therefore be in a position to connect information sources so as to come up with a solution. Brown (2006) emphasizes on developing skills on identifying, manipulating and evaluating information and knowledge that can be used to form solutions and also educate others. In a system overflowing with information, it is necessary that individuals have navigation skills and the capacity to critically evaluate information so as to determine what is reliable. Siemens (2005) adds that rather than relying on the present knowledge, it is more important to have skills that can be used to access knowledge in the future. He goes on to clarify that due to the fast transformation of information, the knowledge that is considered as being correct today is not necessarily correct in the future. This also means that it is vital that the learner keeps him/herself up to date with the current information (Siemens, 2005).

Table 2.1 explains the four types of activities that are envisaged to enhance learning as explained by Kop (2011).

Enhance learning	
1. Aggregation	Learner collects a variation of learning content from different sources. This includes for example text, videos and games.
2. Relation	Reflects and relates over activities to what s/he earlier experiences or what is currently know.
3. Creation	Comes up with own creation such as a post in a discussion forum a blog post etc.
4. Sharing	Posts work on a network that can be accessed by other people e.g on Facebook, YouTube, etc.

Table 2.1: Four types of activities that can be used to enhance learning

2.1.3 21st Century Skills

The change in the global economy that has come up as a result of advancements in ICT shows the need for educators to help students achieve skills defined as crucial to be successful in the 21st century world. According to Nanney (2004), unlike in the 20th century where industries were in need of workers with basic skills, the industrial market in the 21st century is in need of workers who are self-directed, willing to continue learning and are able to work their way to finding solutions to various problems. Appropriate knowledge that can be used in different relevant contexts is therefore a necessity to coming up with solutions to real world problems (Koschmann, 1996). Koschmann uses the word ill-structured to define the real world problems. He states that these are problems that require more information than is initially available to solve them, and as more information emerges the state of the problem changes. To find a solution to such problems there is need to reason, reflect and inquire. It is vital to implement instructional methods that actively involve the learner in the learning process so as to enable them develop the qualities needed to come up with solutions to such problems (Koschmann, 1996).

Willingham (2010) states that skills such as communication and collaborative skills have always been present in workplaces. However, what's different is how these skills are crucial to be successful in today's global economy. Collaboration, communication, critical thinking, ability to solve real world problems and self directedness have been defined as some of the skills that are critically needed to make it in the 21st century global market (Schwartzbeck & Wolf, 2012).

Willingham (2010) states that skills are more important than knowledge, and knowing where and how to access information is more important than storing or cramming it. When presented with a problem, a person is likely to use his/her skills to find a solution to this problem with the help of the information that can be retrieved by using technology. In addition to skills, students need to have content knowledge that is central to the domain. Acquisition of this knowledge will enable learners to expand their knowledge as they look at different perspectives of the same matter and at the same time develop skills in critical thinking (Rotherham & Willingham, 2010). Willingham (2010) also draws our attention to a challenge which is the complexity of teaching skills as compared to knowledge. The author compares teaching long division to collaboration and innovation, and states that it is easier to teach the former than the latter. Teaching skills means that the learners do not only experience skills but practice and improve on them while receiving feedback from more knowledgeable peers (Rotherham & Willingham, 2010).

2.1.4 Collaboration

Dillenbourg (1999) states that *"learning takes place as a result of joint problem solving."* In the process of collaboration, students work together in teams to create new knowledge and develop skills that can be used to find solutions to different problems. When comparing collaboration to individual learning, Dillenbourg states that performing activities in a group can help students to construct knowledge as they explain to each other, disagree and regulate ideas. Collaboration can be characterized by three situations (Dillenbourg, 1999). The first situation is that peers working in a team should be at the same level. This applies when it comes to the level of knowledge, level of action every learner is allowed to perform, and the status that learners have in respect to the learning community. It is relevant to note that the situation here can be either subjective or objective as knowledge symmetry will be irrelevant in cases where a tutor and a student are collaborating. Secondly, peers should have a common goal. Creating an external goal does not guarantee that learners will completely share these goals. External goals fixed by others may not apply when it gets down to the different work practices that different people relate to. At the beginning of collaboration, groups should partially set up goals that are to be revised as the work progresses.

> *"Through negotiation of goals, agents do not only develop shared goals, but they also become mutually aware of their shared goals" (Dillenbourg, 1999).*

The third situation is the degree of labour division among group members. Dillenbourg (1999) splits this into two by bringing in the concept of cooperation and collaboration. Unlike in collaboration where team members "do the work together", cooperating members split the activities into parts that should be solved individually and thereafter assembled to form the final result (Dillenbourg, 1999).

For teamwork to be possible, learners need to communicate. Synchronous communication has been defined as where learning takes place in real time and tutor or student participation happens simultaneously (Johnson, 2006). On the other hand is asynchronous communication where learning does not take place simultaneously and participation is independent of time and space synchronization (Johnson, 2006). Some of the advantages that asynchronous communication has over synchronous communication is that it allows students to use enough time that they need to complete a task, gives every learner the opportunity to contribute to the group discussions and provides ample time needed to reflect on the exercise. To achieve good asynchronous communication, discussion forums that give participants a clear overview are recommended. Oztok (2013) elaborates on the importance of using threaded notes and linking inputs so as to make it easier for participants to follow the discussions (Oztok, 2013). A study performed by Johnson (2006) has stated that supplementing asynchronous communication with synchronous can be beneficial. While asynchronous communication is likely to yield cognitive presence[1], synchronous will add to the course as it fosters social presence[2].

[1] Cognitive presence: *"The extent to which the participants in any particular configuration of a community of inquiry are able to construct meaning through sustained communication"* (Garrison, Anderson, & Archer, 1999)

[2] Social presence: The feeling that one is sharing the learning environment with others (Garrison et al., 1999)

2.1.5 Student-centered Learning

The Student-centered approach shifts focus from the teacher and gives the learner an active role in learning.

> *"Learning is not a passive process of reception, but rather, a constructive process of knowledge assembly influenced greatly by what is already known" (Koschmann, 1996, p. 89).*

The students should take responsibility for their own learning and use the instructor as a guide through this process. Student-centered learning has been identified as the approach that is capable of producing life-long learners who can solve problems without fully depending on the teacher (Nanney, 2004). According to this author, the teacher's role in a student-centered environment is to facilitate learning by designing relevant tasks, setting time limits to help student manage time, asking leading questions, providing feedback, and deciding when students should change focus or move to the next task. Fully achieving this approach has however shown to be difficult both from the tutor and learners perspective. One possible reason is that students who are used to the teacher being in charge could find it difficult to take responsibility of their own learning. Felder and Brent (1996) pointed out that students who are used to the traditional way of teaching can either go through all or some stages of grief and trauma when introduced to the modern ways of learning. The stages explained here are:

> *"shock, denial, strong emotion, resistance and withdrawal, struggle and exploration, return of confidence, and integration of success" (Felder & Brent, 1996).*

Felder and Brent (1996) stated that resistance in this process is a normal stage that students go through as they advance from being dependent to being autonomous. Tutors should however take into consideration that students are different and for some it may take more time to advance through these stages. The tutors are therefore required to provide the learners with a proper structure and guidance.

2.1.6 Supporting Students Online

Scaffolding is providing support to help students achieve that which they are not able to achieve without support. Support can either be given through an individual (social scaffolding) or a tool (system scaffolding) (Melero, Leo, & Blat, 2012). To solve significant problems that are likely to be open-ended and complex, students will need guidance from mentors so as to be able to come up with the desired outcome. Salmon (2002) also states that students should be supported in different stages of the course to enhance a positive experience. This author presented the five stage model that online course tutors can use to assist learners as they develop through the different stages of the course. The model as shown in figure 2.1 can be used to determine activities that are suitable at every stage of development to help learners develop their skills and gradually build confidence in online learning and networking. The model also gives an outline of how tutors can motivate students, pace learning and help them build knowledge as they develop towards their success (Salmon, 2002).

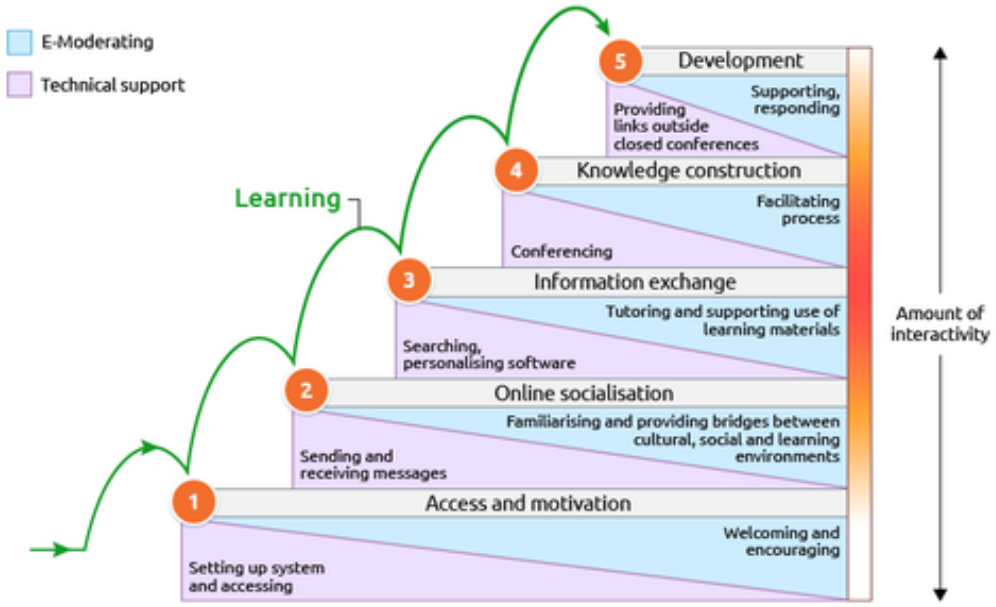

Figure 2.1: The Five Stage Model

http://www.gillysalmon.com/five-stage-model.html

The five stage model suggests that learners should build a basic foundation before they can begin to learn a new concept. Students should be well informed about the course, what they are supposed to learn, and understand the structure of the course and its goals before starting the course. It is also important that they get the opportunity to get to know one other and feel secure in the class. In the first stage of the five stage model, the tutor welcomes students and provides them with the technical support that they need. In stage two, students socialize online by connecting with peers in the learning network. The tutor should at this stage provide activities that encourage students to get in touch with one another and help them create a community. In stage three students work in groups and benefit from discussions with tutor and peers. In stage four the student is well integrated in the community and focuses on knowledge construction. The tutor's role at this stage is that of a guide by the side

who provides feedback and helps support students towards completing their projects. In stage five the learner is confident and in a position to construct knowledge through collaboration with peers. Tutor feedback is also important in the final stage (Fossland, 2015, p. 73-74).

2.1.7 Andragogy

As the demographics in this study consist of adult learners, the theory of adult learning also referred to as andragogy is discussed. Andragogy can be defined as *"The art and science of helping adults learn"* (Knowles & associates, 1984, p. 6).

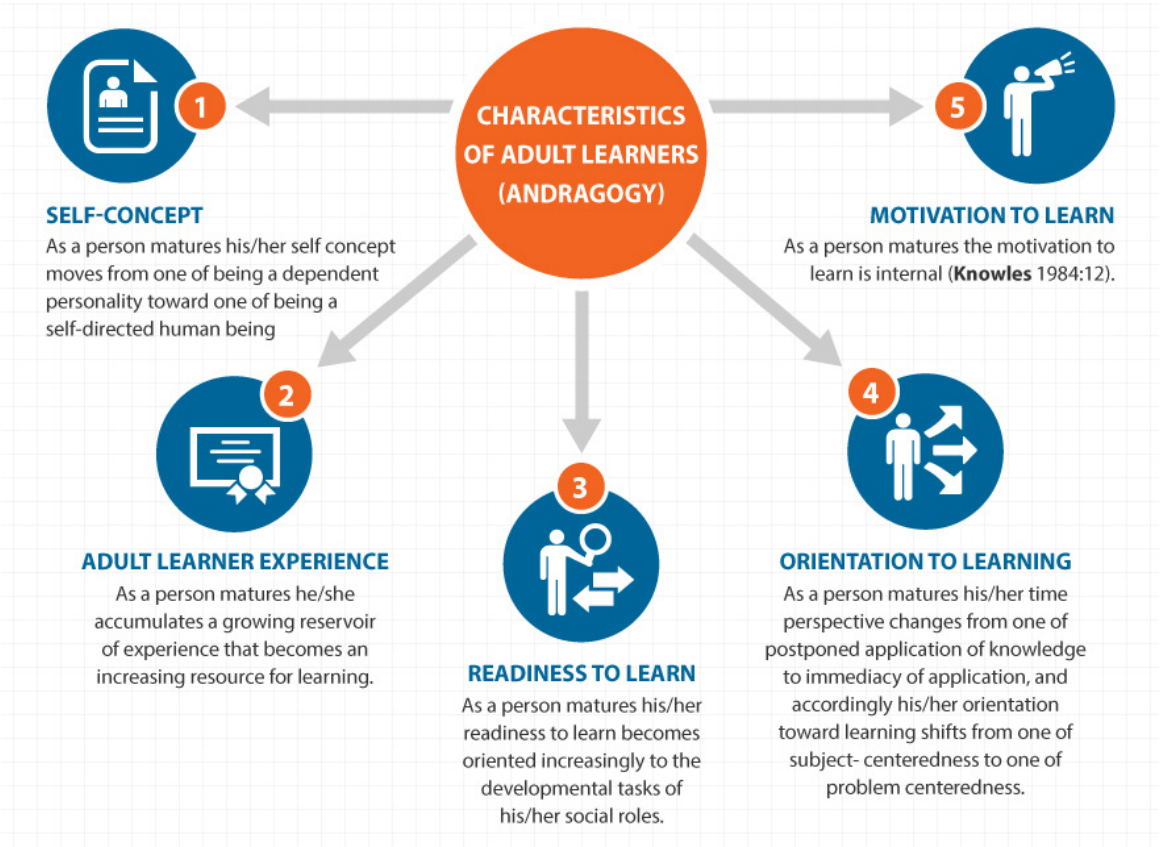

Figure 2.2: The andragogy model

https://elearningindustry.com/the-adult-learning-theory-andragogy-of-malcolm-knowles

As shown in figure 2.2, the andragogy model contains five assumptions that are used to describe the adult learner. The first concept is the self-concept: *"the learner is self directing"* (Knowles & associates, 1984, p. 9) and wants to be perceived by others as capable of taking responsibility of him/herself. When learners find themselves in situations that they have not been part of the decision making process, they are likely to develop a feeling of resentment. The second concept is the role of the learners experience; adult learners unlike their younger counterparts have acquired and accumulated different experiences through the years. While prior experiences can be positive due to learners acting

as learning resources for one another, it can also be negative as the previous experiences mean that learners have developed certain habits and perceptions that they would not easily want to change. The third concept is readiness to learn; when individuals experience the need to know or the need to improve an aspect of their lives, they will be triggered to learn. The fourth concept is orientation to learning; adults enter learning with a purpose. *"...adults do not learn for the sake of learning; they learn in order to be able to perform a task, solve a problem or live in a more satisfying way"*. The fifth concept is motivation to learn; internal motivation is more potent even though learners might respond to external motivational factors (Knowles & associates, 1984, p. 9-12). Even though it has been argued that this model is not only applicable to adults and can also be used on younger learners, it is used in this study as it is a framework that is widely used and is recommended when designing, implementing and evaluating educational environments for adults (Merriam, 2001).

2.1.8 Learning Styles

There is need to consider the learning styles as this will help to determine how to design and structure an online course in a way that meets the needs of different students. Felder (1996) defines learning styles as *"characteristic strengths and preferences in the ways they (students) take in and process information"*. Knowing the differences in preferences can help to motivate students to achieve long life learning when best practice strategies are implemented (Cercone, 2008). Table 2.2 as presented by Cercone (2008) shows recommendations that can be used to address different learning styles.

2. Learning styles need to be considered. In any group of adults there will be a wide range of individual differences, thus the individualization of learning experiences is important in many situations.	a. Ensure that students can move through the instruction at their own pace. b. Ensure that the students can review previous learning whenever they want. c. Provides links to a wide variety of web resources. d. Ensure to allow ample time for students to master the content.e. Ensure that all learning styles are addressed by presenting material in multiple modes including text, graphics, audio and manipulativesf. Use strategies such as consciousness raising, journal keeping, reflection logs, think sheets, guided questioning.

Table 2.2: Recommendations that can be used to address different learning styles

(Cercone, 2008)

2.2 Motivation

According to Ryan and Deci (2000), motivation is “to be moved to do something”. Understanding motivation as a theory is important in this study as it will enable us to understand how the various design elements implemented in E-teaching 1 and Nettkunnskap can lead to increased or diminished interest and engagement in the two online courses.

2.2.1 Intrinsic and Extrinsic Motivation

To differentiate between the various types of motivation, Deci and Ryan used the Self-Determination Theory (SDT) (Deci & Ryan, 2008). This theory assumes that humans are naturally self-motivated and perceive success in itself to be a satisfying reward. However, the theory also acknowledges that people can be passive, estranged, or disaffected. According to the SDT theory, the three factors that should be addressed to achieve motivation include competence, autonomy and relatedness (Deci & Ryan, 2008). Intrinsic motivation is described as performing a task that one finds interesting and because the task itself gives a satisfactory and positive feeling. Extrinsic motivation is performing a task to either receive a reward or avoid punishment. This means that there is a separate consequence to performing the task other than the satisfaction itself (Deci & Ryan, 2008). SDT divides extrinsic motivation into two states that should help educators to address tasks that are not inherently interesting to perform. The first state is a situation where an extrinsically motivated task is performed when one is externally driven into performing a task, and the second is where a task is performed willingly with a sense of volition. Educators are encouraged to promote volitional forms of extrinsic motivation to achieve successful teaching (Ryan & Deci, 2000). Deci and Ryan (2000) state that people are not always intrinsically motivated to perform tasks, and this is more evident as people grow up and tasks become more of an obligation than a choice. An example to this is intrinsic motivation going down as students advance to higher grades. Even though extrinsic rewards have been considered to undermine intrinsic motivation, SDT-theory explains that when the three psychological needs (feeling of competence, autonomy, and relatedness) are supported when extrinsically motivated activities are used, one is likely to maintain intrinsic motivation and become more self-determined. A way to achieve this in the classroom is by offering optimal challenges and effectance-relevant feedback, and introducing tasks that will make learners feel valued to those that they are connected to (Ryan & Deci, 2000).

Non-contingent rewards such as positive feedback on performance that are not perceived to be controlling and satisfy the need of competence can lead to intrinsic motivation. Whitton (2014) adds that intrinsic motivation can be achieved when constructive feedback is provided frequently and clearly. When discussing how feedback can be implemented, Whitton states that immediate feedback can be effective in addressing errors as it gives immediate gain and should be provided when users are attempting difficult tasks which are beyond their skills. This author however advises that frequent feedback on tasks that are relatively easy can be perceived as feedback intrusion. Tangible rewards on the other hand, can be perceived as controlling and tend to reduce intrinsic motivation. This is also applicable to punishments, deadlines and surveillance which are also perceived to be controlling (Deci & Ryan, 2008). This brings us to the importance of supporting autonomy in learning environments.

> *"Autonomous motivation involves behaving with a full sense of volition and choice, whereas controlled motivation involves behaving with the experience of pressure and demand toward specific outcomes that comes from forces perceived to be external to the self" (Deci & Ryan, 2008).*

It is likely that people will enjoy performing tasks that offer them choice and satisfy their autonomous nature. Informative and supportive social climates will therefore provide intrinsic motivation as opposed to social climates that are controlling. The same applies to tangible rewards that could have a positive effect when administered in a way that supports autonomy. The need to support autonomy in learning environments is seen as an important factor. Research has shown that in cases where tutors and/or parents support autonomy, students are likely to be more intrinsically motivated (Deci & Ryan, 2008). Students should be in a position to initiate own behavior and learn from their success and failures rather than depending on the teacher to tell them what to do. Students in autonomy supported environments have shown to have developed a higher level of competence and self-esteem, are more curious, take on challenges and independently attempt to achieve mastery (Deci & Ryan, 2008).

2.2.2 Gamification

Gamification is defined as *"the use of game design elements in non game contexts" (Deterding, Khaled, Nacke, & Dixon, 2011)*. The elements that have been known to make games interesting and addictive are integrated into online courses so as to make them more interesting and engage the learner. In this study, activities that contain elements such as role plays, progress bars, points and badges are discussed because they were used in Nettkunnskap. When discussing these activities in this study, they will be referred to as gamified activities.

One of the benefits of game-based learning is that it enables "automated customised feedback" and increases interactivity (Whitton, 2014). Whitton (2014) stated that providing feedback on performance is essential to motivate learners.

> *"At the heart of every computer game is a mechanism for providing feedback to the player; the player takes an action and sees a reaction from the computer within the game; the player then evaluates the consequences of that reaction and makes another action"* (Whitton, 2014).

Salen (Salen & Zimmerman, 2004) used the term discernable[3] to explain that feedback should be communicated to the user in a perceivable manner. This can be achieved by using for example sound and visual effects. The use of points, badges and leaderboards (PBL) has also been discussed as a way of providing automated and instant feedback to the users. However, Deterding (2012) points out that *"meaningful choices in the pursuance of interestingly hard goals"* rather than feedback provided by PBLs is one of the reasons as to why people find games pleasurable (Deterding, 2012). Virtual rewards that are provided by PBLs have also been stated to *"extract real value from users"* due to their exploitative nature. Deterding (2012) emphasizes that gamification should not only implement

[3] *Discernable: "the result of the game action is communicated to the player in a perceivable way"* (Whitton, 2014)

game components but game design as a whole. It is important to look at other ways in which games can be rewarding such as in social contexts. To successfully implement gamification, designers are encouraged to start by understanding the goals that they want to achieve and the behaviours that gamification is meant to encourage. It is also important to understand the users and their needs so as to determine what will function best (Deterding, 2012).

2.3 Learning Technologies

The education system should ensure that it supports a learner-centered instruction system that will enable it to produce individuals who are capable of developing solutions by synthesizing and evaluating information from different sources as required by the 21st century global market (Wolf, 2012). This shows the need to maximize the potentials and opportunities that technology and digital learning provides. Digital tools and content bring focus to the students by providing relevant tools and resources that can be engaged in promoting efficiency and various relevant ways of teaching (Wolf, 2012). Technological tools such as video games, visualizations, interactive tools and computer simulations can be used to engage learners (Melero et al., 2012), and provide the possibility to create instructional strategies and curriculum that is more relevant and interesting (Schwartzbeck & Wolf, 2012). Nanney (2004) states that technology enables the creation of powerful, engaging and immersive learning environments and helps the students to augment their cognitive capacities.

In regards to how learning technologies enable the instructor to implement an instructional method that is learner centered, Wolf (2012) explained that digital tools and content can be used to create a personalized study environment, produce rigorous content, provide tools that allow learners to work collaboratively, and give students the possibility to work anywhere at any time. Furthermore, the use of digital tools makes it easier for facilitators to communicate with students, provide diverse learning content, and collect real time data and assessment. These tools also enable educators to discover students' maximum potential and ensure that every student is catered for (Schwartzbeck & Wolf, 2012). Learning Management systems (LMS) are among the technological tools that can be used to facilitate learning in online environments. LMSs are used to deliver courses online and contain features that enable communication, modelling of learning activities, content management, student tracking, grading, etc. The LMSs that are relevant and will be discussed in this study are Fronter and Neo.

Digital tools are also effective when it comes to personalizing content so as to ensure that every student is catered for. Personalization can be defined as pacing and tailoring instruction according to learner's needs, preferences and interests (Wolf, 2012). Rather than disseminating the same information to all students and assuming that they learn at the same pace, modern technology makes it possible to track each student and meet each of them at their various points of need (Wolf, 2012). Personalized learning does not only apply to students who require more assistance, but also to the well performers who are likely to get bored when they do not receive challenging tasks that engage them (Wolf, 2012).

Hornik (2007) explains that the successful implementation of online learning environments goes beyond the convergence between a learning model and the technology. It is vital to consider the students'

preferable learning approaches and if technology supports learners' beliefs on how learning should occur, also referred to as learners' epistemological beliefs. A match between technologically supported learning models and learners' epistemological beliefs will lead to effective outcomes, while a mismatch will create friction that can impact learning outcomes negatively. Friction can lead to reduced participation in the learning process as learners do not find technology to be supportive to their learning and instead experience it as a barrier to achieving outcomes (Hornik et al., 2007).

2.3.1 Learning Videos

An instructional video, which is classified under digital tools, has been termed as *"a rich and powerful medium"* (Diwanji, Simon, Märki, Korkut, & Dornberger, 2014) used in online education, and has been proved to increase student engagement in the learning process (Guo, Kim, & Rubin, 2014). It is however not certain that any learning video will result into student engagement. Course designers are encouraged to look at the factors that affect the production of good online instructional videos. A study carried out by Diwanji (2014) has divided the factors that determine the success of online learning videos into the following categories: Support material, style and content, production phase, video distribution, social media, internalization, social media, gamification and mobile technology. Table 2.3 as presented by Guo (2014) shows a summary of findings and recommendations on students' engagement with instructional videos specifically created for MOOCS[4].

Finding	Recommendation
Shorter videos are much more engaging.	Invest heavily in pre-production lesson planning to segment videos into chunks shorter than 6 minutes.
Videos that intersperse an instructor's talking head with slides are more engaging than slides alone.	Invest in post-production editing to display the instructor's head at opportune times in the video.
Videos produced with a more personal feel could be more engaging than high-fidelity studio recordings.	Try filming in an informal setting; it might not be necessary to invest in big-budget studio productions.
Khan-style tablet drawing tutorials are more engaging than PowerPoint slides or code screencasts.	Introduce motion and continuous visual flow into tutorials, along with extemporaneous speaking.
Even high quality pre-recorded classroom lectures are not as engaging when chopped up for a MOOC.	If instructors insist on recording classroom lectures, they should still plan with the MOOC format in mind.
Videos where instructors speak fairly fast and with high enthusiasm are more engaging.	Coach instructors to bring out their enthusiasm and reassure that they do not need to purposely slow down.
Students engage differently with lecture and tutorial videos	For lectures, focus more on the first-watch experience; for tutorials, add support for rewatching and skimming.

Table 2.3: Summary of findings and recommendations on students' engagement with instructional videos

(Guo et al., 2014)

[4]MOOC: Massive Open Online Courses

3 Research and Methods

This chapter presents the research methods and processes that have been used to gather and analyze data. Before every survey was carried out, researchers introduced themselves and the research project. A consent form was also provided at the start of every interview. Students were given the chance to ask questions during the introduction sessions and given the freedom to choose if they were willing to participate or not.

3.1 Respondents

This research is based on 17 respondents. 12 of them are students who are taking the supplementary program "Technology for teachers in elementary education" at the University of Agder, Grimstad. The other five are course tutors, two tutors for E-teaching 1 and three tutors for Nettkunnskap. Two of the Nettkunnskap tutors are also the researchers in this study. The population of this study was clearly identifiable as this is a small group that we had access to and did not need to go through the process of identifying participants (Preece, 2015, p. 227). The tutors are between the ages of 20-70 where three of them are female, and two male. The student participants are between the ages of 20-50, where nine are female and three are male.

The program had weekend sessions three times every semester where students would meet for face-to-face discussions with tutors or peers and to carry out practical exercises. Researchers used the face-to-face meetings as an opportunity to conduct both individual and group interviews during these sessions. Questionnaires were also distributed online during the meetings. A total of four surveys using questionnaires were conducted within the period that students took the online courses. While all the 12 students took part in answering the questionnaires, only five of them were selected to take part in the interviews. Three of them were female and two male. It was important that both students who had completed the course and those that dropped out are selected. While all interview respondents completed Nettkunnskap, two out of the five dropped out of E-teaching 1.

3.2 Quantitative Research

The quantitative research method has been used to collect measurable and quantifiable data that can be used to make numerical comparisons and create graphs.

> *"Quantitative analysis uses numerical methods to ascertain the magnitude, amount, or size of something; for example, the attributes, behavior, or opinions of the of participants"* (Preece, 2015, p. 277).

3.2.1 Questionnaires

A total of up to four data gathering sessions using questionnaires were performed in this study. The forms started by providing information about the research project and also assured students that the survey would be anonymous. Both close and open ended questions were used in the questionnaires. The first questions were basic demographic questions about gender, age, and which level of education the teach. A rating scale also known as the likert scale (Preece, 2015, p. 246) was used to measure students attitudes and opinions on different claims made. The scales ranged from strongly agree to strongly disagree. Other types of questions used were multiple choice questions, true/false questions and text boxes where users could write in additional information. The program "Google Forms" was used to create the questionnaires. This made it easy to distribute the forms over the web and also gave a good overview of the results in illustrations and graphs. The first two questionnaires contain some questions that are not applicable for this study. This is because we had initially thought of using MM-105 Multimedia as part of this research. The number of responses also vary as not all students took both courses. The questionnaires were however distributed to all participants and information given that they needed to answer only questions concerning the course(s) they had participated in.

3.3 Qualitative Research

Qualitative methods have been used to collect descriptive data that should help us go into depth of how both tutors and students perceive the different elements used in designing online courses. Interviews were carried out a semester after the students had taken E-teaching 1. Some students were also at this point finished with Nettkunnskap. It was important to conduct the interviews when students had completed or almost completed the courses to ensure that they had sufficient experience.

To enable us to answer research question 1, an interview was performed on the E-teaching 1 tutors. However, no interview was done to collect data from the Nettkunnksap tutors since the researchers of this study also designed the course and were tutors in it together with the main tutor. The main tutor has been a part of the whole process of creating Nettkunnskap, and through continuous discussions the researchers are aware of his thoughts about the different decisions made. A document (Appendix I) that answers the same questions as answered during interviews with E-teaching 1 tutors was however produced to enable the comparison of the different elements in the two courses.

3.3.1 Interviews

Performing semi-structured interviews enabled the researchers in this study to gain a better understanding of the tutors' and students' perceptions, as well as their experiences. It was possible to explore the matter as respondents would not only answer questions asked, but also give feedback according to their experiences in the two courses (Preece, 2015, p. 234-235). The respondents were asked specific questions and then prompted to say more if they had any other comments to add. The two methods used to record data during the interviews included audio and note-taking. As there were two interviewers, one led the interview sessions as the other one took notes.

To plan through the interview process, Kvale's model referred to as the seven stages of interview investigation is used. This model as shown in table 3.1, explains the seven stages that researchers can refer to when carrying out interviews (Kvale, 2006).

Seven stages of interview investigation	
1. Thematizing	Finding out the purpose of the interview and describing the concept before carrying out the interview.
2. Planning	Planning on how to obtain the information and knowledge intended.
3. Interviewing	Conducting the interview.
4. Transcription	Transcription from oral speech to written text. Preparing and clarifying the study for analysis.
5. Analyzing	Selection of method for analysis based on the study's purpose. Analysis based on hypothesis and research questions.
6. Verification	Evaluation of the reliability and validity of the interview findings.
7. Reporting	Presentation of the findings in a perceivable way.

Table 3.1: Seven stages of interview investigation

3.3.2 Focus Group

A group of students facilitated by course tutors discussed their course experiences in plenum. This method was used to enable researchers collect diverse information on the two courses and study what the experience of the class was as a whole. Discussions were triggered during this sessions allowing us to collect different opinions. However, we also realised that some members in the group dominated the discussions and that the less active members only said something when encouraged to (Preece, 2015, p. 237-238). Data was collected through note taking.

To avoid inaccurate registration of data collected from interviews, an audio recorder was used (Jacobsen, 2005, p. 228). This gave access to good sound recording, and made it possible to transcribe data and write quotes (Tjora, 2017, p. 237). However, no sound was recorded during the focus group interviews as focus group interviews were meant to support the individual interviews and to find out if the class as a whole shared or varied in opinions. To reduce the chances of misunderstandings occurring, both researchers were present and took notes during the focus group interviews.

3.4 Reliability and Validity

The reliability of a research method refers to how the method used enables the researcher to obtain results that would be similar to those of another researcher when the same research is performed under the same circumstances (Jacobsen, 2005). The small sample size can affect the extent to which the findings of this study may be generalizable. Rather than to generalize, the quantitative research method has been used to identify patterns and tendencies. Validity refers to how well a method used measures what is meant to be measured (Jacobsen, 2005, p. 19). By using qualitative research methods, researchers are able to get a deeper understanding of tutors and students perceptions of the various elements. Combining the two research methods is referred to as methodological triangulation (Preece, 2015, p. 230).

3.5 Transcription

In order to make a proper structure and prepare the interviews for analysis, oral speech was transcribed (Kvale, 2006). Interviews were performed in the Norwegian language as students were Norwegians and felt most comfortable communicating in Norwegian. In addition to this, the language of communication used in both courses is Norwegian and it would therefore be easier for students to refer to same terms as used in the courses. The use of different Norwegian dialects has been avoided to ensure respondent anonymity. An intelligent verbal transcription method was used and small words like “eh”, “hmmm” are omitted (Issac, 2015). The online program oTranskribe[1] which was used to transcribe is easy to use and gives the opportunity to add audio tracks and listen to it directly in the program.

[1] Online program: http://otranscribe.com/

3.6 Data Analysis

After data transcription was completed, researchers re-listened to all the interviews at least once so as to avoid misunderstandings. Thereafter, data analysis was carried out by grouping the issues that repeatedly came up using meaning condensation and categorization (Kvale, 1996, p. 193-199). The two methods have enabled us to get a clear overview of data and compare students and tutor perceptions. Quantitative data was analyzed using the program Microsoft Excel which is a spreadsheet software that enables numerical calculations and graphical representations.

With a small sample size, it would be difficult to identify patterns in behaviour without merging data. To create graphs and illustrations, the five categories have been merged into three: strongly positive, positive and negative. When reporting findings in the analysis chapter, the three categories are further merged into two: positive and negative. The disadvantage of merging data is that the likert scale loses meaning when some of the categories are removed. We have however included the details from the likert scale in brackets to show the different degrees of agreements or disagreements. We also present the data in percentages but include the number of participants in bracket as percentages can be misleading when small sample sizes are used. To get the right percentages, figures have been normalised where a comparison is done between questions that have a different number of respondents. See more details of the normalization in Appendix F: “Calculation of quantitative data”.

4 Results, Analysis and Discussion

This chapter presents and discusses the findings of this research. The chapter is divided into two sections; Research question 1 and Research question 2. Each question has further been divided into four categories; Collaboration, motivation, digital tools and course structure.

Research question 1: In the courses E-teaching 1 and Nettkunnskap, various elements are used for learning. What are the justifications for using these elements according to the course tutors?
Research question 2: Does participants in the earlier mentioned courses recognize the same elements as important for learning?

Data is presented in percentages and the number of participants given in brackets. The figures in bracket also present the different degrees of agreement/disagreement as collected using the likert scale. For example, 50% (Helt enig: 3/10, Litt enig: 2/10).

The questions from the questionnaires have been attached in the footnotes considering that meaning can be lost in translation. Quotes are used to supplement the findings by adding credibility and weight to the discussions. When using quotes, the interviewers are referred to as “Intervjuer 1” and “Intervjuer 2”. Tutor respondents are referred to as “Tutor” and student respondents as “Student”. However in the transcript document (Appendix B), the interview respondents are referred to as “L” and the interviewers as “M” and “A”.

4.1 Research Question 1 - Tutors’ justification for use of various elements in E-teaching 1 and Nettkunnskap

Presented in this section are the tutors’ perceptions on the elements used and why they consider these elements as vital in online course design. An interview was carried out to find out how the tutors of E-teaching 1 justify the elements they have used in the course. To find out the same for Nettkunnskap, no interview was required as the researchers of this paper were also involved in designing the course.

4.1.1 Collaboration

Tutors of E-teaching 1 termed collaborative learning as the main pedagogical method used in the course.

> **Tutor:** (...) collaborative learning som er det viktigste for meg. At folk jobber sammen for å bygge opp forståelse.
> **Intervjuer 1:** så collaborative learning er det viktigste er E-teaching 1?
> **Tutor:** Det er det

The importance of keeping students active in the learning process and giving them the chance to work together and help one another develop understanding is emphasized. This is in alignment with

Koschmann (1996) who termed learning as an active process of knowledge construction, and Dillenbourg (1999) who emphasizes on the importance of working in teams to come up with solutions to problems. Tutors of E- teaching 1 explained that to understand course content, students should discuss with peers and formulate what they have learned in their own words. They also explained that if a student cannot formulate in his/her own words, then it means that they have not understood the concept properly. By discussing with others, students also get a different perspective of the same matter. Collaborative learning in E-teaching 1 is also meant to enable learners to develop skills that they need as teachers to function in a virtual classroom. This is why it is important for learners to practice collaboration and not just learn it in theory. Tutor's reasoning is in alignment with Willingham (2010) who has stated that for students to learn skills such as collaboration, innovation and creativity, it is necessary that they put these skills into practice. By practice Willingham (2010) means that one sees what they are doing wrong, and tries to find a strategy to make it better. Felder and Brent (1996) also termed practice and feedback as vital to enable students to develop skills on collaboration.

However focused the tutors are on promoting collaborative learning, they have stated that it comes with its challenges. Students who are used to the instructivist way where the teacher is responsible for teaching will have a hard time when they are made responsible for their own learning. This is in alignment with the second assumption of the andragogy model: the role of the learner's experience. Adults have through the years developed habits that they may not wish to change easily (Knowles & associates, 1984, p. 10). Another difference that the E-teaching 1 tutors bring to our attention is that students are likely to experience difficulties when expected to develop proper understanding of the content while they have been used to cramming and reproducing knowledge.

> **Tutor:** (...) det er alltid en terskel å komme over for alle, og de fleste greier det etter en stund, så jeg regner med at det er en del studenter som har store problemer med å gå over til collaborative learning, det å bygge opp et resultat flere sammen (...)
> **Intervjuer 1:** men hvordan gjør du dette? hvordan innfører du dem i en mer kollaborativ..?
> **Tutor:** den eneste måten å innføre det på mener jeg er å gjøre det i praksis, hands on. Så du kan lese så mye teori du bare vil, du lærer det ikke før du gjør det.

Tutors reasoning is in agreement with Felder and Brent (1996) who also stated that students who are used to the traditional ways of teaching are likely to resist the modern approach that requires them to be responsible for their own learning. E-teaching 1 tutors also explained that they have experienced that students from the older generation are the ones who are likely to have more difficulties with this system. They address this challenge by creating activities that encourage students to work in groups and share their understanding with one another. Several studies have also discussed how to address this challenge. Felder and Brent (1996) encouraged facilitators to guide students as they convert from dependent to autonomous learners by making a proper structure. Vrasidas (Vrasidas & McIsaac, 1999) also explained that including collaborative activities in the course structure can encourage interaction with peers in the online learning environment. Another challenge that is related to collaborative learning in E-teaching 1 is the group of students that the tutors refer to as "free-riders". These are students who are not willing to take initiative to contribute to the group works, and greatly depend on others to do the work for them.

Tutors of Nettkunnskap have also expressed the importance of collaborative learning but to a smaller

extent. Unlike in E-teaching 1 where the students are required to work in groups in most of the activities, Nettkunnskap has only one group discussion in every module. Less collaborative learning has been implemented in Nettkunnskap so as to enable students to allocate time as it best suits them without having to depend on the work schedule of others. However important it is to encourage collaborative learning and a sense of community in learning environments, tutors in Nettkunnskap maintain that it is also important to support autonomy where students can decide on their progress without depending on the other learners.

Both tutors of E-teaching 1 and Nettkunnskap share the belief that collaborative learning creates a sense of community in online learning and is a way to motivate students as they encourage one another through the learning process. This is in alignment with Vesely's (2007) study that stated that interaction between learners in the online environment can enable them to achieve their goals. Vesely also stated that the tutor has a role of modeling the online community by leading, contributing, and providing timely and constructive feedback to group discussions. Tutors in both E-teaching 1 and Nettkunnskap however stated that they only contribute to group discussions when they experience that students are stuck or have taken the wrong direction. Some of the group discussion exercises require the members to choose a moderator who has the role of leading the discussion and encouraging less active members. Oztok (2013) also explained that having the students play the role of a moderator helps to distribute the tutors' role to the students, and that committing to their moderator roles will increase interaction and participation. In relation to communication in the discussion forums, tutors in E-teaching 1 have experienced that the discussion forums in Fronter function well and that asynchronous discussions work well for the students as it enables them to work from anywhere at any time without having to depend on other students. In addition to this, they explain that asynchronous communication provides students with ample time that enables them to experiment, argue and correct mistakes. In this way the student will learn from trying new things. Tutors perception of asynchronous communication is in alignment with Johnson's (2006) study which stated that asynchronous communication gives the student enough time to complete and reflect on an activity, and gives each learner the opportunity to be part of the discussion. Tutors in E-teaching 1 also explained that asynchronous discussions give a better chance for less experienced members to discuss with the more knowledgeable peers. The tutor used an example of a 22 year old student who has a better opportunity of discussing asynchronously with a 50 year old professor when provided with more time to respond to a conversation after doing some research. Tutors perception is in correspondence with Oztok (2013) who defined increased time on task as one of the advantages of asynchronous communication as it provides the students with sufficient opportunity and extra time to research and reflect on the task. Tutors in both subjects have also experienced that students have a tendency to use social media platforms to discuss synchronously. The Learning Management System Neo that has been used to deliver Nettkunnskap has a chat function, but this did not seem to function well as it was on and off. Tutors state that this could have affected collaborative learning as the system did not support the students' wishes to communicate with peers through the chat function. Research performed by Hornik (2007) found that when technology does not function according to the learners wish, it will be perceived as a barrier thus reducing learner satisfaction. This will also lead to users underutilizing the elements that do not match their preferences.

While tutors of E-teaching 1 divided students into groups at the beginning of the course, students were given the freedom to choose their own groups in Nettkunnskap. Students in Nettkunnskap had worked together in previous projects and tutors assumed that they were in a position to work this out by themselves. Tutors in E-teaching 1 disagreed to this by explaining that students have a tendency of choosing to work with people that they are familiar with. Vesely (2007) also explains that the tutor should ensure to help students come into contact with one another so as to help them form a community in the learning environment.

4.1.2 Motivation

Tutors in both courses agreed that they have a role to play when it comes to student motivation. Tutors' perception corroborates Bolliger (2004) who stated that in addition to being a facilitator, the tutor is also a motivator for the students. E-teaching 1 tutors explained that their experience is that a majority of the students were motivated and took the initiative to work hard. Students' self motivation can be related to Deci and Ryan's (2008) Self determination theory (SDT) which states that the eagerness and curiosity is a natural characteristic in people that drives them to work towards being successful. SDT also takes into consideration that people can be alienated and passive. Tutors of E-teaching 1 agree to this as they state that there are students that do not seem to be motivated and need constant encouragement from fellow students and instructors. Tutors stated that even though it is not possible for them to motivate all students, they follow students' progress in the course and contact those that are not participating through mail. Another way of motivating students in the course was through the group works where students had contact with other group members and also encouraged and informed one another. Tutors believed that students rather than course tutors can push one another to participate constantly in the course. The constant discussion activities are not only meant for the students to learn from one another but also to motivate one another as students can easily feel lonely and discouraged in online learning. Tutors perception of group works is in alignment with Ausburn's (2004) and Vesely's (2007) studies which have shown that students value communication and interaction with one another in online learning environments. SDT also explains that relatedness is one of the psychological needs that should be nurtured in social contexts to promote optimal motivation (2008). Tutors in Nettkunnskap have also acknowledged that peers play an important role when it comes to motivating fellow learners in an online environment. In addition to this, gamified activities and progress charts have been used in the course to motivate the students. Students were awarded with points or badges every time they successfully completed a task. These points were to be collected through the course and would determine if a student had passed the course or not. Other gamified activities such as role plays, animations and "drag and drop" exercises were also used to increase interactivity and introduce playfulness and variation in the course. Visual and sound effects were also added to these activities as a way of providing immediate and perceivable feedback to the learners. (Whitton, 2014; Salen & Zimmerman, 2004). The progress charts have been used to enable both the students and tutors track students' progress. The importance of employing a tracking system that can help both students and tutors to see how far the student has come in the course has also been explained by Wolf (2012). This way the tutors are able to identify students that need extra assistance and fast learners who need more challenging tasks.

Tutors in Nettkunnskap emphasized that it is important for the students to experience volition in the course. These are adult students that are employed, have families and are studying part-time. Students should have the freedom to study when it is most convenient for them as long as they achieve the Intended Learning Outcomes (ILOs). This corroborates self-concept which is one of the assumptions in the andragogy theory by Knowles (1984). Rather than being dependent, adult students are self-directed learners who prefer autonomy to instruction. Nettkunnskap also gave students the freedom to choose which groups they wanted to work in and provided them with a tentative plan. The plan was meant to give them an overview of how they would progress in the course, but students could choose when they were in a position to complete course work as long as they managed to hand in within the course's final deadline. Self-directedness and the opportunity to structure own learning have also been discussed by Bolliger (2004) as factors that determine student satisfaction in online courses. A study of two American law schools also showed that students provided with autonomy over choice of subjects, relationship with professors, and how assignments are done have achieved better scores and grades (Sheldon & Krieger, 2007). However, as tutors in E-teaching 1 have remarked, a tentative plan can be confusing when it comes to group works as students are likely to be in different parts of the course. Tutors in Nettkunnskap advised students to arrange group discussions within their groups and ensure that discussion activities are completed.

E-teaching 1 provides the students with a study guide that is a presentation of the whole course. Tutors have stated that the study guide gives the students responsibility for their own learning and that it is up to the students to determine how they progress with the help of the study guide. Students are also required to make contracts at the beginning of the course that would help group members organize work within the groups. Tutors intention to include learners in the decision-making process is in alignment with Dillenbourg (1999) who stated that to promote collaborative learning, students should create shared goals at the beginning of the course. When group members take part in negotiating goals, they create shared goals and develop mutual awareness of the goals. Knowles (1984) also stated that adult learners are self directing and have the need to be part of the decision making process. When decisions are made for them, they will use their energy in pursuing the need to be self directing than in learning. While students have been provided with some course material, they also have the freedom to search for content on the internet that would enable them to develop skills on critical thinking and knowing where to find the information. Siemens (2005) and Brown (2006) have also explained that it is important for students in the 21st century to know where and how to find valid and reliable information that can be used to solve a given problem. Cercone (2008) also stated that students should be provided with links that can enable them access different learning resources on the internet. This will enable students to choose resources that are most suitable for the learning styles that they prefer. In addition to the study guide an assignment schedule that is supposed to be followed strictly has been provided and every student is expected to make deliveries by the given deadlines. Tutors in E-teaching 1 stated that for collaborative learning to be successful, a strict plan with cut off dates is necessary as time frames will make it possible to ensure that students' progress at the same pace. The students who participated in Young's (2006) study also agreed that they needed a structure with set due dates to facilitate their progress in the course. Tutor's in E-teaching 1 further explained that students freedom is partly taken away so as to ensure the functionality of collaborative learning. There is no guarantee that students who hand in late will have their deliveries looked at by either the

tutors or peers. Tutors experience is that when provided with a period of five days, students agreed on using the first two days to research, and the last three days to discuss, sum up and hand in the assignment. Time frames are meant to train students on time management and student discipline. Tutors of E-teaching 1 meant that a tentative plan can be confusing as the student will be unsure when to hand in and also the course tutor won't know if the students have submitted on time.

> ***Tutor:*** *(...) vi har jo fastsatt en plan med cut-off dates. Som gjør at du tvinges inn i en viss progresjon så du får tidsrammer, men du får cut-off dates, og det gjør at..*
> ***Intervjuer 1:*** *altså endelige frister?*
> ***Tutor:*** *ja, endelige frister som leverer du etter dette her så er det ikke sikkert at vi gidder å se på det. Eller at gruppa tar hensyn til deg. (...)*

> ***Intervjuer 2:*** *hvorfor mener dere at det fungerer bedre enn en tentativ plan?*
> ***Tutor:*** *for tentativ plan da er det litt flummy, hva mener du egentlig hvis jeg leverer inn en uke senere eller to uker senere, spiller det noen rolle? Og det gjør det. For hvis du skal jobbe i en gruppe og det er det vi legger veldig stor vekt på at du skal fungere i en gruppe. Så må du være enig om tidsplanen. Så vi tar fra deg en del individuell frihet gjennom å tvinge deg til å jobbe i en gruppe. Så du får ikke lov til å gjøre hva du vil lenger.*

4.1.3 Digital Tools

Tutors in Nettkunnskap have used videos, animations and gamified activities to increase interactivity, engagement and students' interest in the course. In regards to learning videos, videotaped in-person lectures and short videos have been used. The videotaped in-person lectures were recorded during a class session with another class to be reused in the Nettkunnskap course. Tutors in Nettkunnskap clarify that this was done to save time and resources. On the other hand are the short videos that are used to increase chances that students are attentive throughout the videos and learn the most out of them. Tutors perception is in alignment with Guo's (Guo et al., 2014) study that has termed shorter videos to be more engaging. Nettkunnskap tutors also explain that it was important that the video content was variational, easy to follow and involve elements that students recognize as familiar. One of the videos was made in a school environment and students in the school involved. The thought behind this was that the students in the course would recognize the environment as their familiar working environments and relate it to their everyday lives. This corroborates Guo's (2014) research which recommends filming instructional videos in an informal setting as this is more likely to introduce a personal feel than a studio recording. E-teaching 1 has also used videos as an alternative to the text content. Tutors explained that they have informed the students that they have a choice to either read text or watch the videos but their experience is that the majority use both text and videos. When asked about the length of the videos, one of the E-teaching 1 tutors explained that the first videos he produced were between 15-20 minutes, and that the length have a relation to the fact that he is used to giving double-hour lectures. The use of long videos contradicts Guo's (2014) study that terms short videos as more engaging. It is certain that tutors acknowledge this as they state that the recent videos have been reduced to under 10 minutes and the long ones divided into various series.

> ***Intervjuer 1:*** *(...) I forhold til lengden på filmene, er det noe grunn til at dere har valgt å ha dem den lengden de er?*
> ***Tutor:*** *du vet, jeg er jo vant til som gammel lærer at vi holder sånn dobbel time forelesning (ler litt). Du trykker på en knapp ikke sant, legger på 5 kroner så kommer det 45 minutter forelesning, så jeg vet jo det at når jeg sitter å ser på en gammel, kjedelig lærer som holder foredrag, de er ikke skuespillere, de er ikke profesjonelle underholdere. Så jeg er nødt til å uttrykke meg kortere. Så de første filmene jeg spilte inn med forelesning var på sånn 15-20 minutter. Etterhvert som jeg får mer praksis på dette, prøver jeg å holde dem nede på 10 minutter og under det. Så jeg har blitt veldig mye flinkere til å dele opp i forelesningsserier for jeg vet jo det at the attention span is pretty short. Så går du utover 10 minutter så begynner folk å gå lei.*

Videos in E-teaching 1 have also been produced in a studio with the tutor standing in front of the camera while addressing the students by the help of a power point. Tutor explains that old style of teaching has been used to make the older generation students feel comfortable and that this is the safest way he could have done it since he is an old teacher.

> ***Intervjuer 1:*** *men oppsett på filmene, står gjerne foran, du snakker med powerpoint, hvorfor har du valgt å gjøre det sånn?*
> ***Tutor:*** *Hvordan skulle vi ellers gjort det?*
> ***Intervjuer 1:*** *du kunne hatt en animasjon, du kunne hatt en..*
> ***Tutor:*** *ja, så er det klart vi kan legge inn korte filmer og sånt no, men med en gang du legger inn en filmsnutt på la oss si 3 minutter så får du plutselig 15 minutter istedenfor, så da må vi heller legge inn linker til; se en youtube film eller noe sånt. Så jeg tror nok det har noe med at mange studenter føler seg komfortable med den tradisjonelle forelesningen stilen. Og det er klart vi som lærere føler oss også komfortable der da har liksom vi gjort jobben vår når jeg har hatt en forelesning. Så det er nok gamle følelser bare.*
> ***Intervjuer 1:*** *så det er litt enkelt og greit å gjøre det trygt?*
> ***Tutor:*** *ja*

Tutor's reasoning here is in contradiction with Guo's (Guo et al., 2014) study which states that studio recordings engage students less when compared to videos produced in informal settings. The tutor standing in front of the camera can also be related to videotaped in-person lectures which has been defined as an old way of using communication media (Guo et al., 2014). In addition to the videos, other digital materials used in E-teaching 1 include e-books.

Using Neo as a LMS to design Nettkunnskap made it possible to use SCORM[1] packages such as gamified activities created in Adobe Captivate[2]. Tutors are aware that students had a problem accessing the activities at some point in the course as the university administration did not update this function in time. Neo also has diagrams that give the tutors the possibility to monitor students and see if there are students that need follow up.

[1] SCORM: Sharable Content Object Reference Model.*"SCORM is a set of technical standards for e-learning software products." (Software, n.d.)* Read more: http://scorm.com/scorm-explained/

[2] Adobe Captivate: E-learning authoring tool (Captivate, n.d.). *http://www.adobe.com/no/products/captivate.html*

4.1.4 Course Structure

Tutors in Nettkunnskap have defined course structure as an important element to enhance learning in the online environment. A proper structure ensures that students are conversant with the interface, allows easy navigation and enables students to monitor their progress. Tutors justification of a proper structure is consistent with other studies that have also termed structure as an important factor to ensure student satisfaction in online learning (Northrup, 2002; Swan et al., 2000; Vrasidas & McIsaac, 1999; Yukselturk & Yildirim, 2008). Tutors state that to create a good structure, a Learning Management System (LMS) that enables the delivery of a well-structured course is required. The online course Nettkunnskap was created at a time that the University was testing different platforms that would replace Fronter. This gave the course tutors the possibility to look at different LMSs and to choose Neo which the tutors define as user friendly and able to give a good overview to the students. This LMS has a menu to the left where course content is arranged in a chronological manner making it easy to navigate through the folders. Neo also provides diagrams that enable students to see how they are progressing in the course and gives the tutor the possibility to monitor students and provide support where necessary. Additionally, the program provides a checklist that shows how far the student has come and what is left to be done. The possibilities that Neo gives to the students are in alignment with Northrup's (2002) finding which explains that students should have access to a system that enables them to regulate own learning and monitor their progress. Since Neo was a new platform that none of the students had used before, a "how-to" document and video was created to help students get started in the course. A study conducted by Swan (2000) also stated that online learners should feel comfortable with the course interface and have a good overview of where to find resources, how to perform activities and when to perform them. Northrup's (2002) adds to this by stating that students should have access to tutorials that can assist them to perform the given tasks.

When asked about how effective Fronter was when it comes to creating a good course structure,one of the E-teaching 1 tutors responded by saying that Fronter was a great LMS and that course content was the same despite which platform one chooses to use. He continued to explain that chaos in an online system cannot be blamed on the LMS used for delivery as there is likely to be a problem with folder structure in an online environment with many participants.

> ***Intervjuer 2:*** *(...) er dere fornøyd med fronter?*
> ***Tutor:*** *helt greit.*
> ***Intervjuer 2:*** *ja, dere syns fronter er helt greit, til og med deg som skal over til canvas? (ler litt sammen alle)*
> ***Tutor:*** *No problem. Pedagogikken er den samme uansett hvilken plattform jeg bruker om jeg bruker blackboard eller..*
> ***Intervjuer 2:*** *så struktur er ikke viktig i forhold til linking og mapper og sånn?*
> ***Tutor:*** *nei*
> ***Intervjuer 1:*** *det er ikke LMS-et det kommer ann på?*
> ***Tutor:*** *det er ikke lms-et det kommer ann på, og du får akkurat de samme problemene uansett når mange mennesker skal inn og jobbe sammen med vill forvirring i mappestruktur*

Since Fronter does not give a checklist that provides an overview of what has been covered by the

students, E-teaching 1 tutors monitor students' progress through the frequent activities that students are required to complete and hand in. Reflection forms and quizzes are also a way to help both tutors and students to determine if the students have achieved the ILOs. Fronter also provides a login overview which can enable tutors to identify if a particular student has taken a long time without being active in the course. Tutors contacted less active students.

Tutors in both courses provided a study guide that should give the students an overview of the whole course including course content and various activities. The study guide in E-teaching 1 has also provided the approximate hours that students should use on various activities. Students are expected to use both the course description and the study guide so as to know what to expect of the course and the goals they will achieve at course completion. A study conducted by Bolliger (2004) has also put emphasis on communicating course goals and objectives at the beginning of the course. Tutors in E-teaching 1 have stated that the course would be impossible to complete within a given time frame if a study guide is not provided. Students in a study carried out by Northrup (2002) agreed that it is vital to have access to a system that enables them to monitor progress and shows when activities are due so as to help them organize their weekly assignments. Tutors in E-teaching 1 emphasize that the time and work invested in creating a complete study guide is worth the effort as this is a good way of giving students an overview of how they should make progress in the course. Tutors in E-teaching 1 stated that they have received positive feedback from the students that the study guide works well. They go on to explain that they are aware that some sentences in the study guide can be misunderstood and should have been formulated in a better way.

Both courses have been structured in a way that requires students to participate actively in the activities and group discussions from the first to the last module. Various activities will contribute to student's final grade. Research done by Vrasidas (1999) has also shown that adding activities that require students to participate in group discussions in the structure can help improve interaction among learners. The same applies to including participation in group discussions to the final grade. Tutors of E-teaching 1 explain that it is important that students are constantly involved in the learning process and do not only aim at passing a test at the end of the course. The course does not aim at testing how clever the students are but rather to ensure that students have reached the goals and achieved the intended learning outcomes. Tutors stated that some of their roles are to create a good learning environment by facilitating the virtual classroom with group works, learning resources and discussion forums. This is in alignment with Nanney (2004) who explained that the tutors in a student-centered environment should facilitate learning by acting as a guide through the learning process, designing relevant tasks and providing feedback.

> ***Intervjuer 1:*** *Hva er din, eller deres, rolle i e-teaching 1?*
> ***Tutor:*** *Vi betrakter det som det viktigste vi gjør, det er å lage the study guide, så den legger vi mye jobb i, og bygge opp det her, la oss si, læringsmiljøet. Vi møblerer så og si det virtuelle rommet, med grupperommene, der legger vi inn møbler, og læringsressurser og diskusjons-rom og sånt, også tenker vi kanskje litt gammeldags med at vi tror det er såpass mange gammeldagse mennesker som tar disse studiene, at de er nødt til å ha forelesninger, det gir dem trygghet. Så derfor spiller vi inn en del videoforelesninger, riktignok ganske korte, men vi kaller det en læringsressurs (...).*

4.2 Research Question 2 - Students' perceptions of how the course design elements impacted learning

This section presents and discusses how the students perceived the elements used to design the two courses and how the elements affected their learning experiences. Data presented will enable us to determine whether there is a discrepancy between tutors' and students' perceptions of design elements in the two online courses. This section is divided into four categories; collaboration, motivation, digital tools and course structure.

This analysis presents data gathered from 12 participants who took the courses E-teaching 1 and Nettkunnskap. 9 of the students were women and 3 men. Figure 4.1 shows that 75% (9/12) of the students had not been part of an online course before taking E-teaching 1.[3] It was the first time these students were getting involved in an online course. The same does not apply to Nettkunnskap as students took the course the following semester after completing E-teaching 1. As shown in figure 4.2, 82% (9/11) of the students answered that they had never been part of the student-centered way of learning and that it was the first time they were participating in a course where they were expected to take responsibility for their own learning.[4]

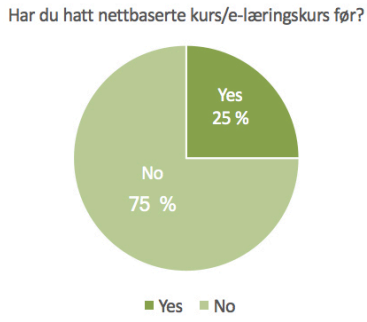

Figure 4.1: Students' responses to whether they had taken an online course before

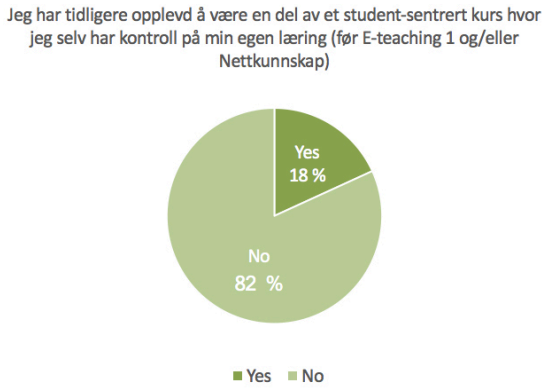

Figure 4.2: Students' responses to whether they had been part of a student-centered course before

[3]Question: Har du hatt nettbaserte kurs/e-læringskurs før?

[4]Question: Jeg har tidligere opplevd å være en del av et student-sentrert kurs hvor jeg selv har kontroll på min egen læring (før E-teaching 1 og/eller Nettkunnskap)

4.2.1 Collaboration

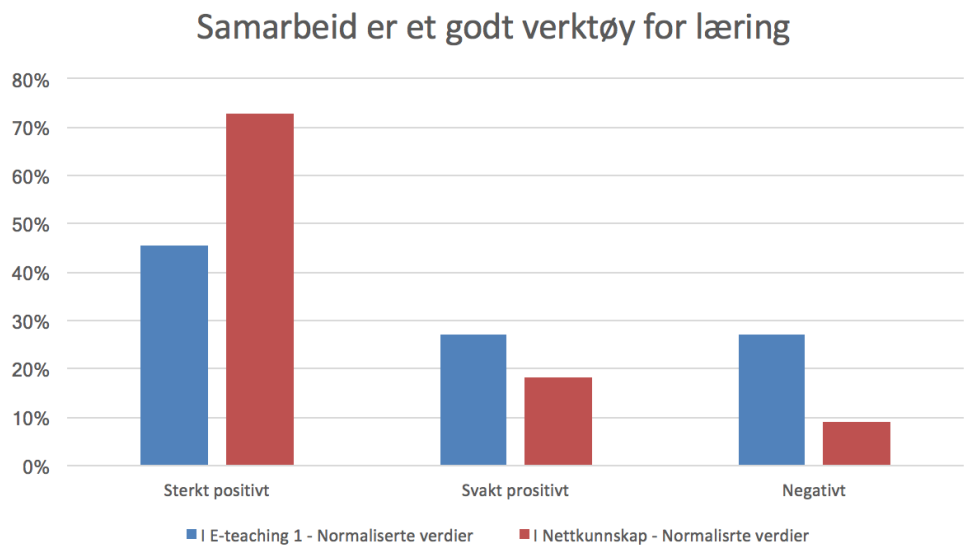

Figure 4.3: Response on whether collaboration was perceived to be a good tool for learning

Figure 4.3 shows that while 91% (Helt enig: 2/11, Ganske enig: 6/11, Litt enig: 2/11) of the students perceived collaboration as a good tool for learning in Nettkunnskap, 72% (Helt enig: 3/9, Ganske enig: 1/9, Litt enig: 2/9) perceived the same in E-teaching 1.[5] Learners perception is in alignment with Dillenbourg (1999) who stated that the activities that students get involved in during group discussions enable them to construct knowledge as they explain, justify, disagree and reformulate their ideas. Siemens (2005) also stated that one can extend his/her knowledge by connecting information from different sources such as various learners.

[5]Question/Statement: Samarbeid er et godt verktøy for læring i MM-106 Nettkunnskap/E-teaching 1

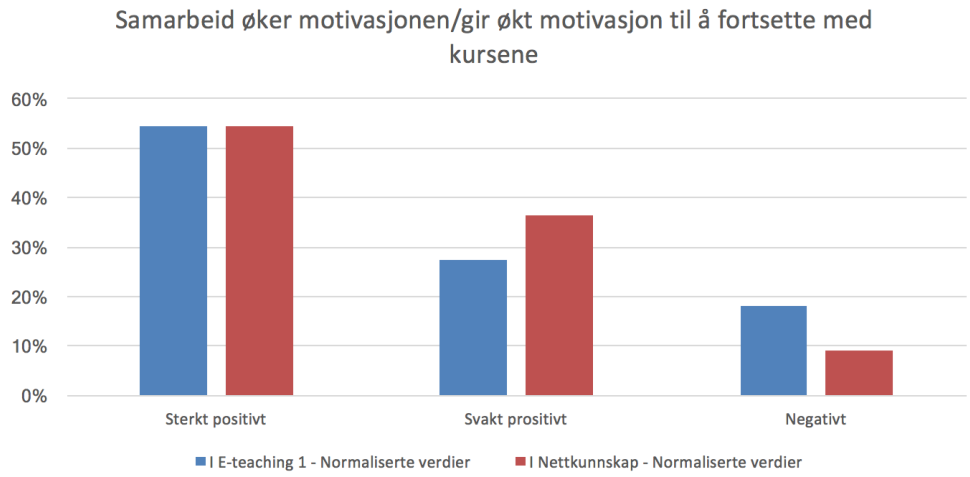

Figure 4.4: Students' responses to whether they perceived collaborative learning as motivational

Learners in both courses attributed their positive attitude towards collaborative learning to students motivating one another. Figure 4.4 shows that while 82% (Helt enig: 3/9, Ganske enig: 2/9, Enig: 2/9) of the students agreed to that collaboration in E-teaching 1 was motivational, 91% (Helt enig: 3/11, Ganske enig: 3/11, Enig: 4/11) agreed to the same in Nettkunnskap.[6] In addition to this, all the interview respondents stated that they were satisfied with their working groups. Students response corresponds Bolliger's (2004) study that termed learner-learner interaction and learner-tutor interaction as vital to the learning process. Similarly, SDT by Deci and Ryan has termed relatedness as a psychological need that can lead to increased motivation when fulfilled (2008). By students working in groups, they fulfilled their need to be cared for and to care for others. All students in this study (100%) (Helt enig: 2/11, Enig: 6/11, Litt enig: 3/11) also agreed that contributing to the discussions made them feel appreciated knowing that they had contributed to other peoples' learning.[7] It is also clear that students appreciated feedback from peers as 91% (Helt enig: 1/11, Enig: 7/11, Litt enig: 2/11) of the students agreed to the statement that peer review is important in the learning process.[8]

On the other hand, there are factors that students related to the poor functionality of collaboration in the two courses. 4 out of 5 interview respondents attributed poor collaboration in E-teaching 1 to the heavy workload in the course. Students stated that the course requirement to collaborate in almost all the activities led to inadequate time to read inputs in the discussion forums, do proper research and contribute to the discussions. Students' reaction to many group discussion activities is in alignment with the research carried out by Northrup (2002) where students showed frustration over many interactive assignments. One of the students stated that she ended up contributing in the discussion forums without doing proper research due to inadequate time.

[6]Question/Statement: Samarbeid gir økt motivasjon/øker motivasjonen til å fortsette med E-teaching 1/MM-106 Nettkunnskap

[7]Question/Statement: Jeg opplever å være verdsatt når jeg bidrar til andres læring i gruppearbeid og diskusjoner

[8]Question/Statement: Tilbakemelding fra medstudenter er nyttig underveis i et nettbasert kurs

> ***Student:*** *du skulle inn å diskutere ditt og diskutere datt så ofte så føltes det ut som du måtte bare forte deg å gå inn å slenge inn en kommentar å.. ja, gå ut igjen så jeg syns ikke det, det gav ingenting.*
> ***Intervjuer 1:*** *Nei..*
> ***Student:*** *Du satt ikke igjen med noe konstruktivt*
> ***Intervjuer 1:*** *Det var bare noe du måtte på en måte?*
> ***Student:*** *Du måtte bare gjøre det*

Despite not having frequent discussion activities in Nettkunnskap, students still showed the need for more individual activities. One student mentioned during the interview that since the subject was easy, he did not need input from others to successfully complete the course. Student's perception could be due to his preference to work individually. When explaining the individual differences in regards to learning styles, Felder (1996) stated that not all learners prefer the active and interactive way of learning. Huang (2002) also points out that even though collaborative learning puts an emphasis on working in groups, adult students are individuals that have prior experiences and habits that might make it harder for them to function in groups.

The other factor that was related to how poorly collaboration functioned in the two online courses was tutor support. Even though students did not need much support in Nettkunnskap as they found the subject to be easier to learn and understand, students expressed the need for tutor contribution in the discussion forums. Students' perceptions are in alignment with the research findings of the study that was performed by Vesely (2007) which explained that students needed to experience instructor presence in the learning community. Whitton (2014) has however explained that tutors should be careful not to provide frequent feedback on tasks that are relatively easy as this can be perceived as feedback intrusion.

In regards to the groups, some of the students mentioned that tutors should create the groups to enhance collaboration from the very start.

> ***Intervjuer 1:*** *(...) samarbeid i nettkunnskap hvordan fungerer det?*
> ***Student:*** *det fungerer å greit det var litt surr i begynnelsen når ikke vi visste helt hvordan vi skulle ha grupper og sånn, men når vi fant ut av det på et eller annet vis så fungerte det greit.*
> ***Intervjuer 1:*** *syns du at det burde vært lagd grupper fra lærer fra før av?*
> ***Student:*** *for å forenkle prosessen, for å gjøre det mer lettvint for elevene så er jo det egentlig veldig greit*

While students were satisfied with the groups that they were already divided into at course start in E-teaching 1, the same did not apply for Nettkunnskap where students were required to create their own groups. Students stated that this was confusing and even though they had worked together in other courses, it was still unpractical to leave this task to them. Students perception is in correspondence with the second stage of Salmon's five-stage model that emphasizes the importance of tutors assisting students to come into contact and connect with one another in an online environment (Salmon, 2002). Vesely's (2007) also explains that tutors should provide a structure that includes "getting to know you" activities which will help students to socialize at the start of a course. Another concern raised in relation to the groups was the need to create a clear overview such as a document that showed which group each member belongs to. Students also suggested that there was need to have a face-to-face session before the semester started. In this meeting, students would be introduced to the course content, the LMS and divided into various working groups. Students' suggestion is consistent with that of Young (2006) who explained that learners should be given the opportunity to get comfortable with the medium used in online learning. Young has recommended face-to-face orientation meetings where students can get support from online support technicians before the online course starts. Also in regards to group works, learners stated that even though they were required to hand in activities in the specific groups that they belonged to, it was important for them to discuss with others in various groups so as to develop connections with the other students in the class. The solution in E-teaching 1 to this need is the course café which is a discussion forum where all students can participate and interact with one another. Vesely (2007) also recommends rotational groups as a technique that should help students develop relationships in learning environments. Despite the comments that creation of groups was the tutors' responsibility, one of the students explained that her previous group functioned well and that they were satisfied to be able to continue in the same group.

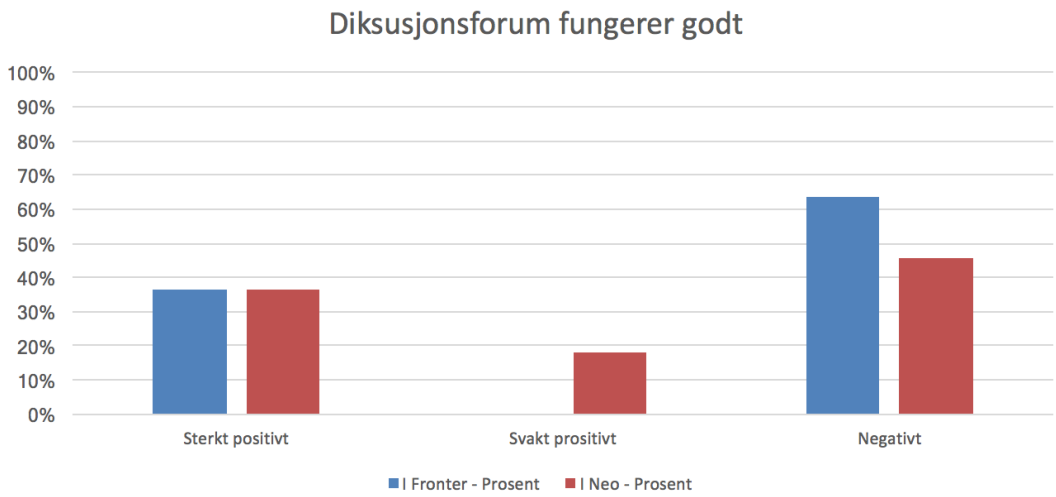

Figure 4.5: Students' opinions on discussion forums in Fronter and Neo

The other factor that impacted collaborative learning is the LMSs that have been used to deliver the two courses. As shown in figure 4.5, 64% (Litt uenig: 5/11, Helt uenig: 2/11) of the students reacted negatively to the statement that discussion forums worked well in Fronter, while 45% (Litt uenig: 5/11) reacted negatively to Neo.[9] One of the reasons why students perception is negative seems to be connected to asynchronous communication in the two courses.

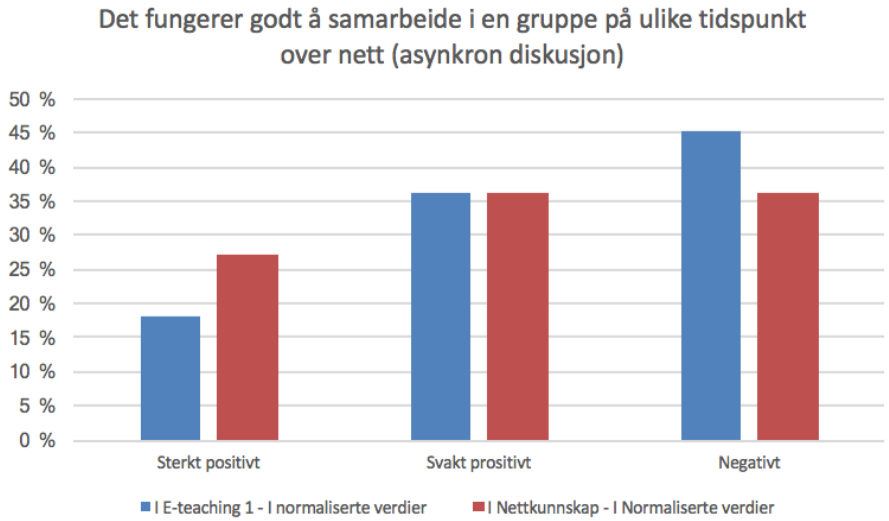

Figure 4.6: Students' opinions on how asynchronous communication functioned

Figure 4.6 shows that students have different opinions as to how well asynchronous communication worked in both Fronter and Neo. While 54% (Ganske enig: 2/9, Enig: 3/9) of the students agreed to that asynchronous communication works well in E-teaching 1, 63% (Helt enig: 2/11, Ganske enig: 1/11, Enig: 4/11) agreed to the same in Nettkunnskap.[10] Students stated that having to wait for others to participate in the discussions in order to move on was inconvenient and time consuming. Students

[9] Question/Statement: Diskusjonsforum fungerer godt i Fronter/Neo

[10] Question/Statement: Det fungerer godt å samarbeide i en gruppe på ulike tidspunkt over nett (asynkron diskusjon) i E-teaching/MM-106 Nettkunnskap

perception about asynchronous discussion is in agreement with the findings of Swan (2000) where asynchronous communication was connected to the difficulties students experienced in projects where they were required to work in groups.

Unlike Fronter, Neo has a chat function that enables the students to communicate synchronously in addition to communicating asynchronously. However, the analysis of close-ended questions has shown that the chat function was not popular among the students. 36,4% (4/11) of the students stated that they preferred to carry out discussions on social media like facebook,[11] and 36,4% (4/11) were not aware that there was a chat function in Neo.[12] The class also had a facebook group where they could share posts and comments with one another. Both courses gave students the freedom to choose the discussion platform that they wanted to use. During the interviews, one student stated that using facebook chat worked well as it made it possible to communicate synchronously. Students' perception in this study is in agreement with Johnson (2006) who explained that it is beneficial to supplement asynchronous communication with synchronous communication as synchronous conversations promote social presence and increase interaction, thus addressing isolation issues that may arise in online courses. Tutors should however be aware that discussions that happen beyond the instructors scope such as outside the learning platforms can lead to responses that are ineffective and sometimes erroneous (Huang, 2002).

The poor functionality of the discussion forums was also related to the fact that both Fronter and Neo made it difficult to know if there was a new post as no notification was given. Neo has this function but it does not look like students were aware of it as it has to be turned on by the user. Even though Fronter and Neo has a system that arranges the discussion inputs in threads and links and is meant to give a good overview in the forums as discussed by Oztok (2013), students were still dissatisfied as lack of notifications meant that students had to physically log in just to check if there were new inputs in the discussion forums. This proved to be tiresome, demotivating and time consuming. All students agreed that notifications would have made discussion forums better (Helt enig: 1/11, Enig: 6/11, Litt enig: 4/11).[13]

Even though the implementation of collaboration seem to have its downsides that should be further looked into by tutors of these two courses, it is a powerful tool when it comes to developing a sense of community in an online environment. One student stated that even though it seems as working in groups was confusing and discouraging at the start of the E-teaching 1 course, it got better as students got used to the system.

[11] Question/Statement: Chat funksjon i Neo var et godt verktøy for kommunikasjon, svar: Synes det var bedre å bruke chat på facebook (sosiale medier)

[12] Question/Statement: Chat funksjon i Neo var et godt verktøy for kommunikasjon, svar: Jeg visste ikke det fantes en chat funksjon

[13] Question/Statement: Gruppediskusjoner ville vært bedre om jeg fikk varsel hver gang en ny post ble opprettet

4.2.2 Motivation

During the interview students were asked if they experienced autonomy in the two courses. One of the factors that came up several times was the constant group discussions that seemed to diminish students' motivation:

> ***Student:*** *(...) jeg liker å jobbe i gruppe, men ikke hver eneste oppgave*
> ***Intervjuer 1:*** *så hadde det vært litt individuelt og litt gruppe så hadde det vært bedre?*
> ***Student:*** *ja, fordi man har en annen hverdag. Jeg har jo en seksåring og mann som er byggmester og har eget firma og mange ansatte sånn at man kan ikke disponere fritiden. Også i forkant av studiet her så var jeg å snakket med (navn på studiekoordinator) og sånn "å det går så bra", "det her er lagt opp så man kan ta det ved siden av jobben sin".*
> ***Intervjuer 1:*** *men det var ikke din opplevelse av dette kurset?*
> ***Student:*** *nei, ikke når du må ha så mange felles innleveringer og så mange felles diskusjoner*

The frequent discussion activities in E-teaching 1 are considered to take away students' autonomy as students feel that they are compelled to keep on checking and contributing to the group discussions before the deadlines. Despite having about five days between each activity as explained by the tutors in this course, some students did not feel that they had enough time to successfully complete each activity. One student mentioned that the strict deadlines made it impossible to go through the activities and understand them properly. This can be related to the fact that students in a course move at different pace and there is need to take care of each student and the pace at which they learn. Cercone (2008) stated that tutors should address the different learning styles by ensuring that learners can move at their own pace and have adequate time to master the content. However, as tutors of E-teaching 1 have stated, providing students with autonomy that enables them to use the time they need to complete activities proves to be a challenge for collaborative learning.

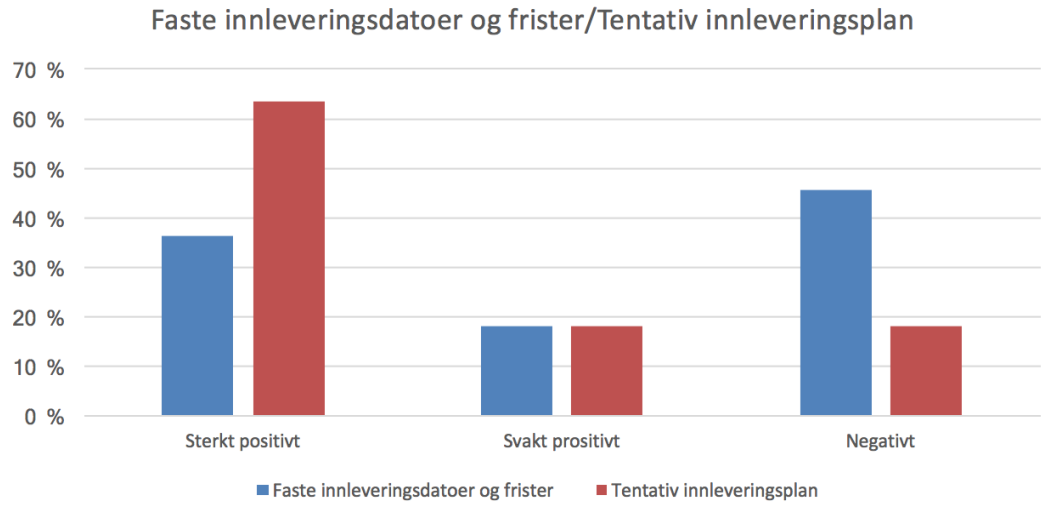

Figure 4.7: Students' perceptions of strict/tentative plan

Figure 4.7 shows students' perceptions in regards to strict and tentative plans. 82% (Helt enig: 5/11, Ganske enig: 2/11, Enig: 2/11) of the students in this study reacted positively to a tentative plan[14] which gave them an overview over course activities and suggested dates for handing in, but still provided them with the flexibility to make deliveries at a convenient time. Students that experienced the course as autonomous explained that this gave them ample time to work at their own pace and to use the time they needed to properly understand a topic. However, when asked how many preferred a strict plan with deadlines,[15] 54% (Helt enig: 2/11, Ganske enig: 2/11, Enig: 2/11) of the students reacted positively. The two sets of data could be an indication that tentative and strict plans are preferred in different situations. One student stated during the interviews that a strict plan was better in a context where students had to collaborate in almost all the activities since this pushed all the students to move at the same pace. This student further explained that a plan was meant to be followed as it is, whether strict or tentative. Students in a study performed by Young (2006) also expressed their need for a structured plan that would guide them when progressing through the semester.

[14]Question/Statement: Det er bra med tentativ innleveringsplan som gir deg frihet til når du kan levere oppgaver"
[15]Question/Statement: Det er bra med faste innleveringsdatoer og frister

The other factor that impacted student motivation is feedback. All students (Yes: 11/11) agreed to that it was important for them to receive timely feedback from course tutor.[16] This is in agreement with Whitton (2014) who stated that providing frequent and clear feedback can increase internal motivation. The study carried out by Vrasidas (1999) also stated that unlike students in face-to-face learning where non-verbal gestures are a way of giving feedback, students in online learning rely on verbal feedback due the absence of the non-verbal cues. All students (11/11) (Helt enig: 5/11, Enig: 6/11) also acknowledged that it was vital to receive continuous feedback on hand-ins.[17] Students perception on feedback is in alignment with that of Vrasidas (1999) and Bolliger (2004) who stated that timely feedback impacts satisfaction in online courses. Bolliger also explained that when students do not receive timely feedback on completed activities, they are likely to get frustrated. Feedback also helps students to revise assignments and concepts learned in the course (Bolliger & Martindale, 2004). The analysis of closed ended questions have shown that students to a higher degree were dissatisfied with the amount of feedback that they received in E-teaching 1. Figure 4.8 shows that while 70% (Litt uenig: 4/10, Helt uenig: 3/10) of the students stated that they did not receive the feedback that they needed in E-teaching 1, 45% (Litt uenig: 5/11, Helt uenig: 0/11) stated the same in Nettkunnskap.[18]

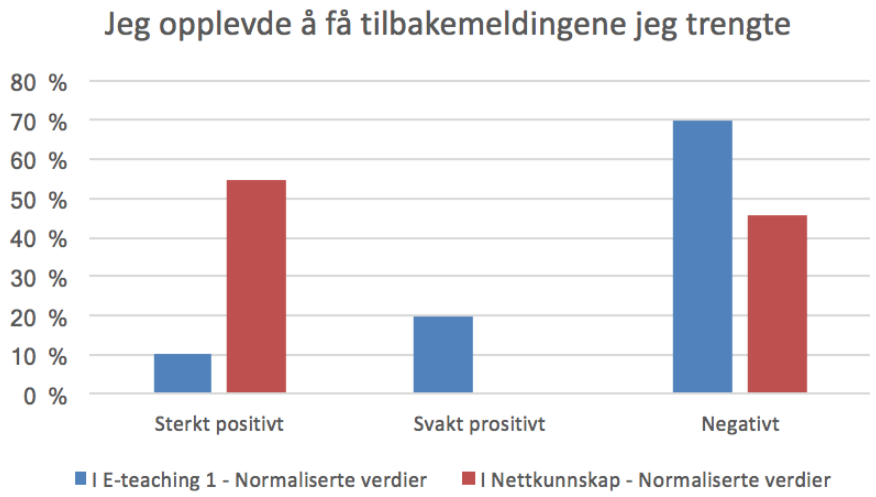

Figure 4.8: Students' perceptions of amount of feedback received

[16]Question/Statement: Det er viktig for deg som student i et nettbasert kurs å få raske svar på spørsmål av lærer underveis i kurset"

[17]Question/Statement: Kontinuerlig tilbakemelding på innleveringer er viktig i nettbaserte kurs

[18]Question/Statement: Jeg opplevde å få tilbakemeldingene jeg trengte i E-teaching 1/Nettkunnskap

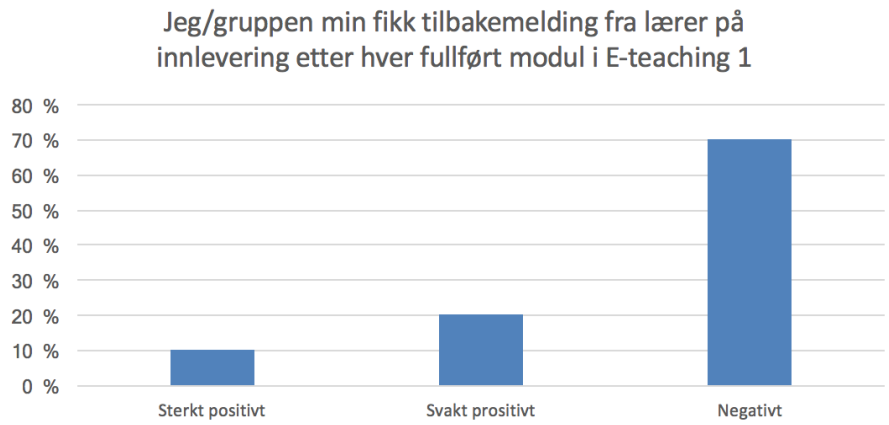

Figure 4.9: Students' response on whether they received feedback after submissions were made

Figure 4.9 shows that 70% (Litt uenig: 4/10, Helt uenig: 3/10) of the students responded negatively to the statement that they received feedback after every completed module in E-teaching 1.[19] Lack of adequate feedback is an indication to the diminishing motivation in E-teaching 1. Students' need for feedback in this study corresponds to the findings in other studies. Vesely's (2007) study explains the importance of instructor presence in online courses including cases where collaborative learning is used. Students in that study explained that the instructor had the important role of modelling the learning community by providing frequent, constructive and timely feedback. Similarly, Vrasidas (1999) named timely feedback as one of the factors that influence interaction in an online course. When students post in discussion forums but do not receive immediate feedback, they can feel like they are connecting to a network with no response. To encourage students to keep posting messages, tutors can provide timely feedback and also involve moderators who have the role of encouraging others to participate in the discussion forums. SDT theory by Ryan and Deci (2000) has also stated that educators should provide effectance-relevant feedback to promote self-determination in classrooms.

However dissatisfied the students were with the amount of feedback they received from course tutors, all interview respondents reacted positively to quizzes as a way of providing students with feedback and enabling them to reflect on how much they have learned in every module. One student explained that knowing that there was a quiz at the end of every module motivated him to pay attention and take notes through the learning process so as to be able to pass the quiz. Another student also mentioned that quizzes were a great way to summarize a module and acted as a checklist that helped her to know how much she had achieved in a module.

> ***Intervjuer 1:*** *Så quiz etter hver modul har fungert både i e-teaching og i nettkunnskap?*
> ***Student:*** *Ja, altså jeg tror i alle fag har quiz hjulpet, til og med i e-teaching for det var litt tungt stoff, det var litt kjekt å se hvordan man lå an og hadde fordøyd stoffet*

[19] Question/Statement: Jeg/gruppen min fikk tilbakemelding fra lærer på innlevering etter hver fullført modul i E-teaching1

Also in regards to reflection at end of modules in E-teaching 1, students said that quizzes were more useful than the “did you learn it all” assessment forms. One student also suggested that quizzes should be incorporated in the learning videos so as to help students remember the video contents. Students’ perception could be related to the fact that quizzes rather than assessment forms provide immediate feedback which can also produce immediate gain. Whitton (2014) stated that automated customized feedback is one of the beneficial ways of using computers to deliver learning.

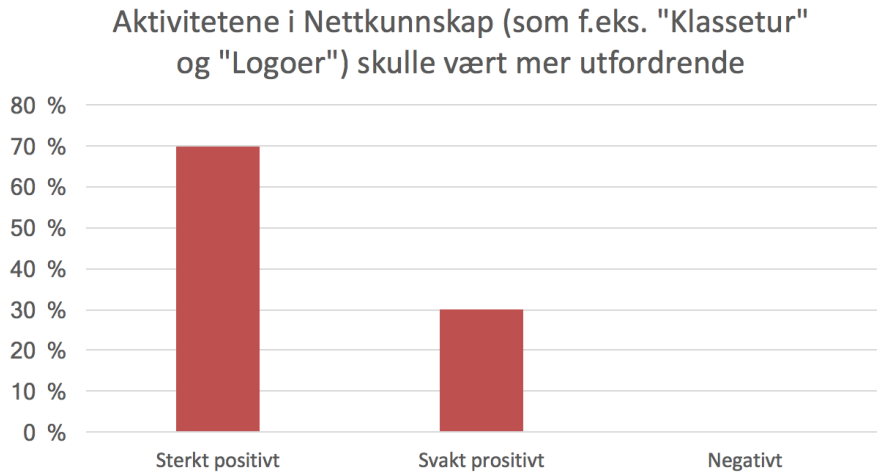

Figure 4.10: Students’ responses to whether gamified activities in Nettkunnskap should have been more challenging

In regards to the gamified activities in Nettkunnskap, 73% (Helt enig: 2/11, Ganske enig: 4/11, Enig: 2/11) of the students agreed that they made learning interesting.[20] All the interview respondents also termed the activities as a good break between exercises that also engaged them and brought in the concept of variation. However, these activities were referred to as too easy and less educative. Figure 4.10 shows that all (Helt enig: 3/10, Enig: 4/10, Litt enig: 3/10) students perceived the activities as too simple and that they should have been more challenging.[21] During the interviews, one of the students stated the following:

> ***Intervjuer 1:*** *de aktivitetene som for eksempel klassetur og de hvor du klikker og drag and drop, hva syns du om de?*
> ***Student:*** *Det syns jeg er veldig okei for da får du liksom litt variasjon*
> ***Intervjuer 1:*** *Ja..*
> ***Student:*** *selv om de var jo utrolig lette da, det var jo i all verdens pannekake så enkelt*
> ***Intervjuer 1:*** *Så det skulle kanskje vært enda mer avansert?*
> ***Student:*** *Ja, kanskje litt mer utfordrende for det ble veldig enkelt, men det er jo skjønt for da går det jo veldig fort*
> ***Intervjuer 1:*** *men det funka som et greit avbrekk på en måte?*
> ***Student:*** *veldig*

[20] Aktivitetene i MM-106 Nettkunnskap (som f.eks “Klassetur” og “Logoer”) gjorde læringen mer interessant
[21] Question/Statement: “Aktivitetene i Nettkunnskap (som f.eks. "Klassetur" og "Logoer") skulle vært mer utfordrende”

Students' perception is in agreement with several other studies. Deci and Ryan (2000) discussed the use of optimal challenges as a way of helping students maintain intrinsic motivation. Lee (2005) also elaborates on the importance of balancing individual's ability with the challenge the task gives and that failure to do this can lead to procrastination in studies. Koster (2014) adds that when presented with a task that is too easy, an individual is likely to get bored. The opposite is also true as tasks that are too difficult will create anxiety and lead to one giving up when no progress is being made. When implementing gamification, designers should start by understanding the users and their needs so as to determine what is most suitable to use (Deterding, 2012).

4.2.3 Digital Tools

80% (8/10) of the students agreed to the statement that the idea behind using learning videos in E-teaching 1 was good but did not seem to work.[22] 60% (6/10) of the students perceived the videos as too long.[23] During the interviews, one of the learners compared the videos to in-person lectures. This student stated that the videos in E-teaching 1 gave her the feeling of a traditional classroom where the teacher stood in front of the class and addressed the students. She went on and stated that the only difference is that the traditional classroom method would have been better in this case as it would have enabled her to interact with other students. Students seemed not to understand why it was important to watch the videos in E-teaching 1 as they had the same content as text. It seems that students did not receive tutors' information as tutors have explained that students were informed about the similarity of text and videos, and that it was the student's choice to make use of either or both text and video. Other factors related to why students found the videos to be uninteresting and difficult to follow were difficult academic language used in the videos and lack of variation in them. Guo (2014) recommends introducing continuous visual flow into videos to engage users and Diwanji (2014) states that producing videos in multiple languages and using subtitles and captions can lead to increased success of online learning videos. Analysis of data has shown that 90,9% (10/11) of the students perceived the videos in Nettkunnskap as easy to follow.[24] The learning videos were also described as short, direct to the point and varied making it easier for students to concentrate through the videos and remember video content. Students perception is consistent with Diwanji (2014) who in addition to recommending videos shorter than 6 minutes, has also stated that increased use of visuals and artefacts in learning videos will result in student engagement. However, during the interview one student commented that he preferred a book that he could read rather than watch the learning videos.

[22] Question/Statement: Hvordan opplevde du filmene i E-teaching 1? Svar: Ideen er god, men det fungerte ikke
[23] Question/Statement: Hvordan opplevde du filmene i E-teaching 1? Svar: For lange
[24] Question/Statement: Hvordan opplevde du filmene i Nettkunnskap? Svar: Lett å følge med på

In addition to using digital tools such as videos and animations in Nettkunnskap, gamified activities were used. The impacts of using gamified activities have been discussed in part 4.2.2. When asked what ways students preferred their learning material to be delivered in, videos, books and animations came at the top of the list in that order as shown in figure 4.11. At the bottom of the list were E-books and audio books.

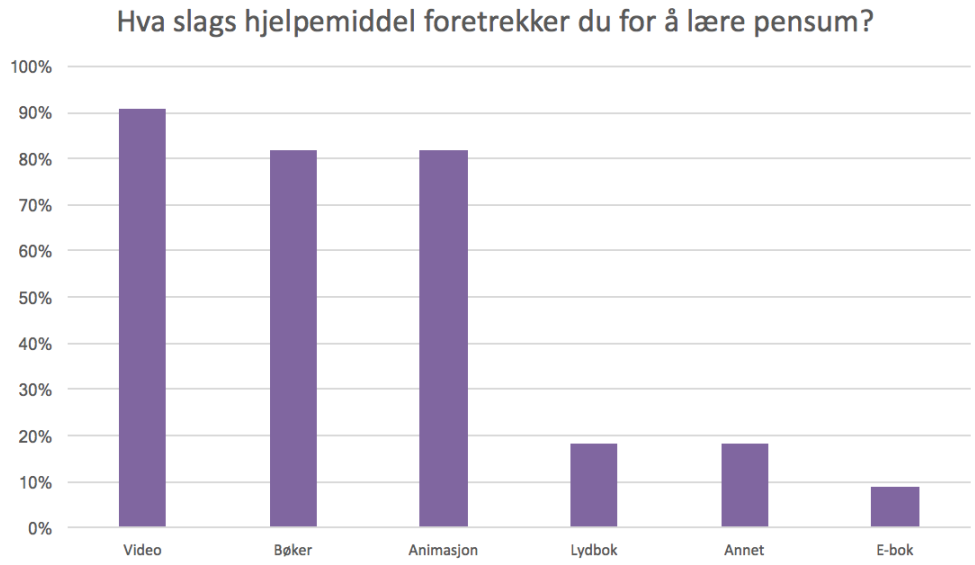

Figure 4.11: Students' perceptions of different ways of delivering content

4.2.4 Course Structure

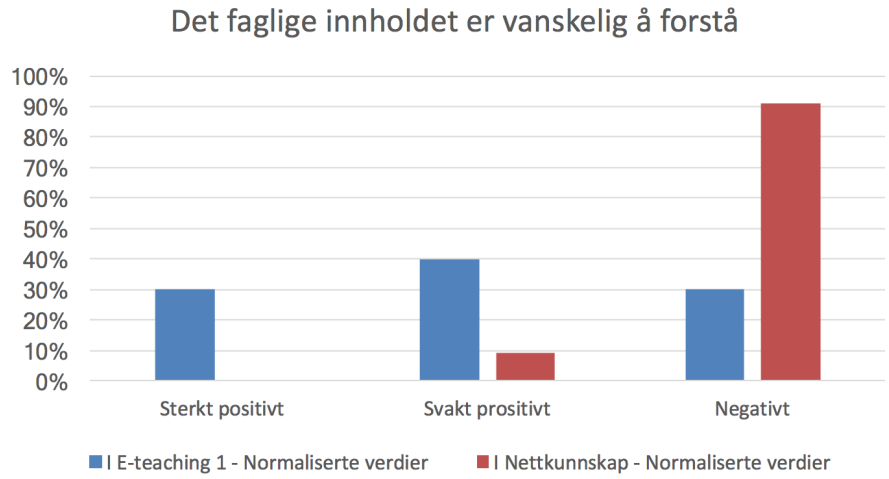

Figure 4.12: Students' responses to how difficult course content was to understand

To find out how the course structure impacted learning in the two courses, students were asked how difficult they found the course content to be, and then asked if the structure of the course made learning easier or more difficult. Figure 4.12 shows that while 70% (Helt enig: 1/10, Enig: 2/10, Litt enig: 4/10) agreed that course content was difficult to understand in E-teaching 1, 91% (Helt uenig: 10/11) fully disagree that course content in Nettkunnskap was difficult.[25]

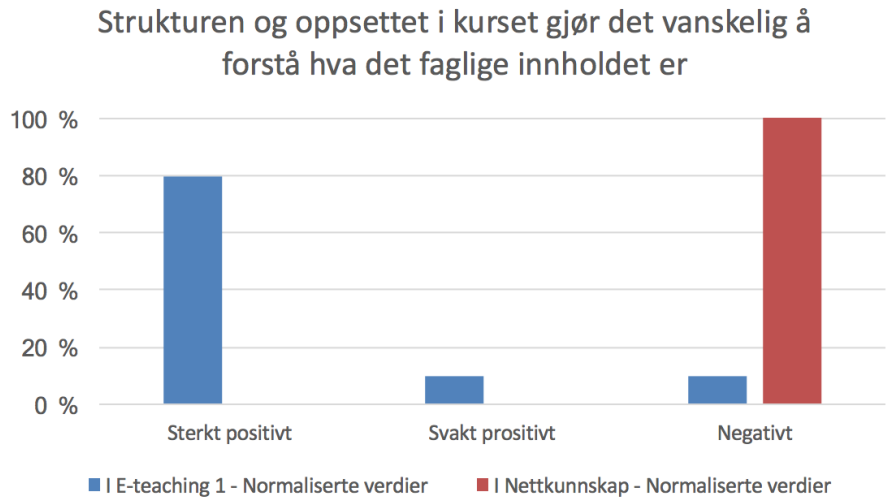

Figure 4.13: students' responses to if the course structure makes the content difficult to understand

What seemed to be common however, is that students agreed that a better structure made it easier to understand course content. Figure 4.13 shows that while 90% (Helt enig: 6/10, Enig, 2/10, Litt enig: 1/10) of students agreed to that how E-teaching 1 is structured made it difficult to understand course

[25]Question/Statement: Det faglige innholdet er vanskelig å forstå i E-teaching 1/Nettkunnskap

content, all (Litt uenig: 2/11, Helt uenig: 9/11) students disagreed to the same in Nettkunnskap.[26] Some of the words students used to describe the structure in E-teaching 1 during the interviews include messy, unstructured, and confusing.

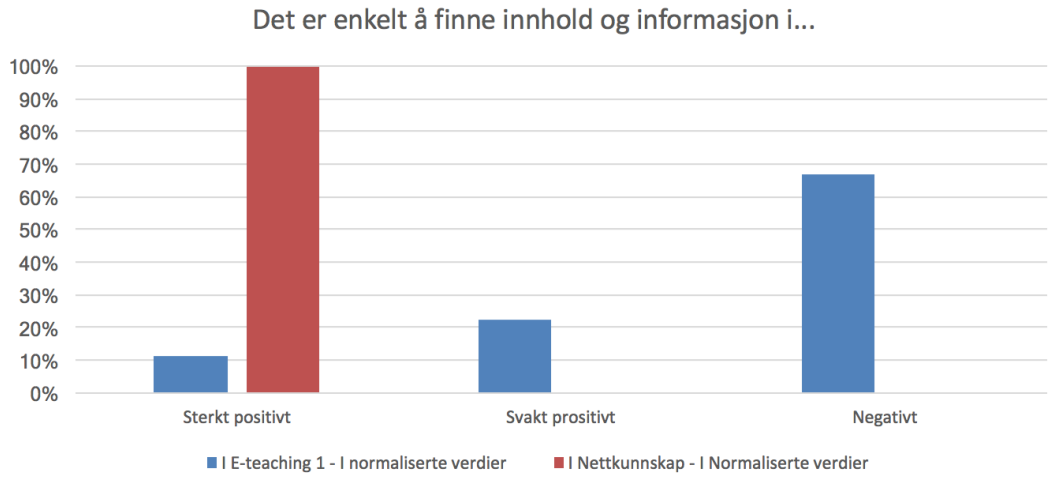

Figure 4.14: Students' perceptions of how easy it was to find course content

Figure 4.14 shows that while all (100%) (Helt enig: 7/11, Ganske enig: 4/11) students agreed that it was easy to locate course content in Nettkunnskap, 67% (Litt uenig: 3/9, Helt uenig: 3/9) disagreed to the same statement in E-teaching 1.[27] During the interviews, one student mentioned that one of her challenges in E-teaching 1 was navigating in the course. This student stated that she used more time trying to find course content than learning. The folder and linking systems in E-teaching 1 were also described as confusing and as difficult to navigate. Students stated that it was difficult to have a good overview of folder structure as there were too many of them. Students' perception is in alignment with several other studies that have stated that students will get frustrated when they find navigation in an online course to be difficult (Northrup, 2002; Swan et al., 2000). One of the interview respondents clarified that she had to use her mobile phone to take pictures of content locations so as to be able to locate it the next time she needed to go back to it.

> ***Intervjuer 1:*** *(...) fronter som lms, hva syns du om det?*
> ***Student:*** *jeg syns det er tungvint, det er så mange mapper og som jeg har brukt det tidligere bare i et fag der du ikke skal diskutere og ikke ha veldig mye forskjellige mapper man skal inn i, at man har: her er bøkene, her er innleveringen og sånn, da er det greit å bruke fronter, men å bruke det så interaktivt som vi har gjort føler jeg blir tungvint. Kunne aldri finne tilbake til det jeg hadde sett var bra nesten, og det var ikke bare meg, jeg sa til (sier navn på klassekamerat) "har du sett den med det?" "nei, hvor finner jeg det?" "la meg se.. ånei, jeg finner det ikke.. husker ikke". Jeg tok bilde med mobilen min, "det skal jeg huske".*

[26] Question/Statement: Strukturen og oppsettet i E-teaching 1/Nettkunnskap gjør det vanskelig å forstå hva det faglige innholdet er

[27] Question/Statement: Det er enkelt å finne innhold og informasjon i Nettkunnskap/E-teaching 1

The problem with the structure in E-teaching 1 also seems to be partly connected to the LMS Fronter that 67% (Helt enig: 3/12, Ganske enig: 0/12, Enig: 5/12) of the students found to be less intuitive.[28] One of the students however commented that he had no problem using Fronter as he had used it for many years. However, he also noted that he had to go back and forth so as to find what he was looking for. Figure 4.15 also shows that all students (Litt uenig: 4/11, Helt uenig: 7/11) disagreed to that it was difficult to work in Neo.

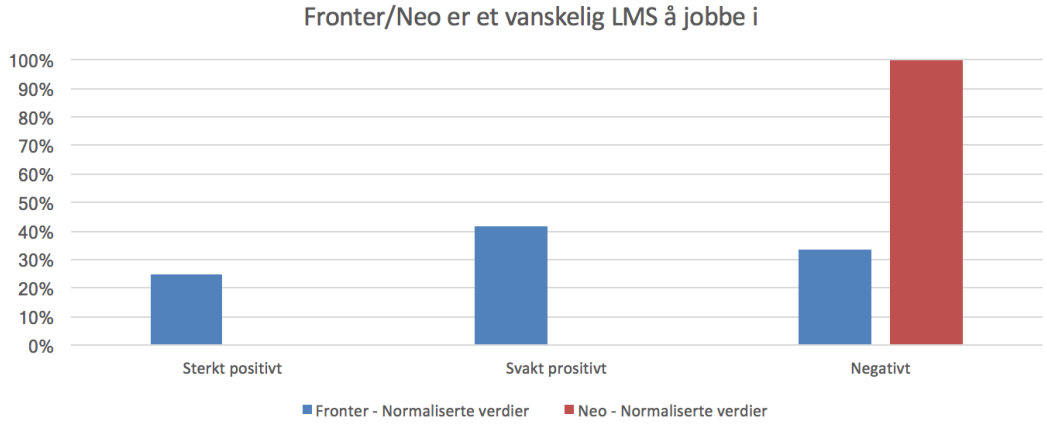

Figure 4.15: Students' responses to the statement that Fronter/Neo is difficult to work in

The use of modules was perceived to give a good overview. Students stated that they were satisfied with the fact that both courses were divided into modules as this gave them a good overview. The findings in Swan's (2000) study has also recommended dividing online courses into modules and went on to explain that higher levels of learning were reported in courses that contained fewer modules. However, students expressed their dissatisfaction in E-teaching 1 due to the amount of information that these modules contained. Every module contained several activities and in the activities were several tasks to be performed. This was referred to as much information that confused students. Also related to much information was the study guide that one student referred to as overwhelming due to the amount of information that it contained. However, students also referred to the study guide as useful. Students perception is consistent with the fourth concept of the andragogy model which states that adults enter learning with a purpose, and information on what is to be learned should be given in an unambiguous way (Knowles & associates, 1984, p. 9-12). Swan (2000) also stated that course designers should keep in mind that complex structures will confuse students and that it is important to keep it simple and maintain redundancy.

The analysis of interview responses has shown that Nettkunnskap was perceived as structured and easier to navigate. Neo, the LMS used to design Nettkunnskap, gives a better possibility to create a folder structure that is easier to follow.

[28] Question/Statement: Fronter er et vanskelig LMS å jobbe i

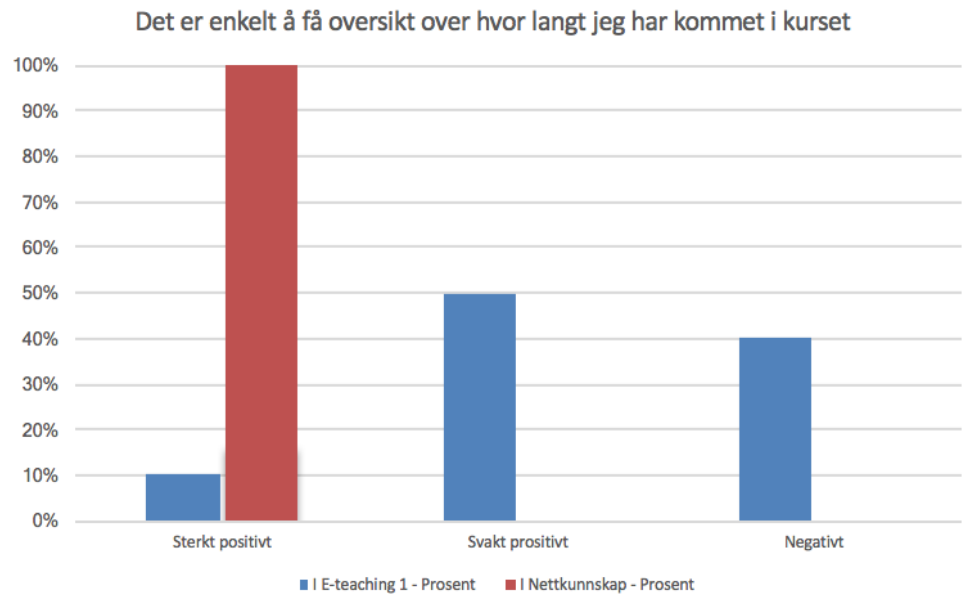

Figure 4.16: Students' perceptions of how easy it was to monitor progress in the courses

In Neo it is possible for the student to see how far they have come in the course. Figure 4.16 shows that while all students (100%) (Helt enig: 7/10, Enig: 3/10) agreed to that it was easy to monitor progress in Nettkunnskap, 60% (Helt enig: 1/10, Litt enig: 5/10) agreed to the same in E-teaching 1.[29] Learners expressed their need for a system that enables them to have an overview of what is already covered and what is left. Participants in the research carried out by Northrup (2002) also expressed the need to be able to monitor their progress on a weekly basis. Not having an overview of where one is in the course was termed as demotivating. One of the students mentioned that the structure in Nettkunnskap was great as it enabled her to start at the top and work her way downwards. However, one of the students also mentioned during the interview that the progress diagrams externally motivated him and made him rush through the exercises. Progress diagrams can be categorized under virtual rewards which have been discussed by Deterding (2012) to diminish intrinsic motivation.

[29] Det er enkelt å få oversikt over hvor langt jeg har kommet i kurset Nettkunnskap/Fronter

5 Summary and Conclusion

This study examined tutor and student perceptions of the design elements in the two online courses E-teaching 1 and Nettkunnskap. Discussed are the elements that the course tutors perceive to be vital in online courses and students' perception of how these elements impacted learning. As shown in the discussion chapter 4, there are both similarities and discrepancies. This chapter presents a summary of the results, followed by a conclusion. Also presented are the areas that future research should look into.

5.1 Summary

To show the similarities and discrepancies between student and tutor perceptions, the results of this study are presented in the four tables: collaboration, motivation, digital tools and course structure.

5.1.1 Collaboration

Tutors and students seemed to agree that collaboration was a great tool for learning as it enabled students to work in groups, share their ideas with one another and create own knowledge. However, some of the ways in which collaborative learning has been implemented in the two courses turned out to be challenging. Table 5.2 shows the similarities and discrepancies of tutor and student perceptions in regards to how collaborative learning was implemented in the two courses.

Tutor	**Student**	
Tutor justifications	**Similarities**	**Discrepancies**
Discussion activities will keep students active in the course as they push one another to keep participating in the group activities.	Contributing to other people's learning made students feel appreciated.	Frequent discussion activities was perceived as much work that made it impossible to use enough time to understand course content. Could have been great to have more individual activities. Not all learners preferred the active and interactive way of learning.
Collaborative learning creates a community.	Students were satisfied with their groups.	
Careful not to contribute too much in the discussion groups as students would feel like tutor is controlling the discussion activities.	Some students did not need much feedback on course content that is relatively easy.	Students wished for more tutor participation and feedback in the discussion forum.
Students should learn from trying and correcting their mistakes.		There was not enough time to figure out those mistakes.
Students should be given the freedom to create own groups.	Some student continued in the same group as it worked well.	Tutors should ensure that groups are created before course starts. An overview of all the groups and their respective members should be available.

Table 5.1: Part 1: Summary of how collaboration was perceived by tutors and students

Tutor	Student	
Tutor justifications	**Similarities**	**Discrepancies**
Students worked in the same groups throughout the course.		Could have been great to work in rotational groups so as to interact with other class members.
Asynchronous discussions can be effective		Waiting for other group members to participate in the discussions was time consuming and demotivating. Students were not notified when there was a new input in the discussion forums.
Synchronous communication enhances social presence.	Great to be able to choose where to discuss such as on social media platforms.	Not many used chat function in Neo.

Table 5.2: Part 2: Summary of how collaboration was perceived by tutors and students

5.1.2 Motivation

Learner-learner and tutor-learner interaction play an important role in student motivation. The course should also be structured in a way that ensures student autonomy and implement activities that increase student engagement, interactivity and provide immediate feedback. Table 5.4 shows the similarities and discrepancies of tutor and student perceptions of motivation in the two online courses.

Tutor	**Student**	
Tutor justifications	**Similarities**	**Discrepancies**
Collaborative learning is motivational.	Students perceived working in teams as positive.	Group discussions in almost all the activities were demotivating as students have to depend on one another to make progress.
The tutor is a motivator.	Tutor plays an important role of motivating students and should provide more feedback.	
A tentative plan is practical for adult students.	Adult students who are studying part-time need the autonomy to choose when to work.	In cases where there are frequent collaborative activities, students need a strict plan with deadlines to enable them to move at same pace.
A strict plan should be implemented.	A strict plan is necessary for collaborative learning to function.	Students had to rush over activities so as to meet deadlines. Strict plan took away students autonomy.
Students received feedback at completion of every module.		Lack of immediate feedback after deliveries was demotivating.

Table 5.3: Part 1: Summary of how motivation was perceived by tutors and students

Tutor	Student	
Tutor justifications	**Similarities**	**Discrepancies**
Progress diagrams are an effective way of tracking progress and giving feedback.	Good to be able to monitor progress and know where one is in the course.	Are also perceived as external motivational factors that tend to diminish internal motivation.
Freedom to search for learning resources on internet.	Gives the freedom to explore different sources. Students liked the “read more” links.	
Gamified activities are interesting and engaging.	The activities are a good break. Brings in the concept of variation. Activities were interesting.	Activities were too easy, not challenging, and not educative.
Use of quizzes enable students to reflect on what they have learnt after every module.	Quizzes provided immediate feedback on how much students have learnt. Quizzes should also be incorporated in quizzes to help students remember content.	

Table 5.4: Part 2: Summary of how motivation was perceived by tutors and students

5.1.3 Digital Tools

The use of digital tools enable students to have access to learning from anywhere at any time, provide automated feedback and can be used to increase students' interest and engagement in online courses. Course tutors should implement these tools in a way that creates a positive learning experience for the students. Table 5.5 shows the similarities and discrepancies of tutor and student perceptions in regards to the use of digital tools in online courses.

Tutor	**Student**	
Tutor justifications	**Similarities**	**Discrepancies**
Videos with tutor standing in front of camera could be appealing to students who are used to lectures.		Videos were perceived as outdated and gave the feeling of instructivist way of teaching.
Videos are powerful media for learning.	Short videos that are made in informal settings made learning interesting and engaging.	Difficult academic language in the videos made it difficult to understand content.
LMSs can be effective to deliver learning.	Made course content easily accessible.	
Videos contained same content as text.		Did not know why they should use time on videos that contain same content as provided in text. Some students wished they had a book that they could read instead of the videos.

Table 5.5: Summary of how the use of digital tools was perceived by tutors and students

5.1.4 Course Structure

According to the findings in this study, it is important that students find it easy to navigate in the course and have a good overview of where to find the resources. It is also important that the students are in a position to monitor their own progress. Table 5.6 shows the similarities and discrepancies of tutor and student perceptions in regards to the course structure.

Tutor	**Student**	
Tutor justifications	**Similarities**	**Discrepancies**
Structure of an online course is important as it makes navigation in the course easy.	A good structure availed more time for learning.	
The course description and study guides are meant to give students a good overview of the whole course and its contents.	Some students meant that the study guide is useful as it gives a good overview of the course.	Some of the students meant that the study guide contained much information that was overwhelming. Some did not use these documents and some did not know they existed.
Choice of LMS does not matter, course content remains the same despite platform used.	Students preferred Neo because it provided a better overview and structure.	Structure in Fronter made it difficult to navigate and monitor progress.
It should be possible for both students and instructors to monitor student's progress in the course.	It is important that students have a good overview of where they are in the course.	
The chronological folder system in Neo makes navigation easy.	The system made progressing in the course easy as the student could start at the top and proceed downwards.	

Table 5.6: Summary of how the course structure was perceived by tutors and students

5.2 Conclusion

The conclusion presented in this section is based on the results of this study that has shown that there are both similarities and discrepancies in how tutors and students perceive the use of various design elements. Both E-teaching 1 and Nettkunnskap have to various extents implemented design elements that ensure the student-centred way of learning which can enable students to achieve the 21st century skills. However, tutors need to look into the ways in which design elements have been implemented so as to enable students achieve learning goals.

As much as collaboration is recommended for learning in the digital age and aims at creating a sense of community in online courses, tutors should ensure that student autonomy and the possibility for self-paced learning is implemented. Students should be in a position to use sufficient time to process content and not feel compelled to move at the same pace as their peers. While students appreciated working in groups and found collaborative learning to be motivational, they reported that there is need to include individual activities so that they do not fully depend on one another to progress in the course.

While tutors explained that they were more keen on addressing concerns that were reported to them and giving feedback after deliveries were made, students showed dissatisfaction when it came to the amount of feedback received. They have expressed that they need frequent tutor response also in the discussion forums. It also seems that students need to experience more tutor presence in courses where content is relatively difficult to understand. Students remarked that they needed more assistance in E-teaching 1 than they did in Nettkunnskap. In addition to feedback from the instructor, quizzes were perceived to be useful for reflections and as a way of providing immediate feedback. Quizzes should also be incorporated in other activities, for example in videos to make it easier for students to remember course content.

Tutors should use a LMS that gives the possibility to make a good structure and makes it easy for students to navigate through the course. This is especially important in cases where the students use LMSs not just as a repository but also for interactive activities. A good course structure will enable students to set aside more time for learning, as well as monitor their progress in the course.

The use of digital tools like learning videos, animations and gamified activities are likely to increase student engagement in online courses. Gamified activities make learning more interesting and can effectively be used to provide breaks between exercises. Instructors should however ensure that these activities are challenging and lead to learning of course content. Learning videos should be short, variational and made in informal settings that would allow students to easily relate to them. Videos should also contain additional information that supplement the content provided in text.

5.3 Future Research

As shown in this research, there are discrepancies in how tutors and students perceive the use of different elements in the two online courses. Future research should look at these areas so as to develop a set of criterias that can be useful for designing online courses.

Since E-teaching 1 has been defined as an international course, future research should include students with other backgrounds to make the results of the study applicable to international students. Tutors of E-teaching 1 also explained that the course is more revolutionary for students from the developing countries than students in Europe. This is a factor that should be considered as some challenges in E-teaching 1 could be due to the difference in students' backgrounds.

E-teaching 1 tutors explained that students that participated in this study might not realize the goals they achieved in E-teaching 1 as they do not take E-teaching 2. While E-teaching 1 is theoretical, E-teaching 2 enables students to put the theory that they acquired in the first part of the course into practice. Future research should therefore include students that have taken both courses.

Other factors such as age, gender and level of student education should also be looked into as other studies (Young & Norgard, 2006; Northrup, 2002; Swan et al., 2000) have shown that some of these factors can influence learning in online courses. Looking into these factors will also help in understanding to what extent age can affect student-centered way of learning, and why some students prefer traditional methods of delivering resources such as books to digital tools.

The methods used in grading in the two courses and how grading impacts the learning process should be looked into. In Nettkunnskap, students collect points by completing different activities in the course. The number of points collected determine whether a student has passed or failed the course. In E-teaching 1, 40% of the grade is determined by student portfolio and 60% determined by a written essay. In addition to looking at how the grading systems impact learning, future research should also consider how the points and badges that are awarded to students affect student motivation in an online course. Other ways of implementing gamification such as in social contexts should also be looked into.

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