Like Learning

An Information Architectural analysis of compulsory school educational practices on Facebook

Iben Meldgaard Andersen 02.06.14

AALBORG UNIVERSITET

Master Thesis
Information Architecture

Aalborg University

Department of Communication and Psychology
Nyhavnsgade 14
9000 Aalborg

Title:
Like Learning - An Information Architectural analysis of compulsory school educational practices on Facebook

Student:
Iben Meldgaard Andersen
Study number 20121984

Supervisor:
Marianne Lykke

Number of pages:
67 (161.000 characters)

Submission date:
02.06.14

Table of Contents

Abstract (English)

Emerging use of social media for educational purposes has been observed. Due to the popularity of the media, some schools use Facebook in their day-to-day educational practice. This report presents an analysis of this practice in terms of Information Architecture design, revealing a system with extended features such as personalization, interaction and user generated tagging options. Persuasive Technology analysis furthermore illuminates processes that enhance communicative practices between pupils and teachers. This includes simulations of physical environments and different levels of private and public spaces. Pedagogical and psychological aspects of using the social media of Facebook are being presented and discussed in relation to persuasive technologies.

To investigate the applicability of the analytical findings to compulsory education, qualitative workshops involving teachers and pupils has been conducted. The workshops were intended to reveal the users' tacit knowledge and find relationships between pupils' and teachers' perceptions of key features of the social media. Workshop results and analytical findings have been compared to existing research focused on social media in different educational levels.

The outcomes of the analysis and workshops are used to make ten concrete suggestions for the design of online future educational platforms.

Resume (dansk)

En spirende tendens i relation til anvendelsen af sociale medier på forskellige uddannelsesniveauer er observeret. Grundet Facebooks popularitet burger nogle skoler Facebook i deres daglige undervisningspraksis. Denne rapport analyserer denne praksis i relation til designet af Facebooks Informationsarkitektur. Et design der i høj grad er baseret på personaliseringsprocesser, interaktion og burgergenereret metadata i form a tags. En videre analyse baseret på Persuasiv Teknologi belyser endvidere kommunikative processer mellem elever og lærere faciliteret af Facebook. Dette indbefatter simulationer af fysiske miljøer samt grader af åbne og private fora. Pædagogiske og psykologiske teorier anvendes til at diskutere persuasive teknikker i forbindelse med undervisning af elever på folkeskoleniveau, herunder behaviorisme kontra indre motivation.

Til at undersøge om de analytiske resultater understøtter elever og læreres opfattelser af deres egen anvendelse af Facebook, er der blevet udført kvalitative workshops. Disse workshops funktion er at frembringe viden, som deltagerne ikke tidligere har givet udtryk for og som ikke har været mulig at aflæse igennem observationer og analyser. Resultater fra analyser og workshops er løbende holdt op imod eksisterende data indsamlet igennem tidligere forskning inden for feltet relateret til læring og sociale medier.

Til sidst er 10 forslag til re-design af fremtidige og eksisterende undervisningsplatforme præsenteret. Disse forslag er opbygget omkring de analytiske fund samt workshopresultater.

1. Introduction

A trend of teachers and pupils using Social Network Sites (SNSs) for educational purposes seem to be emerging. This has developed with the recent years' expansion of social networks, such as Facebook, and which has enabled a new way to communicate and interact within the educational system. Statistically, Facebook has been a growing success since its creation. In March 2014 the SNS of Facebook reported a total of 1.28 billion monthly active users (Facebook, 2014)[1]. Danes are in particular fond of online social networking. In January 2013 Facebook had 3.031.980 active Danish users (Nettendenser.dk, 2013)[2]. These impressive numbers reveal that Danes in particular are active users of the social media and it is easy to understand why educational systems want to benefit from the popularity.

SNSs, such as Facebook, have transformed into a category of sophisticated web-based services, which allow individuals to construct profiles and social networks, share content and interact publicly and privately within a constructed frame (Boyd & Ellison, 2007). Surveys show that online social networks in general are related to trust, social support, tolerance, community and political engagement (Pew, 2010). SNSs, such as Facebook, attract a wide span of user groups. Statistically, 71 % of all online adults (+18) use Facebook, women a little more than men. This makes Facebook the dominant social media. In comparison, only 18 % of online adults use Twitter (Pew, 2013). Anyone above the age of 13 is allowed to create a profile. In 2013 news medias reported that teenagers were leaving Facebook. Facebook has not confirmed this, and it is difficult to find statistical evidence of this alleged migration. Danish statistical reports reveal that the age group from 14-22 are more than 100 % represented on Facebook (Nettendenser.dk, 2013). This over representation can be caused by fake profiles or children under the age of 13 lying about their age to be able to create an account. The teenage users might be opposed to their parents' generation fast growing presence and interest in the social media of Facebook, but Danish statistics show that teenagers are still highly, even over represented, on the media.

Educational practice on Facebook is interesting from several analytical viewpoints. This thesis will primarily attempt to establish a relationship between the information architecture employed on the network of Facebook and user satisfaction and interaction in relation to didactic practices. Reasons might be diverse, some of which might seem obvious, as to why Facebook is an attractive tool in daily teaching practices.

[1] http://newsroom.fb.com/company-info/
[2] http://www.nettendenser.dk/2013/01/25/facebook-statistik-2013-for-danmark-sadan-er-befolkningen-fordelt/

One of these reasons might lie within the construction of the information architecture of the SNS and the network's additional usage of persuasive design techniques.

Schools in Denmark are already equipped with custom designed web 2.0 solutions. The most commonly used is "Skoleintra", an intranet platform for teachers, pupils and parents. Skoleintra offers abilities to communicate, calendars and options for knowledge sharing. Furthermore, the intranet is constructed with the aim of being a primary tool in educational communication and practice within the Danish school system. The question is why the tendency of school related groups and forums on the SNS of Facebook seems to be growing when the schools are already equipped with intranet solutions? The information architectural components within Facebook might hold explanations of parts of this tendency. Information architecture is able to explain how structures of organization, categorization, search and navigation promote user experiences, findability amongst others (Morville & Rosenfeld, 2006).

The Danish Ministry of Education is aiming to promote initiatives that can raise and improve the use of IT in schools. Amongst this is an agreement to use research and IT-based methods of learning:

"*The efforts to increase the usage of IT has to result in innovation and development of IT-based teaching. Traditional teaching should not just be transferred to an electronic environment.* […] *This requires a development of new knowledge in relation to how IT-based teaching and learning methods can increase the pupils subject specific knowledge. Hereunder how the teachers' it-didactical competences can be raised and give the teachers more time to teach*."
(The Danish Ministry of Education, 2014. Author's translation)

The Ministry of Education is highly interested and motivated to improve the usage of IT-based learning. At the same time, it is interesting how teachers have independently adopted practices involving social media. This can be seen as a result of lack of satisfaction with the intranet solutions and general IT-solutions, which are provided in schools today. The aim of this thesis is to explain these emerging practices with arguments related to information architecture and persuasive design principals. The hope is, that these findings can be used in order to design successful IT-based learning medias and platforms in the future.

1.1 Introduction to Hjørring Ny 10.

Hjørring Ny 10. (New Hjørring 10th grade) is a school placed in Hjørring in Northern Denmark. Hjørring Ny 10. provides an optional offer of a 10th grade in addition to the compulsory schooling. Teachers working at the school of Hjørring Ny 10. are using

Facebook as a didactic and communicative tool in teaching practice and have created subject and class related Facebook groups where pupils are invited to interact online. Teachers use the Facebook groups as a diary for homework and assignments. It is the schools goal to make all teachers use Facebook in their teaching practices from the new school year in 2014. Teachers report that almost all pupils have a Facebook account. The few that do not have an account are informed about activities in more traditional manners, such as the intranet or by email.

The didactic practices involving Facebook at Hjørring Ny 10. have been used as an analytical foundation in this thesis. Analytical findings are based on observations of interactions and activity on the schools Facebook groups and pages. These observations are subsequently compared with findings from a qualitative workshop involving teachers and pupils.

2. Research Question

How can components from Information Architecture and Persuasive Technology explain teachers' and pupils' apparent successful usage of Facebook for communicative and educational purposes and how do modern pedagogical theories related to motivation and development support the use of the media?

3. Methodology

A hypothetico-deductive model is used as the overall scientific method and structure for this thesis. The hypothetico-deductive model suggests that one or more hypotheses are established through informal observations or practical problems (Føllesdal, 1994, p. 233). In this thesis the informal observations are based on teachers' didactical use of Facebook at Hjørring Ny 10. Informal practical problems of general character were also observed. These have been, in particular, related to IT-use in schools and the apparent insufficiency in IT-related communication forms used in schools. Through these informal observations and practical problems the following hypotheses have been created:

Hypothesis 1: Facebook facilitates a range of communicative and didactic practices which previous and traditional platforms used in schools do not support.

Hypothesis 2: The facilitation of communicative and didactic practices is of persuasive character and enhances the motivation in pupils and communication between pupils and teachers.

The next step in the hypothetico-deductive model suggests analysis and testing of these hypotheses. The analysis will be done through:

1) literature reviews of existing research within the field of learning and social medias,
2) analysis of information architectural and persuasive technology components used on Facebook with focus on how these support the practice of learning and communication,
3) qualitative observations of teachers' and pupils' didactic and communicative practices and interactions on the SNS of Facebook,
4) workshops with the users with the aim of retrieving tacit knowledge and comparing this to analytical findings.

Analytical results will finally be qualitatively tested through workshops with both pupils and teachers. The qualitative focus has been chosen in order to be able to, in depth, analyse information architectural and Persuasive Technology components in relation to didactic use. The aim is to understand how different components are used and perceived by the observed teachers and pupils (Marshall, 1996).

Workshops will be preformed to establish relationships between actual and observed usage and the workshop participants' perceptions and reflections within the area. The conducted workshop is a modified version of Halskov & Dalsgård's Inspiration Card Workshop (2006). Halskov & Dalsgård intended this workshop to support user participation in a design process. In this thesis the same workshop is conducted but with an aim to make users evaluate their own practice and bring forward tacit knowledge and perceptions through reflective interactions (Halskov & Dalsgård, 2006). The workshop in this thesis is based on two sets of cards. One related to technical (and persuasive) features. Another set of cards is related to the cognitive outcomes of using these features. A range of activities will be presented to the participants and observational and analytical data will be retrieved from the workshop outcomes.

Observations and analyses will be done independently but leaning against already existing research and literature within the area of learning, psychology and ICT.

Finally, a conclusion reflecting the qualitative and analytical findings will be established. The contribution and outcome of the analyses, observations and workshops is an attempt to suggest an information architectural framework to future designs, or redesigns, supporting educational and communicative practices in schools through persuasive design techniques and suitable information architecture.

4. Literature Review

The primary motivation for this thesis is a need to review and in detail analyze the information architectural patterns that facilitate learning environments and communicational practices in schools in relation to Facebook. No such reviews have previously been conducted. This thesis builds on previous research done within the field of ICT and learning. These previous findings are then compared and supported with information architectural and persuasive technology literature and research.

4.1. Social Media and Learning

Previous research has been conducted on the effects of learning in relation to social media. The similarity of this research is that it is primarily focused on outcomes and less on how these outcomes are facilitated through the system's design and information architecture. Studies related to learning outcomes are important because they illuminate a broader perspective of pros and cons of using SNSs in teaching. Most of the previously conducted studies are based on higher education or upper secondary education whereas this thesis is based on the use of Facebook in the last, and optional year, of compulsory school. Possible differences and changes in use and perceptions from compulsory school to higher education must be considered as a limitation in comparing these studies to the case of Hjørring Ny 10th.

Andersson et. al. (2012) has, over three years, analyzed 1:1 computing use in Swedish schools, focusing on the age group ranging from 10-18. In 1:1 computing practice each enrolled student is provided with a computer or tablet and presented with educational material in digital form. A main issue reported in this study is related to instances where the use of social media distracts pupils from learning. This study's slightly more critical conclusion on SNS in teaching is important to review because it reveals patterns in use and user perceptions. Distractive use of social media is referred to as use "for personal and private reasons", which are not connected to curriculum-related content (Andersson, et. al., 2012). This study is based on interviews (qualitative) and surveys (quantitative) of teachers and pupils and the findings are highly associated with Facebook as the main concern when looking at pupils' attention:

"In the survey data for 2011 and 2012, 52% of the students say that they use social media for private reasons everyday in school. When asked to rank which social medium that most often diverts their attention from learning, Facebook was the most frequent answer with 42% of the responses. When teachers in the 2011 survey were asked to mention the major risk of failing with 1:1 education, 74% stated distractions

such as Facebook. In an open-ended question in the 2012 survey, teachers were asked to freely comment on any negative consequences they had experienced since the introduction of 1:1, and the most common response (38% of the answers) concerned the distractions caused by the students' extracurricular social media use. Additionally, 73% felt that social media to 'some' or 'high' degree affected the teaching and learning negatively."
(Andersson et. al., 2012, p. 43)

This study further reveals that 80 % of pupils reported that they have experienced working more on their own after the implementation of 1:1. 71 % of the teachers share this view. Pupils who think they use Facebook too much during school hours describe their divertive use as being almost unavoidable:

"*It is harder to study because you so easily end up on Facebook – there is no way avoiding it . . . Sometimes you cannot stop – if you have logged in to Facebook you cannot get out of there. (2 students, compulsory school)"*
(Andersson, et. al., 2012, p. 44)

Positively, 73 % of the surveyed pupils claim to be able to manage a balance between private and school related activities – this though has to be seen in the light of 65 % of the surveyed pupils admitting using social media too much.
Finally, the study concludes that the use of social media for educational practices is risking a reinforcement of the divide between high-performing and low-performing pupils. This conclusion is based on the qualitative interviews with teachers and pupils and these finding are not reflected in a broader qualitative perspective in this or other reviewed studies.

Even though 1:1 education is not practiced in the investigated school in this thesis, the didactical practice can be compared due to Hjørring Ny 10.'s aim to make the use of SNS mandatory in teaching practices at the school. Several studies point to teachers' roles as being predominant when successfully implementing social media in teaching (Andersen et. al, 2012; Callaghan & Bower, 2011). In order to make social media function as a didactic tool rather than a disturbing element, teachers strategies of use are very important. The teachers' relationships with pupils, along with their presence on the SNS used are further mentioned as being important factors.

Through observational studies, Callahan & Bower (2011) have determined that the use of SNSs in teaching affect the pupils' motivation and engagement more positively than traditional non-mediated teaching. Comparing user patterns and teaching out-

comes through an SNS this study found that there is no reason not to use SNSs in teaching, seen from a motivational point of view:

"*In an age where students are using SNSs as part of their everyday lives and teachers are often reluctant to use SNS due to fear of the unknown, this study demonstrates that the type and quality of learning that transpires in SNSs does not appear to be attributable to the technology. SNSs can promote greater levels of student motivation and engagement, and enable students to utilize higher order thinking skills. Utilizing SNSs draws directly on students' experience with social networks and can be used to develop their technological and media literacies. However, the extent to which these outcomes are achieved in SNSs ultimately depends on the way the SNS learning activities are implemented by the teacher."* (Callahan & Bower, 2011, p. 16)

Callahan and Bower's comparative study is conducted on the basis of "Ning" which provides abilities to build a customized social network. This excludes the possible factors of disturbances in relation to private use or advertising, because the SNS was build for the specific purpose of establishing a learning environment. This research is furthermore conducted on students in higher education. The research findings might be seen as conflicting. Can a medium be motivational and disturbing at the same time? The answer to this is likely to be found in the differences in age groups and types of social medias. Common to these studies is the idea of teachers' roles being highly significant to the pupils' learning related outcomes of using the medias in educational practices.

Learning Ecology in SNS-mediated Teaching

What do pupils actually learn from using SNSs in their school or education? The ecology of learning might in some cases be "hidden" or non-curriculum based. Learning ecologies are defined as the 'set of contexts found in physical or virtual spaces that provide opportunities for learning' (Greenhow & Robelia, 2009). This notion of a learning ecology stipulates that: (1) adolescents are simultaneously involved in many settings; (2) they create learning contexts for themselves within and across settings; (3) the boundaries between settings can be permeable; and (4) interest-driven activities can span contextual boundaries and be self-sustaining given adequate time, freedom, and resources (Greenhow & Robelia, 2009, p. 123).

Greenhow and Robelia further stipulate that informal learning:

- complements, supplements, deepens, and enhances classroom studies;
- emphasizes creativity through the need to attract non-compulsory audiences;

- does not use a formal set of guidelines, objectives, or curriculum to guide interactions between participants or state what participants should gain from interactions with media;
- extends to the affective, cognitive, and social realms;
- presents opportunities for mentors, professionals, and citizens to share time, friendship, effort, creativity, and expertise with youngsters and adult learners; and
- allows for different learning styles and multiple intelligences and offers alternatives for non-traditional and second-language learners.
  (Greenhow & Robelia, 2009, p. 121-122)

Greenhow and Robelia's evaluation is based on American pupils' (age 12-17) use of social media (MySpace) and their learning outcomes. The study claims that SNSs support identity formation and enhance technological fluency. These findings are related to processes of informal learning, and therefore indirectly connected to the use of SNSs in curriculum-based education.
When evaluating stages of development in teenagers, identity formation is an important element to consider (e.g. Ericson, 1968). Greenhow & Robelia (2009) argue that SNSs give teenagers an arena to develop identities and virtual selves, which might be informal but sometimes spring from formal, educational learning:

"*In some cases, formal and informal learning opportunities for developing technological fluency were symbiotic. Several students talked about being introduced to technology applications in school (e.g., video production or graphic art class) and then building on and extending what they had learned through interest-driven activities within MySpace. For example, one student, who was interested in video production, had learned to use related software programs in high school. He built on these skills when he wanted to promote a local sports team*."
(Greenhow and Robelia, 2009, p. 134)

Even though this study is based on the use of MySpace, other recent studies support the idea about SNSs role in the development of virtual selves, identity formation and awareness on the Internet (e.g. Bazarova et. al. 2013). Especially patterns in language and presentation of emotion are elements, which the expansion of SNSs has developed in students.

Bazarova et. al. (2013) has, through linguistic behavior analysis, concluded that social media users express themselves in different ways when looking at open (public) and private online spaces. This study divides communication on Facebook into three categories:

1. Directedness – refers to private messages and closed environments, e.g. groups.
2. Publicness – refers to status updates that are not aimed at a particular person.
3. A hybrid between the two above where a message or update is, directly or indirectly, aimed towards a group of people

According to this study, Facebook users express themselves more positively in public posts or updates than in direct messages to other people. This replication of communication can be seen as an online identity formation or development of a virtual self.

"*In terms of Facebook participation structures, we argue that both publicness and directedness will affect how people express emotions. In general, we expect public messages to be more positive and less negative in tone. This is because negative emotions are more private than positive emotions (Finkenauer & Rimé, 1998) and often are attached to sensitive and private information, creating a social norm of focusing on positive rather than negative emotions in conversations with strangers and acquaintances (Leary, 1995). These norms hold in Facebook as well. Status updates do contain more positive than negative language (Kramer & Chung, 2011), and the expression of negative emotions and experiences is perceived less favorably than that of positive experiences in public Facebook conversations (Bazarova, 2013).*"
(Bazarova et. al, 2013, p. 125)

These findings in relation to participation structures are relevant because they might impact positively or negatively on learning environments. Bazarova et al.'s study is conducted on private use of Facebook and the participants are adults and therefore the study's results might not be entirely applicable to the focus in this thesis. The findings related to linguistic patterns must be seen as an overall tendency on Facebook based on an implicit wish to simulate non-mediated environments in mediated interactions. This tendency might also apply to educational practices in relation to teenagers and school children.

5. Information Architecture Analysis

Information Architecture lies within the field of human-computer interaction (HCI) and is concerned with methods to organize and present large amount of information in order to enhance "findability".
The information architecture analysis performed in the following is based on Morville and Rosenfeld's (2006) definition of the field as:

1. The structural design of shared information environments,
2. The combination of organization, labelling, search and navigation systems within websites and intranets,
3. The art and science of shaping information products and experiences to support usability and findability,
4. An emerging discipline and community of practice focused on bringing principles of design and architecture to the digital landscape.

The four main components of information architecture (organization, labelling, search and navigation system) together form a framework for functional websites, intranets, etc. Functional in the sense that the user is able to navigate, search and discover unimpeded. Behind this navigation lie processes of information organization, management, strategies and research. These are elements, which the following analysis and workshops also take into account.

5.1. Understanding the Anatomy of Facebook

Understanding of the anatomy of Facebook and how information architectural components and applied persuasive technologies have lead to mass interpersonal, and possible didactic, usability is necessary in order to give suggestions for redesigns of existing and future learning platforms.
Key components related to Information Architecture can help to answer questions as to how and why Facebook could be a successful tool in communicating and interacting with pupils on matters of both educational and social relations. The obvious answer to this question is that the pupils are already very familiar and adjusted to the online communication forms used on the SNS of Facebook. This fact makes it easy for teachers to join and reach the pupils in an online environment where the pupils are already present. Familiarity with social media amongst pupils and is a plausible factor in the apparent successful use. But why is the communication apparently so successful on Facebook between teachers and pupils? Which elements make the difference?

In the following answers to these questions will be suggested by analyzing and evaluating the anatomy of the information architectural components of Facebook.

Morville and Rosenfeld (2006) have defined four components that together make up the foundation for Information Architecture. Some of these components are visible to the user while others can be features within the system and never directly shown to the user. The hidden components of information architecture are likely to play an important role when using Facebook for educational purposes. Questions addressing developer intentions and sincerity have to be asked and taken into account. Studies, which previously have investigated the roles of SNSs in education, have pointed to social media as being a disturbing factor to pupils' educational attention. This thesis will not contradict or neglect the fact of social medias possible negative disturbances to pupils' concentration in relation to education, but the focus will primarily be to point out components and factors that facilitate educational and communicative practices.

5.2. The Four Components of Information Architecture

The components that will be used to analyze the information architecture behind Facebook as used in by the school of Hjørring Ny 10. are the following:

- Organization Systems – to determine how information is categorized,
- Labelling Systems – to determine how information is represented,
- Navigation Systems – to determine how browsing through information happens,
- Search Systems – to determine how information can be searched for.
  (Morville & Rosenfeld, 2006)

The components can in some cases be difficult to separate, the labelling system is for example often a part of the navigational system, but a separate analysis of the components can establish indications of functionality and patterns. The analysis will point out areas where attention should be drawn to developer intentions. The analysis is being made from the point of view of a Chrome browser. Facebook has apps built for mobile and tablet platforms, but this analysis will entirely focus on the browser version of Facebook.

5.2.1. Organization System

Artificial Intelligent Organization

The organization system of a website can be divided into organization schemes and organization structures (Morville & Rosenfeld, 2006, p. 58). Organization schemes are related to the overall way of dividing content on any web site. An example of this can be to either divide content alphabetically or chronologically. This division of content has to happen somewhat according to the users expectations or view of the world in order for the organization system to work successfully. Facebook operates less with alphabetical ordering of content and more with algorithmic operational determined organizations[3] (Facebook, 2014). This can be seen as a result of extended personalized processes where content rated as relevant to a specific user is presented first. This process is determined by the users previous interactions and patterns of use. The success of algorithmic ranking of content can be seen in the light of the scale of users on Facebook. Users with many friends and high group activity might not be interested in being presented with updates from everyone and everything. The algorithmic organization solves this problem by thinking for the user. The artificial intelligence in the algorithmic organization might also have negative consequences. This is likely to occur if the system misinterprets a user's actual interests or behaviours.

Applying this to the case of educational practices, the algorithmic control can hypothetically create unexpected issues. An example could be a group of very active teachers and pupils on a Facebook group site who generates 20+ posts a day. Some posts are "liked" and "commented" more than others. The numbers of likes and commentary determines the hierarchical placement of the post in the news feed of the group. This could potentially result in less liked, but perhaps not less important, updates being relegated to the bottom of the page and thereby being less visible to the user. The fact that posts, even in groups, are algorithmically organized increases the visibility of posts and news related to the users interest and likeability, but can at the same time potentially decrease the system and order of news according to importance. The reason for this plausible issue related to relevance of posts is likely to lie in the fact that Facebook is not intentionally designed to serve the role as an intranet for companies, nor support educational aspects. The possible effect of the algorithmic determined sorting is what is seen everywhere else on social media – users return and are attracted to the media, probably because content is presented according to personal interest which establishes a feeling of familiarity and attachment. It could be debated whether many other intranet sites used for educational or communicative purposes have achieved this kind of status from its users. To sum up, the algorithmically sorted presentation may attract users to return more frequently because they find

[3] https://www.facebook.com/business/news/NewsFeed-FYI-A-Window-Into-News-Feed

the content relatable. At the same time the structure can be difficult to navigate and important content could be lost in the ranking of posts and updates.

Morville and Rosenfeld (2006) argue that organization schemes should reflect our already established way of seeing and organizing the world, content and information around us. This view applied to the organization schemes on Facebook might seem artificial. The argument is simplified in the way that no average user has the ability to see through or understand the patterns in the algorithms used on Facebook. The user might find the way that content is sorted helpful, but it has no parallel to the real physical world. On the other hand the real-world statement is precise and intelligent in the way the algorithms simulate and predict the user's behaviours and activities. The algorithms are secretive and artificial, but what they actually do, is try to predict who and what the user might be interested in. This could be people who the user has been in contact with recently, and it could be argued that this matches real world physical behaviour. Seen from the perspective of using Facebook as a means to teaching, the algorithmic intelligence and intentions should be thoroughly investigated. The fact that developers behind Facebook are third party in the interaction between users and media brings up issues related to developer intentions. We like to think of these as good, but the fact that Facebook is and was not developed for educational purposes has to raise awareness from teachers and others using the media for teaching purposes.

When looking at where a teacher or pupil would first enter Facebook, the page loads with all kinds of information, newsfeeds from friends, activities and adverts.
Facebook operates with a very rigorous overall organization system, which can be seen in the presentation of:

- The navigational labels related to e.g. pages, groups and apps are always presented in a column to the left. These labels are, what Morville and Rosenfeld (2006) describe as local navigation. See Figure 1.
- News feeds such as status updates from groups and friends are always presented in the middle of the page
- Adverts are always presented in a column to the right. At the top of the page a global navigation bar is present at all times

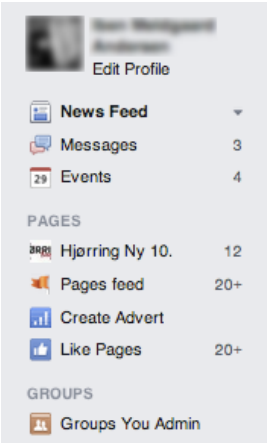

Figure 1: Example of Facebook's local navigation presented to the left on the page

Figure 2: Facebook's global navigation

The global navigation, shown in Figure 2, provides a Facebook logo, which makes the user able to go back the landing page. The global bar also contains a search option and a quick option to see notifications, messages and friend requests. These options will be analysed when looking at the navigation system. It must be stressed that it is not possible for the user to change the overall organization system of Facebook. One thing that can be partly organized by the user is the middle column where news feeds from friends and groups appear. It is possible for the user to group friends in a way that makes their updates not show in the news feed. It is not possible for the user to remove adverts in the middle column. This means that no matter how much the user tries to modify what is presented, adverts will always be shown. Advertising has become a part of the SNSs organizational system and adverts are also algorithmically sorted and presented according to previous actions, searches or behaviour. The fact that adverts are targeted might cause distractions to the pupils when using the SNS for educational purposes.

User Driven Categorization

It is hard to find any social media websites today, which do not benefit from the use of what has been called collaborative categorization (Morville & Rosenfeld, 2006), or maybe better known as tagging. Tags give the users abilities to apply metadata to any content. The SNS of Facebook distinguishes between a) tagging of people and b) tagging of content (hashtags). Facebook was not born with an option for users to tag content (hashtag) and this feature is probably mostly associated with the social network of Twitter and Youtube. Today tagging is possible on Facebook as well, and this provides the users with abilities to categorize content. By putting an # in front of a

word a link is created to a page where all content with the same tags are shown. Tags can be applied to any status updates and photos – if the tag does not already exist, a new page will emerge. Seen from an educational perspective tagging could, if used correctly, provide a positive aspect to any taught subject.
Determination of semantic relationships, controlled vocabularies, and preferred and variant terms must be considered important factors for an optimal functioning tagging system. Since users are not all experts in these matters, collaborative categorization is a tricky subject. Tagging is today a widespread and commonly used feature of almost all social medias.

Figure 3: Example of a pupil tagging a teacher in a question

An example of tagging for educational purposes could be releasing project results to others by adding relevant tag information. Tags must be considered a great way to spread content in an organized way, but problems related to lack of control and supervision are likely to ruin the process of actually using tags successfully.

The pupils and teachers from Hjørring Ny 10. are not using collaborative categorizations in their practices. Although examples can be found, as shown in Figure 4. This example shows a teacher who has published a presentation about statistics. A pupils responds with #firstlike. "Firstlike" is an Internet meme[4] where fans respond with "firstlike" if they are the first to like a celebrity's post. This does not have any direct educational value, and is a sarcastic reference to the fact that this pupil was the first one to like the teachers post. Even though this might not be a valid example, seen from an educational viewpoint, it shows that, at least some pupils, know about the hashtag feature.

[4] an idea, behavior, or style that spreads from person to person within a culture (http://en.wikipedia.org/wiki/Meme)

Figure 4: Hashtag used on one of Hjørring Ny 10.'s closed groups.

5.2.2 Labelling System

Labels are important because they represent information. Labels have the role of reflecting and symbolizing content in a way that makes sense for the user. Labels can be textual or iconic, but no matter what the label looks like, it is important that the labelling system is consistent (Morville & Rosenfeld, 2006). As with the organization system in relation to Facebook, the labelling system is also rigorously designed and almost every label is either a contextual or navigational link. This creates a broad hierarchy of labels and content. Practically, this results in a lot of labels and headings being presented at once at the main landing page on Facebook. This creates a risk of overwhelming the user with options and information.

Figure 5: Example of iconic labelling in the global navigation in Facebook

Figure 5 shows iconic labels representing "friend requests", "messages", "notifications" and "privacy shorts cuts". These symbols are used consistent throughout the SNS and are recognizable to the user.

According to Morville and Rosenfeld (2006), consistency in the labelling system is the key to success. Consistency means predictability, which makes systems easy to

learn and use. Morville and Rosenfeld (2006) present six issues, which has to be taken into consideration when developing a labelling system. The six issues (style, presentation, granularity, audience, comprehensiveness and personalization) are presented in the following.

Style

When analyzing the style used in the labelling system on Facebook, it is clear, that a lot of thought and attention has been put into this. Style refers to grammatical correctness, proofreading and punctuation, and it is obvious, that any network with the size of Facebook uses significant effort on this matter. The scope of the network of Facebook can be seen as directly responsible for changing perception of style. An example of this the "like" and "unlike" feature which has gotten it's own paragraph in the Oxford Dictionary because the connotations of "like" and especially "unlike" has changed in the minds of regular social media users[5]. Generally, Facebook must be seen as being very aware and upfront in relation to style.

Presentation

Presentation focuses on fonts, size and colours in the labelling system. On Facebook, this is also done consistently and in a recognizable way. An example of this is the blue colour used in the logo of the network. The rigorous presentation of e.g. author names as contextual links makes the user recognize functionalities easily. In the left column every label is presented with a small supportive icon. This visual presentation of icons for e.g. messages and notifications reinforces and supports the predictable nature of the network.

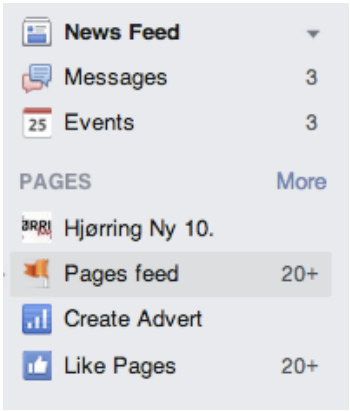

Figure 6: Example of supportive and recognizable icons in navigational labels (seen in the local navigation)

[5] (http://www.oxforddictionaries.com/definition/english/unlike).

Syntax

Morville and Rosenfeld (2006) argue that a single syntactical approach should be applied to any labelling system. An example of this can be to base labels on nouns instead of verbs. When sentences are used as a label, Facebook sticks to a short verb-based design (e.g. "edit profile", "write a comment"), but mainly labels are simple words or icons.

Granularity

Granularity is an important element to consider within any process of categorization. The determination of size of granularity defines how and what information gets placed in a specific category. The concept of granularity also implies that groups of information should be relatively equal in size (Morville & Rosenfeld, 2006).

Applying the concept of granularity to the labelling system of an SNS such as Facebook can be difficult due to the user activity on the network. An example of this is the practice of user-generated tags. When users are allowed to add metadata to their uploaded content, granularity becomes a difficult element to control. The developer loses control of categories and content division, which results in endless, and oftentimes useless, categories being submitted. Because content and authors generally appear as parts of the labelling system, the matter of granularity is difficult to handle. Developers undoubtedly have a model for the basic structure of the networks granularity, but this must be seen as impossible, and unwanted, to control due to user activity and participation.

Audience

Specifications on target audiences, including age groups, demographics, cultural, social and economical relations must be considered highly important in any company or website. Specifically, looking at audience in relation to the labelling system suggests informality in style, tone and language. It is not possible to determine demographic preferences on behalf of the labelling system, but rather that the target audience can be considered broad.

Comprehensiveness

Comprehensiveness partly has to be seen in the light of user expectations and needs. It must furthermore be seen as complex to take all Facebook users' expectations into account when talking about developing a comprehensive design for everyone. Facebook's user group is very diverse, and private users and companies are sharing interfaces. In the case of Hjørring Ny 10., the SNS of Facebook is furthermore expected to support educational perspectives. The comprehensive structure in the labelling system on Facebook can be seen as a result of the previously mentioned user-driven categorization. These processes of categorization make the scope and abilities of the network

almost unlimited. The comprehensiveness is brought to life when users can structure, categorize and edit content as it makes sense to them. The intended usage of Facebook, seen from a developer perspective, is to make the world more connected and doing so by applying a scene and settings, which are clearly comprehensive for large scale audiences and user groups.

Consistency and Predictability

The consistency in the labelling system on Facebook can be seen as a result of a general mutual exclusiveness in relation to the design of labels. The exclusiveness is a result of well-structured and organized content with correctly tailored labels that all present something unique. On Facebook, the exclusiveness can be seen in the way labels are presented when first entering. As explained through the organization system, the column to the left contains a row of contextual links, which are personally related to the user. In the top is a navigational link the user's profile and below this the links are dived into:

- Favourites (news feed, messages, events and photos)
- Pages (pages represent companies, organizations, etc. Only pages the user has liked are presented here)
- Groups (groups the user is a member of. This is also where the educational groups belong and are presented)
- Friends (networks, can e.g. be school or work related)
- Apps (where installed apps are shown)
- Interests (public figures and other people who are not directly friends)

These six labels are exclusive to each other and represent different parts of the network. This way of categorizing content into meaningful groups and adding a representing label is a big and difficult part of any website. Lack of well-established categorization will lead to lower user satisfaction through e.g. lowered findability of in formation. Again, processes of personalization, as here seen in presentation of labels, are likely to contribute to user comprehension.

Feeds, such as news and updates presented in the middle column (news feed), are links, not by themselves, but the author of the feed appearing as a contextual link. By clicking the name of the author the user is taken directly to the author's Facebook page. Underneath the author's name, it is possible to see the time or date of when the feed was posted, this feature is also a contextual link that sends the user to a page where only the specific feed is shown. Underneath the feed are some of the most social features presented: Like, comment and share. These three options are all links in their own ways. By clicking "like", the post is simply liked. Once a user has liked a

post, it is possible to “unlike” the post again. By clicking “comment” a commentary box opens underneath the post, and by clicking “share” a box with options for sharing is opened. Underneath these options it is possible to see which other users liked the post, who commented on it and who liked other users comments. Yet again, all author names serve as contextual links. The feature of presenting the user with this many contextual links holds a potential of disturbing the users focus, which raise questions in relation to educational attention when the network is used as a tool in teaching. Potentially contextual links can compliment educational curiosity in regards of browsing different topics. The main problem with Facebook is, that if an educational topic is browsed, unrelated content shown as contextual links are constantly presented and interfering with the user’s attention.

Underneath these lists is a search option presented to search for friends who are online and available in the chat function. The chat function is exactly the same as the message function, but presented differently. When in “chat-mode”, the messages come in a small box in the bottom of the page. If “messages” are entered through the contextual link, the same messages are again presented, but in a different style. This can be seen from two angles: It could be interpreted as a flaw in the otherwise rigorous labelling system because chat and messages are not mutual exclusive, but actually the same function presented in different terms and different designs. It could also be interpreted as a clever way to differentiate between a message and a chat function. Messages (if opened through the contextual link to the left) gives a better overview of all sent and received messages and the area to type a message is bigger and provides more options. The message option can be seen as a function for writing longer messages or sending files, chat can be seen as a way to quickly make a contact to a friend without having to move away from the news feed page or other parts of Facebook. The advantage of the chat function is that it can be used while simultaneously browsing other parts of the network, where as messages is a page on it’s own.

5.2.3. Navigation System

The navigation system refers to how the user gets around on a website, how links and other navigational options are presented and how content underneath the navigational options are hierarchically categorized (Morville & Rosenfeld, 2006). The navigation system on Facebook can be described as being flexible with options for personalization and social filtering. Morville and Rosenfeld (2006) suggest features, sush as breadcrumbs and sitemaps, to present the user with a navigational overview. None of these are present at Facebook but traditional navigation options such a local and global navigation are available. The local navigation is presented in the previously mentioned left column. The local navigation is constantly present, and this provides

the user an easy options to return to the main landing page or quickly go to other parts of the website. The local navigation options are contributing to a broad, but structured balance. The structure is seen in the way navigation is grouped, or categorized in the local navigation (groups, apps, pages etc.). The broadness can be seen through the number of navigational options presented on the network's front page, which in some cases can be 50+.

Personalization

Personalization processes are a main part of all information architectural elements on Facebook. Everything is personalized or affected by the underlying processes. It can be argued that a SNS like Facebook mainly serves the role as a facilitator for interaction through basic structures. Personalization processes determine specific presentation, which the user in many cases has limited control, and perhaps knowledge of. Web Personalization can be defined as:

1. A process of helping users by providing customized or relevant information on the basis of Web Experience to a particular user or set of users.
(Anand & Mobasher, 2005)

2. A Form of user-to-system interactivity that uses a set of technological features to adapt the content, delivery, and arrangement of a communication to individual users explicitly registered and/or implicitly determined preferences.
(Thurman & Schifferes, 2012)

In general, a change has happened on bigger websites and SNSs within the last decade, which seems to have replaced traditional navigation and organization systems to some extend. Previously the developer of the website would be responsible for the hierarchy of information and content, today the developers of a SNS like Facebook construct algorithmic solutions to enhance a personalized process rather than one main presentation of content for all users.

"Web Personalization is the art of customizing items responding to the needs of users. Due to the large amount of data on the internet, people often get so confused in reaching their correct destination and spend so much time in searching and browsing the internet that in the end they get disappointed and prefer to do their work using traditional means. The only way to help internet users is by providing an organized look to the data and personalizing the whole decoration of items to satisfy the individual's desire and in doing this the only way is to embed features of web personalization."
(Malik & Fyfe, 2012, p. 286)

When looking at personalization in relation to Facebook, it must be considered, that the network not only uses the concept to help users stay connected and present them with customized content, but that the matter of advertising and commerce plays a part of the social media today. Personalization as a concept is rooted in web mining, which in short is storage and structure of user log data (Malik & Fyfe, 2012), which is needed in order to precede the action of personalization. This kind of personalization is in most cases implicit and therefore not directly visible to the user. The most important sources for implicit user feed back is:

1) Reading time of the user at any web page
2) Scrolling over the same page again and again and
3) Behavioral interaction with the system.
(Malik & Fyfe, 2012, p. 287)

The fact that the user is unaware of the procedures of personalization raises a host of ethical considerations, including correct recommendations, privacy issues and black box filtration issues:

"Black box filtration is defined as a scenario where the user cannot understand the reason behind the recommendation and is unable to control the recommendation process. It is very difficult to cover the filtration process for a large amount of data which includes pages and products while maintaining a correct prediction and performance accuracy and this normally happens due to the sparsity of data and the incremental cost of correlation among the users."
(Malik & Fyfe, 2012, pp. 186-187)

This can be described as a light ethical consideration, non-the less an element which is important in relation to educational practices. Weighing even heavier is ethical issued related to data storage and rights related to web mining processes.

When applying these issues to the use of Facebook in relation to teaching, several questions arise. One is in relation to privacy, knowledge and prospects when using Facebook. Are pupils aware that their actions are being mined for both advertising purposes and presentation of content? And are the recommendations they are presented with correctly aimed? What are the ethical aspects of letting a process of personalization determine which content users, in this case pupils, are presented with? One has to critically evaluate whether the process of personalization is aimed at revenue or to ease navigation, orientation and presentation.

5.2.4. Search System

Facebook is equipped with a search feature in the global navigation bar (see Figure 2). The search feature allows users to search for "people, places and things". The search in the global navigation bar does not offer any options for filtering, but presents search results according to relevance to the specific user. An example of this can be seen in Figure 7.

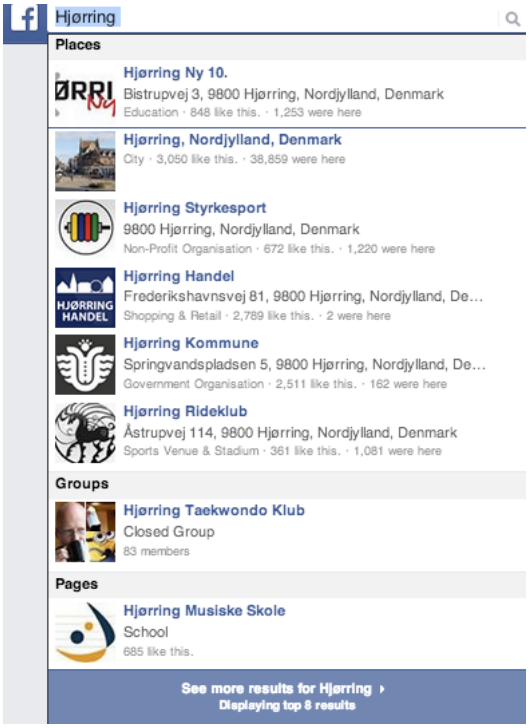

Figure 7: Example of presentation of search results seen in the global navigation presented. Results are sorted by relevance when searching "Hjørring". "Hjørring Ny 10." is presented as number 1, because the user has liked this page.

Below the search results is an option to "see more results for Hjørring". Clicking on this options, takes the user to page showing more search results and options for filtering:

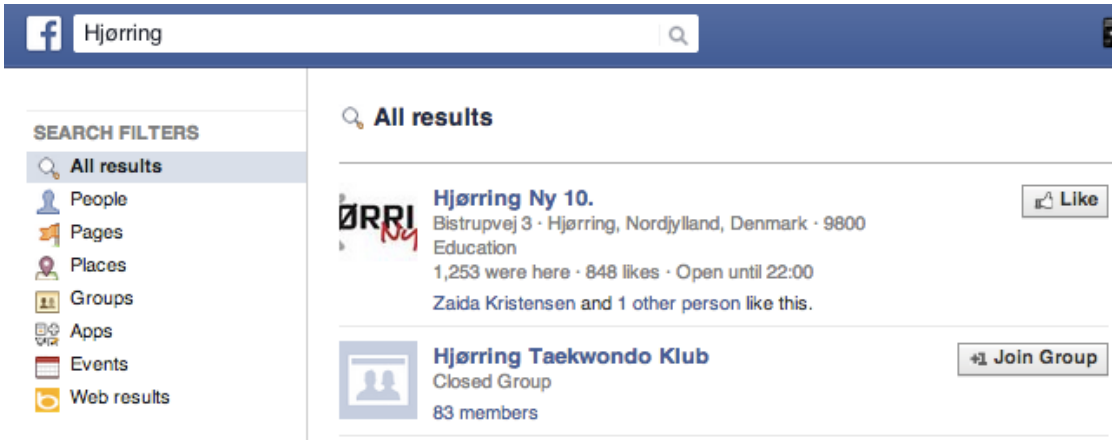

Figure 8. Search Filters on Facebook

These search filters provides the user with more detailed options for searches. Similar for all search results, no matter what filter is used, is that they appear sorted by relevance to user. This is again a result of personalization processes, which are done to in order to present the user with the best matching results. It must be considered that instances of black box filtration are likely to occur because of the personalized presentation of results.

To ease the process of search on Facebook, the search feature used autocomplete (Morville & Callender, 2010, p. 82). This means that the search bar will present search options after the first typed letter. This solution solves common problems related to typing and spelling and must therefore be considered a helpful tool to the searching user.

Conclusion on Information Architecture Analysis

Information Architecture answers some questions to why Facebook is attractive as an educational tool. Especially the transference of personalization from personal use to educational use can be seen as beneficial for both teachers and pupils. These personalization processes makes the SNS appear relevant and familiar, it eases search and findability. Findability is furthermore supported by broad navigation system equipped with recognizable icons and labels. Labels are written in a clearly understandable language and are consistent throughout the network.

The Information Architecture analysis has provided an overview of design and structure. These elements do, to some extend, not seem adequate to explain all features presented on the SNS of Facebook, e.g. interactive participation structures as “likes” and “comments”. Elements relating to persuasive processes will therefore in the following be used to illuminate the features, which Morville and Rosenfelds’ definitions fail to explain.

6. Persuasive Technology Analysis

6.1. Introduction to Persuasive Technology

Persuasive Technology is a set of design strategies and theories, which were first introduced by B.J. Fogg in 1997 at the yearly HCI conference and have since then been a main contributor to the field. Persuasive Technology focuses on human-computer interaction (HCI). In HCI the technology is a participant rather than a facilitator. As Fogg argues, a facilitation of for example communication is not regarded as being persuasive (Fogg, 2003, p. 16).

Persuasive Technology is rooted in the rhetoric discipline of persuasio in relation to modern technologies and social psychology. Classically, persuasio is preoccupied with gaining or winning listeners attention and inducing belief or action, a broad definition, which BJ Fogg has narrowed down into a definition of Persuasive Technology as being:

"An attempt to change attitudes or behaviours or both (without using coercion or deception)"
(Fogg, 2003, p. 15)

Persuasive Technology focuses on how different technological products and platforms can change users' attitudes and behaviours, but the changes have to happen without using coercion. Coercion implies force, and the field of Persuasive Technology agrees that the changes have to happen voluntarily.

Fogg has further developed the term "Captology" which is short for "computers as persuasive technologies" and focuses on the design, research, and analysis of interactive computing products created for the purpose of changing people's attitudes or behaviours (Fogg, 2003).

Persuasive technologies can have side effects, which cannot always be predicted. Captology only focuses on the effects, which are intentional. This means that unintended or unplanned persuasion is not considered a persuasive technology, according to Fogg (2003, p. 16).

6.2. The Functional Triad and Roles in Persuasive Technologies

Fogg introduces what he calls The Functional Triad to explain what different persuading roles computers can have. The Functional Triad is a conceptual framework for

depicting how the user perceives the roles of computers. The three elements in the triad are computers serving the role of either

- a tool,
- a medium or,
- a social actor.

Fogg explains how Persuasive Technologies can be used for educational purposes (Fogg, 2003), which matches the presentation of the hypotheses that social media can serve as a useful contributor in teaching and educational related communication.
In the following these three different persuasive roles will be applied and analyzed in relation to the actual educational and communicative use of Facebook at Hjørring Ny 10.

6.3. The Persuading Tool

A persuading tool is a technology, which is designed to facilitate a change in behaviour and/or attitudes. This facilitation should help the user by making the process of change easier. The tool can for example, make things easier to do or it can motivate or put things into systems.

Reduction
The design principle behind reduction is simple: reducing the effort the user has to spend in order to perform a task. In this case, the task should enhance a change in behaviour or attitude. When looking at Facebook in this context, reduction plays a big part in the persuading process. An important thing to remember, when talking about reduction, is the aspects that are no longer explicit, because they have been reduced. One feature that Facebook has implemented and which is supported by the principle of reduction, is the login feature. Once the user has logged in, the network and browser remembers the user's details and will automatically (if allowed) log in the user in future. This act could possibly reinforce the users' desires to return more frequently due to the reduced process. This type of reduction has been spread out to other sites and networks, in a way that it becomes possible to log in to other sites with a Facebook account. This almost eliminates the process of signing up and remembering passwords and user names, a big element of reduction.

Another element of reduction is the way commentary boxes and icons in general are presented. These features are instantly available, which means that the user does not have to leave a page to perform an action. This centralized design has reduced the

navigational complexity, which relates to the already mentioned hierarchical broadness of Facebook.

Generally, Facebook has successfully implemented a navigational reduction throughout the entire network. An example of this are the available features in relation to the news feed: status updates, commentary, likes, uploads and navigation in between these. Without moving away from a page, it is possible to upload a video, picture or link and attach information to this (geographical information or other relevant tags). It is also possible to comment, share or like these uploaded elements, without ever having to move away from the main news feed. It is possible that this reduced level of navigation and clicks has a positive effect on pupils' willingness to engage with educational related content.

On the other hand it must be debated whether reduction in relation to the educational aspects on Facebook is a reality, seen in the light of the many possible disturbing elements on the network. These are advertising and social activities that are not related to educational matters, but still a constant available temptation. These interfering elements cannot be categorized as reduction seen from an educational perspective; these disturbing elements are more likely to hinder concentration and thereby narrow the chances of positive changes due to persuasion.

Tailoring

The persuasive technology of tailoring is like reduction, a big part of the construction of Facebook. As previously mentioned, the process of personalization partly determines what the user is presented with, when visiting the social network. The difference between customization as a persuasive tool and the personalization used on Facebook is, that the processes of customization has to change attitudes or behaviours, and the intentions behind the persuasion have to be explicit, in order for the technique to be a persuasive technology. Personalization, on the other hand, often happens, as earlier mentioned, implicitly in the use and structure of the SNS of Facebook. Ultimately this results in less knowledge and options for the user. This challenges the persuasive validity of the process of personalization.

The ethical grey area between implicit and explicit personalization will depend on developer intentions and users' perceptions. Fogg argues that the persuasive processes are considered legitimate when the purpose of the personalization results in something positive for the user. Thu, it must be considered difficult for developers to calculate specifically on all users' needs and wishes, and whether these are positive for the individual. When analyzing tailoring in relation to educational purposes on Hjørring Ny 10.'s Facebook pages, explicit and implicit personalization are both presented.

Explicit personalization is shown in the way, the user can choose what post he or she wants to be presented with, as shown in Figure 9. The implicit personalization lies in advertising and in the way posts and search results are presented.

Figure 9: Example of explicit personalization (get notifications)

It can be discussed if the mix of explicit and implicit processes of personalization contribute to even more ethically blurred lines. It can be questioned if a pupil, or users in general, are aware of the personalization processes, which are both interactive and invisible. On the other hand, if these implicit processes persuade the pupil to return frequently, spend more time on homework and communication related to schoolwork, most people would probably consider this a legitimate and positive purpose – and then the implicit tailoring, or personalization, can possibly be seen as a persuasive tool.

Suggestion

Behind suggestion lies the idea that a user is more likely to perform an action, if he or she is presented with the right information at the right time (Fogg, 2003). Suggestion operates closely with the rhetoric principle of Kairos, which means finding the opportune moment to present a message. A suggestion that is not given at the right time or in the right context, might result in a black box scenario where the user is confused or

puzzled rather than informed or persuaded. The tool of suggestion is closely related to the personalization process because suggestions on Facebook rely on already existing user data. This especially includes finding new friends within the network and personally aimed advertisement.
It must be considered difficult to determine when the opportune moments occur and when users are open for persuasive suggestions. A user might find the appearance of new friends important, or even be persuaded by advertisements, but direct correlations to education and suggestion might be difficult to find.

Self-monitoring

When considering self-monitoring from a persuasive perspective the most obvious use of this technique is in relation to giving the user real time feed back on for example health or mental status. This can be used to monitor how well a user is performing the target behaviour, this could be weight loss, and at the same time, self-monitoring increase the continuance of performance towards the targeted behaviour.
Applying self-monitoring to the SNS of Facebook gives an interesting perspective on how users can track their own social behaviour and in particular social success. An example of a self-monitoring process on Facebook is the "Like" feature. This feature has the primary function of making other users like each others statuses, photos or other uploads. But for the user, who initially created the status, the "Likes" becomes a self-monitoring success counter. Recalling Fogg's definition of what a persuasive technology is, the technology has to be intentionally designed with the purpose of persuading the user. If the user who created the status aim's is to have as many friends "liking" or seeing the status, then the process of self-monitoring in relation to social success becomes legitimate.
On Facebook group sites, the feature of self-monitoring has an even further extended feature. Here it is possible for users to see, how many people have seen any post that has been uploaded to the group. This feature is bordering on surveillance, but for the user who has created the post this feature is useful to find out, how many people have read the post. An example of this is shown in Figure 10.

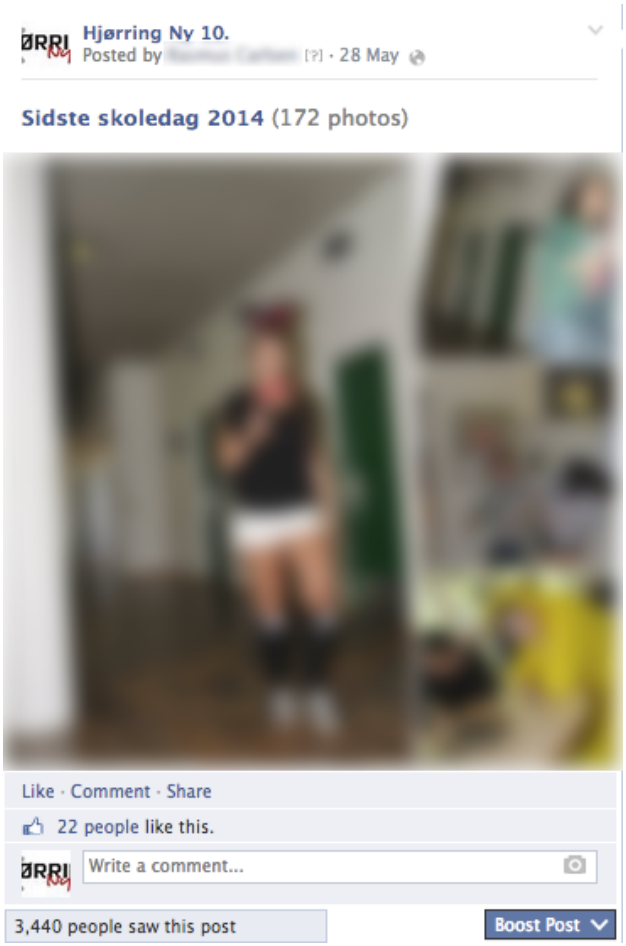

Figure 10: Example of the view counter in Hjørring Ny 10.'s Facebook page. (3.440 people saw this post). This example also shows the reach of Facebook. In two days these photos from the pupils' last school day reached almost 3500 views. Not more than 850 people are following Hjørring Ny 10.'s page.

The self-monitoring feature on Facebook is again difficult to directly relate to educational use. It might be useful for teachers, to be able to see, who has read posts, but whether the pupils directly use these counters to monitor educational and behavioural performances are probably unlikely.

Surveillance

Surveillance is likely to have negative connotations seen in the previously mentioned issues related to data mining and the uncontrolled and implicit processes of personalization and customization. Surveillance in relation to persuasive technology has the perspective of allowing one party to monitor the behaviour of another to modify behaviour in a specific way (Fogg, 2003, p. 74). Surveillance can either be implicit and covert, which is the case in most personalization processes on Facebook, or it can be explicit and overt. Covert (secret) surveillance is not a persuasive technology because of the user's possible missing consent. The matter of surveillance contains

ethical grey areas where it must be considered how much knowledge users have about these implicit processes – and whether knowledge of these processes changes behaviours or attitudes even though a secretive form of surveillance is not considered a persuasive technology, knowledge about surveillance could be likely to change the way that users operate within the SNS. An example of this is the censorship on the SNS of Facebook. Certain photo material or hateful messages are not considered legal on the network. Profiles might be closed down if this kind of material is published – the question is, if this form of censor-focused surveillance is contributing to behavioural changes in form of revision of what is published on the network. Seen from the educational perspective, where young people use the network for school related work it must be considered a positive feature. But whether this form of surveillance is open, visible and overt to the users is questionable. If not, the surveillance processes cannot be considered persuasive, even though it might shape, change or modify behaviour and possibly attitudes.

Conditioning

"B.F. Skinner was the leading proponent to operant conditioning, which peaked four decades ago and is now controversial in some circles. In simple terms, operant conditioning (also called "behaviourism" and "instrumental learning") is a method that uses positive reinforcement, or rewards, to increase the instances of a behaviour or to shape complex behaviours" (Fogg, 2003).

The SNS of Facebook uses conditioning through the already mentioned persuasive elements; the social reward that lies in connecting and following friends, including the interactive abilities, can all be considered behaviouristic. The "like" feature can be seen as a very direct behaviouristic element, a reward that is giving to the user, who has created a post, that other users found interesting. Seen from an educational point of view, the publishing of school related work or activities, which is then liked by friends or other pupils, could also be seen as an action of stimuli and response.
Conditioning principals in relation to persuasion is very relevant and opens up several ethical questions, especially in relation to using persuasive techniques on children and teenagers.

Positive Reinforcement

Fogg (2003) argues that he only sees positive reinforcement as a persuasive tool. In classical behaviourism, or operant conditioning, the reinforcement can either be positive or negative. The term reinforcement describes the effect that an expected consequence can shape certain behaviour. The consequence can only be expected if it is performed in a contingent manner. Contingency is a critical part of reinforcement

because it creates expectations, which, according to the theories of conditioning, will shape or change behaviour(s):

"It may be easiest to grasp the distinction between the two (positive and negative reinforcement, red.) by associating the term positive with adding and the term negative with subtracting or taking away. Positive reinforcement, then, is the effect that occurs when a behavior is strengthened because something is added to a situation by a teacher, parent, or other caregiver. (In fact, consequences need not be added by a person; some consequences are said to be naturally occurring, such as the classic example of a child touching a hot stove.) Note that what is added to the situation can take many forms. A social gesture or positive words (e.g., praise, a smile, a pat on the back), an activity or privilege (e.g., extra recess, time to play a computer game, choice of where to eat lunch), or a tangible object (e.g., food, toys, or stickers) can have a reinforcing effect on behavior."
(Landrum & McDuffie, 2008)

Applying the theories of conditioning to the SNS of Facebook is not difficult – the network almost seems to overflow with positive reinforcement, which is given to the user when he or she publishes content, which is then liked by other users or friends. The fact that someone "likes" ones photo, status update, link and so on, must be considered an element of positive reinforcement. The SNS partly serves the role as a medium for this reinforcement, which is actually given by other human beings. Looking back on Fogg's definition of Persuasive Technology and HCI it was stated that this technology is a participant rather than a facilitator (Fogg, 2003). "Likes" might be a hybrid between a participant and a facilitator because the users indirectly interact with each other through the features. It can therefore be debated how much the SNS of Facebook facilitates features for communication and how much it participates.

These features are intentionally designed to work this way, so it is not a problem calling this form of conditioning interaction a persuasive technology. The interactive features on the SNS, which mediates the positive reinforcement, might result in the user returning more frequently and being easier to persuade on other levels. This is where the application of Facebook as an educational tool is likely to shine - in the light of conditioning features which create pupils who are more likely to be persuaded, maybe to do tasks related to school, homework, assignments etc.

6.4. The Persuading Medium

When a technology is serving the role as a persuading medium it will mimic a situation or experience. The technology becomes a medium by simulating an outcome, a

risk or simply a possibility. The persuading medium provides experiences to the user, experiences which can influence the change of behaviour or attitudes (Fogg, 2003). These experiences can make the user connected to the system through real-world parallels and these simulation features have expanded largely since Fogg first presented his persuasive triad in 2003.
Fogg propose three categories of simulation which are relevant to persuasive technologies:

- simulated cause-and-effect scenarios
- simulated environments
- simulated object

Facebook mostly uses the simulation of environments, which is why a closer look at this category can help to explain the design and processes that lay the foundation for using Facebook as a didactic and communicative media. Simulated cause-and-effect scenarios are not directly apparent on the groups and sites Hjørring Ny 10. has on Facebook. Cause-and-effect simulations enable the user to explore without having to deal with possible real life consequences – this kind of simulation might be available through different apps, but not directly in the design of Facebook. Object simulation provides experience in everyday context – meaning that an object simulating product follows users in a real world setting. It could be argued that the development of apps and smart phones has moved SNS closer to a possibility to being used as simulated objects, but this is not how the media of Facebook is used in relation to teaching at Hjørring Ny 10. An analysis of this will therefore not be carried out.

Simulated Environments
Environmental simulations can be described as one of the core persuasive elements in Facebook when looking at the groups and pages operated by Hjørring Ny 10. Groups related to specific subjects, e.g. English or maths, simulate the classroom where information, tasks and communication would happen in real life. The general expanded use of different media and the Internet in general can make it hard to argue, that social media is not real life, but distinctions between mediated (online) communication and non-mediated (physical) communication can be made.

Teaching environments are attempted simulated in Hjørring Ny 10.'s Facebook groups. The simulation is not one-to-one. Real life communication enables expressions that are not available in mediated communication. This can be reading of facial expressions, emotions and moods. These are all related to social psychology, and it must be considered impossible to fully bring these expressions into written text on a commentary track on Facebook. The simulation is further not one-to-one because

pupils and teachers (users) are likely to express themselves differently in real life than through a media.

Language will naturally be different on any media compared to real life due to the lack of physical presence - and teachers might be able to benefit from moving the physical classroom into a Facebook group because of this. When talking Persuasive Technologies, the benefit has to be related to change in attitude and behaviour. This change could enable pupils to more easily access to school activities, such as finding homework or asking for help. This could help some pupils in completing tasks or homework and further motivate or promote behavioural changes. But why does it seem that some pupils are motivated by Facebook and less by the physical classroom? An explanation of this can lay in the fact that the situated environment is not 1:1. The fact that language is more informal on Facebook than it could be expected in a physical classroom might influence motivation in some pupils. The fact that the classroom is taken into the pupils arena might also influence motivation. In this arena, the pupil is in control of the environment in a different way than in real life. The pupil can choose to answer a message later, as opposed to in real life, where an asked question normally requires an answer straight away. Bringing the classroom into the pupils own arena might leave some pupils with the feeling of having more control. Making a presentation in a classroom might be a frightening experience for some pupils, but adding a comment or uploading a project on the Facebook group wall might seem less intimidating.

Environment and Language

Recent research on SNSs can help establish the differences or correlations on language and behaviors between the physical environment in a classroom and the environment in the virtual classroom in Hjørring Ny 10.'s Facebook groups and pages. First it is necessary to establish a distinction between a public space and a private space on Facebook. This distinction is important because the differences between public and private spaces makes users interact and participate in different ways (Herring, 2007).

The private and public space on Facebook can be divided into degrees of publicness and directedness:

- Publicness is "the probability that one's behavior will be observed by others and the number of others who might see or learn about it" (Leary & Kowalski, 1990, p. 38). Publicness on Facebook could be a message or update on a Facebook page with a significant amount of users.

- Directedness refers to messages, which are sent directly from one person to another. This can be done with the Facebook chat function – it could also have been a private email.

- Hybrids between directedness and privatness on Facebook are common – sharing content in a smaller group or on a personal wall lands in between a private and public space.

Herring (2007) argues that participation structures change when the user moves from a private to public environment and that these changes in behaviour can be seen in linguistic behaviour. User expectations and expressions also change in relation to public and private spaces.

"*In terms of Facebook participation structures, we argue that both publicness and directedness will affect how people express emotions. In general, we expect public messages to be more positive and less negative in tone. This is because negative emotions are more private than positive emotions (Finkenauer & Rimé, 1998) and often are attached to sensitive and private information, creating a social norm of focusing on positive rather than negative emotions in conversations with strangers and acquaintances (Leary, 1995). These norms hold in Facebook as well. Status updates do contain more positive than negative language (Kramer & Chung, 2011), and the expression of negative emotions and experiences is perceived less favorably than that of positive experiences in public Facebook conversations.*"
(Bazarova et. al. 2013, p. 125)

When looking at Hjørring Ny 10.'s use of Facebook some groups have been chosen to be private while others are puplic. Private means that only the members of the groups can see activity within the group and that only group members can create, like, comment and share posts. Public means that anyone can see activity and publish content. To exemplify this, the English group is closed and the group for the girls' elective course (Valgfag – kun for piger) is open. Comparing these two groups does not make any clear indications of different behavior in the setting of closed or open groups. This might be because the pupils are not aware of the groups' statuses (open/closed) and further see groups in relation to their school as a safe environment. The language in the group posts is mainly of informative and subject related character, for example what homework needs to be done. Teachers create by far the most posts and these posts are often neutral when it comes to emotions – this is perhaps what can be expected in informational material from a teacher to a group of pupils.

Figure 11: Informational post from a teacher. This post reflects the general language used by the teachers at Hjørring Ny 10. on Facebook.

Figure 12: Example of humoristic reply from a pupil to a teacher.

Students on the other hand tend to reply with either humor or sarcasm to posts, if they reply at all. Humoristic replies can be related to expressing emotions, which indicates a sense of directedness. The teachers' general neutrality in posts reflects a sense of publicness. This combination creates the hybrid between the two spaces, which makes sense seen in the light of the groups being school related – not completely private nor entirely public and distant. The teachers' neutrality in posts might also reflect their own sense of leadership and responsibility. Pupils do not need to worry about these

factors because they are not in charge. This divergence in roles and powers might also contribute to the creation of a hybrid between publicness and directedness.

Adaption and modification of language hold some analytical value when looking at Hjørring Ny 10.'s pupils and teachers' behavior on Faceboook. The pupils and teachers views on Facebook as being either a public or a private space might change the way they behave. If a pupil is in a private space and feels subjected to directedness he or she might be behave differently, simply because the arena feels safe.

Though Persuasive Technology claim, that it is possible to simulate a physical environment in a technology. It must be stressed that a simulation only roughly creates an environment that has some of the same functionalities as a physical environment. Differences are firstly that pupils and teachers' language and behaviors are likely to change when the environment are moved from the classroom into a Facebook group. This change in language and behavior and emotion might impact positively on pupils perceptions (motivation) in general, but also more specifically in relation to learning within homework and assignments. Secondly, the aspects of emotion sharing and readings become blurred and difficult. Negative influences are possible when looking at the lost abilities to read emotions and feelings, in contrast the creation of a hybrid environment might make some pupils more emotionally expressive due to the feeling of a private arena.

Linguistic observations create an interesting angle to analyze the virtual classroom of Hjørring Ny 10. on Facebook, but to use these observations to estimate the level of simulation in this specific case, it must be considered necessary to compare the mediated language to the physical, non-mediated language in order to establish correlations or differences.

6.5. The Persuading Social Actor

When a computer or media serves the role as a persuading social actor, it will use different techniques to socially involve users. This is a direct process between the computer (developer) and the user. This is different from being a persuading medium or tool, where the computer or media is more likely to facilitate actions. The social involvement can happen through abilities to read social cues such as happiness or anger. It can apply social pressure such as peer pressure or attract users through physical attractiveness. Fogg (2003) propose five primary types of social cues which causes people to have a sense of the computer or media as being socially present:

Cue	Example
Physical	Face, eyes, body, movement
Psychological	Preferences, humour, personality, feelings, empathy
Language	Interactive language use, spoken language, language recognition
Social Dynamics	Turn taking, cooperation, praise for good work, answering questions, reciprocity
Social Roles	Doctor, teammate, opponent, teacher, pet, guide

Table 1. Types of Social Cues (Fogg, 2003, p. 91)

At first glance, it might appear, that Facebook is not a direct social actor, but rather a facilitator for social activities. But when looking closer to the design of Facebook it is clear that the use of social psychology plays a part of the system's design and features. An example of this is seen in the text box where the user can write status updates, share pictures etc,. Here a sentence asks: "What's on your mind?", which is an example of interactive and psychological use of language. The question is implicitly caring and friendly and it gives a sense of a system that wants you to interact.

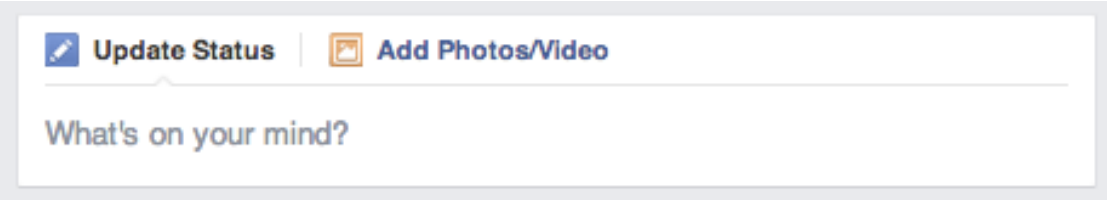

Figure 13: Example of persuading language on Facebook.

It is interesting that this sentence is not consequent throughout the SNS of Facebook. When in a group (e.g. the English group) the statement in the text box is "Write something…" and on pages (e.g. Hjørring Ny 10.'s main page) the question presented in the text box is: "What have you been up to?". It is possible that these different questions make users unconsciously interact differently. It is not possible to claim whether these messages make users create different content from the point of the analyzed data from Hjørring Ny 10., but it can be stated that these messages are persuasive and partly move the SNS into the role of an social actor, mainly using language which provides psychological references such as empathy and personality. In general, the SNS keeps language neutral and simple, and definitely not overflowing with emotional messages – this is why it is not reasonable to claim that Facebook is purely based

on social acting, but functions more as a facilitator for social related activities between users.

7. Motivation and Learning

Through the analysis of the SNS of Facebook in a didactic context, it is apparent that information architectural components can explain some factors of its success. These are mainly related to structure, organisation and presentation of content. The general simplicity in the design of the navigational structure of Facebook seems to have positive effects on the use amongst pupils and teachers. Persuasive Technology can, in further detail, than information architecture, explain the interactions, which fall between the fields of social psychology and computer interaction. Through the Persuasive Technology used in Facebook, it has been claimed in the analysis that simulations of environment and behaviour, elements of reduction (making tasks easier to do), and positive reinforcement are persuasive elements that contributes to the apparent success of using Facebook for didactical purposes. What the field of Persuasive Technology does not explain fully is, whether processes of learning are made intrinsic through persuasive technologies. The field of Persuasive Technology is concerned with making the processes of persuasion overt to the users – a noble, but in reality complicated, ambition that will be discussed in the following.

There are two main problems related to using Facebook and Persuasive Technology as didactic tools for educational purposes:

1. Facebook was neither created nor designed to facilitate didactic and learning experiences.
2. Persuasive Technologies are aiming to change behaviours and attitudes and not to serve as a direct tool for creating learning environments for school pupils.

In reality the SNS of Facebook is being used to create environments for learning, as seen in the pages and groups of Hjørring Ny 10. This is a widespread phenomenon that extends to many other areas of schools and education in general. This can, for example, be seen in the research regarding upper level education, as seen in Chapter 1 (literature review). Firstly, the fact that Facebook is being used as a didactic tool in many educational areas must be considered a reality, even though this was not the primary developer intention for the SNS. The practice seems to function and satisfy user expectations to communicate, including sharing and publishing content. Facebook is, as stated in the analysis, a textbook example of a persuasive media using persuasive techniques. Though these persuasive technologies may be efficient tools in teaching and communicating with pupils, the use of these technologies in combination with role diversity (student, teacher) creates some ethical considerations. These con-

siderations extend further into areas which modern pedagogical theorists have been preoccupied with; internalization of learning, reflection and intrinsic motivation. The reason why these areas must be thought of as being ethical issues, in relation to Facebook, is the SNS's core of conditioning elements as persuasive tools.

Conditioning principals in relation to persuasion are very relevant and raise several ethical questions, especially in relation to using persuasive techniques on children and teenagers through communicative and educational purposes on Facebook.

7.1. Positive Reinforcement and Persuasion

Fogg (2003) argues, that he only sees positive reinforcement as a persuasive tool. In classical behaviourism, or operant conditioning, the reinforcement can either be positive or negative. The term reinforcement describes an effect – the effect that an expected consequence can shape curtain behaviour. The consequence can only be expected if it is performed in a contingent manner. Contingency is a critical part of reinforcement because it creates expectations, which, according to the theories of conditioning, will shape or change behaviour(s):

"It may be easiest to grasp the distinction between the two (positive and negative reinforcement, red.) by associating the term *positive* with adding and the term *negative* with subtracting, or taking away. *Positive reinforcement*, then, is the effect that occurs when a behavior is strengthened because something is added to a situation by a teacher, parent, or other caregiver. (In fact, consequences need not be added by a person; some consequences are said to be naturally occurring, such as the classic example of a child touching a hot stove.) Note that what is added to the situation can take many forms. A social gesture or positive words (e.g., praise, a smile, a pat on the back), an activity or privilege (e.g., extra recess, time to play a computer game, choice of where to eat lunch), or a tangible object (e.g., food, toys, or stickers) can have a reinforcing effect on behavior." (Landum & McDuffie, 2008)

Applying the theories of conditioning to the SNS of Facebook is not difficult – the network almost seems to overflow with positive reinforcement which is given to the user when he or she publishes content that can then be liked by other users or friends. The fact that someone "likes" your photo, status update, link and so on, must be considered an element of positive reinforcement. The SNS partly serves the role as a medium for this reinforcement, which is actually given by other human beings. These features are intentionally designed to work this way, so it is not a problem calling this form of conditioning interaction a persuasive technology. The interactive features on the SNS, which mediates the positive reinforcement, might result in users returning

more frequently and being easier to persuade on other levels. And this is where the aspect of using Facebook as an educational tool is likely to shine - in the light of conditioning features which creates pupils who are more likely to be persuaded, maybe to do tasks related to school, homework, assignments etc.

7.2. Ethical Considerations on Conditioning

The behavioural view, including conditioning, has been significantly criticised in regards to:

- using coercion through the processes of reinforcement (the process might be covert),
- lack of making behaviours last long term and only making behavioural changes temporarily,
- undermining intrinsic motivation.

The criticised elements listed above, can all be related to cognitive processes, such as intrinsic motivation, that behaviourism fails to fully explain. Reasoning, motivation, interest and recognition are important parameters when discussing education and cognitive development, but also elements, which the process of especially conditioning does not take fully into consideration. Modern pedagogical theories are highly concerned about recognition and motivational theories.

The theory of operant conditioning (Skinner) does not neglect the presence of "internal events" such as motivation or feelings, but describe these as being difficult to measure and unreliable. Instead, operant conditioning is concerned with the environment, which, according to behaviouristic theorists, is the best measurable way to change any behaviour. This means that, primarily, by changing options or surroundings it is possible to change or modify behaviour.

The "view counter" in Hjørring Ny 10.'s groups can be used to exemplify how small change in the environment can cause a behavioural change. The view counter makes it possible for anyone to see who and how many has seen a specific post. This can be a tool for the teacher to determine if all pupils have seen tomorrow's homework. The pupils are presented with the counter as well. In this example the counter, or the surveillance, is the stimuli. The response would hypothetically be that pupils are more likely to check homework because they know that they are being monitored. As a result more homework is likely to be done and the possibility of a change in behaviour arises. The view counter is overt – it is presented and open to all users, everyone knows the counter is "watching" them. This openness places the counter into the category persuasive technologies. The question is if the pupils are aware that they are

persuasively targeted, in this example through techniques of conditioning and surveillance. The line between manipulation and persuasion becomes very thin when arguing that processes have to be overt in order to be persuasive. In the case of Hjørring Ny 10.'s virtual environments on Facebook, the cause is good. Most people would be able to agree that doing homework and facilitation of good practices of communication between teachers and pupils are acceptable purposes of persuasion.

7.3. Modern Pedagogical Application to Persuasive Technology

It can be discussed how intrinsic motivation in pupils can be supported through persuasive elements focusing on conditioning and surveillance. These techniques are emphasizing shaping of behaviours and are less interested in intrinsic motivational factors. In order to justify the use of persuasive elements in didactics without neglecting pupils' intrinsic motivations, it is necessary to discuss a new theoretical standpoint in relation to persuasive technology. This standpoint has to support intrinsic motivation in teaching and focus less on shaping and modelling of behaviours because these are difficult to ethically argue when teaching school children.

In the beginning of the 20th century, the Russian psychologist, Len Vygotsky, presented a pedagogical theory called "zone of proximal development". This theory is a reaction to multiple theories, behaviourism being one of them. Vygotsky describes learning and development as two inseparable parts, and that behaviourism, or reflex theories, development as an accumulation of all possible responses (Vygotsky, 1978). The zone of proximal development focuses on levels of *actual* development and levels of *potential* development through guidance and problem solving. Vygotsky describes that the zone of proximal development can be used as a tool to understand the internal course of development in children and teenagers. In other words; the zone of proximal development is used to determine what a learner can achieve on his own and what it is possible to achieve with help from teachers (or a person on a higher developed level).

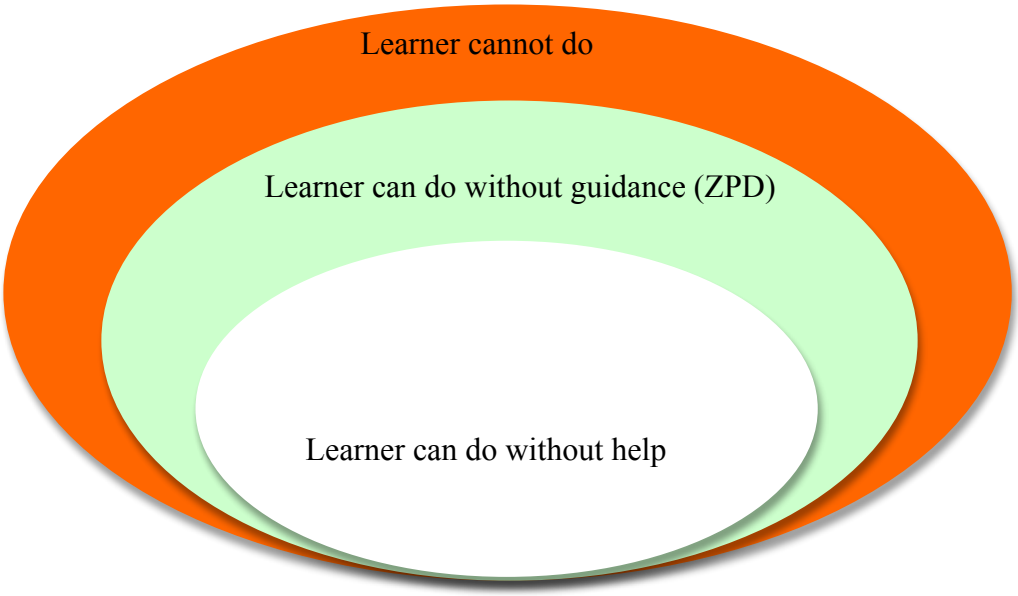

Fig. 14: Zone of Proximate Development, Vygotsky (1978)

The zone of proximate development is highly relevant in general ICT used in schools, including used didactic platforms, in this case Facebook. The fact that teaching moves from physical to mediated environments, does not necessarily mean, that teaching should become behaviouristic and focus on shaping behaviours. Pupil's intrinsic motivation possibly play a big role of the success of using mediated teaching environments - and their development zones in relation to ICT might in some cases be higher than the teachers. Viewing the pupils' zones of development in relation to ICT will move focus from behaviour shaping to intrinsic motivational factors. This change in focus can still be persuasive, but more overt and open than some of the persuasive techniques that Fogg presents (e.g. surveillance and conditioning).
The zone of proximate development in ICT can be used to change the mindset of persuasion in relation to teaching and didactics. It focuses on what development the pupil can achieve through the use of any given system, in this case Facebook, deriving from the pupils' own initiative and motivation. The persuasive technique related to the zone of proximate development could be helping or supporting features in the system. Furthermore, it could be the ability to make other users, teachers or pupils, help and support one another. In this way the pupils will be in more control of the persuasion and the processes will be more overt than conditioning features.

Vygotsky's theory of zone of proximal development is supported by research showing that the role of the teacher is of high importance when using social media in teaching. It further supports that development (informal learning) and learning processes (for-

mal learning) support each other, but sometimes happen on different levels, which Greenhow and Robelia (2009) also argue in their study.

8. Inspiration Card Workshop

Two workshops were held to establish correlation between the analyzed information architecture and persuasive technologies and teachers and pupils' perceptions of the use of Facebook for educational purposes.
Identical material was presented to the participants in the two workshops. The first workshop had 5 participating pupils and the second workshop 6 teachers, all more or less involved with using social media in relation to teaching or communication in their daily practice. The workshops were focused on the findings from Persuasive Technology and Information Architecture to narrow down what elements and components are perceived as relevant and functional to the pupils and teachers.

The workshop was, as mentioned in the methodology chapter, a modified Inspiration Card Workshop. Intentionally, this kind of workshop is developed to enhance user involvement in a design process. For these conducted workshops the use was of evaluating character with the aim to later suggest possibilities for redesigns. Halskov & Dalsgård (2006) names the cards for the Inspiration Card Workshop as "Technical" and "Domain" Cards where the Technical Cards are related to functions and Domain Cards represent information related to settings, themes or people. In the workshops conducted for this thesis, the Information Cards have been changed to "Feature Cards" and "Cognitive Cards". The similarities between this thesis' modified workshop and Halskov and Dalgård's Inspiration Card Workshop are strongly connected to the wish to make participants reflect on their interactions (Schön, 1983).

The workshops were identically designed with the intention of comparing pupils' and teachers' results and statements with each other. Both the teachers' and the pupils' workshops had the following agendas:

a. Inspiration Card Workshop focused on features and usage
    - Discussion and writing down statements
    - Range Feature Cards according to use and relevance

b. Inspiration Card Workshop focused on cognition an learning outcomes
    - Matching Cognitive Cards with Feature Cards

In order to make the participants focus on usage, they were not presented with the second part of the workshop before the first part was finished.

8.1. Feature Cards

The first part of the workshop was focused on finding views and perceptions of different features on Facebook. The participants were told to focus on the features use or options of use in relation to school related activities. These activities were specified broadly to be both communication to do with social activities, e.g. school parties and excursions. These activities could also be more subject related, e.g. homework or help to do complete assignments.

The features which the participants were presented, with had been determined by, in particular, the Persuasive Technology analysis. These features were made into cards on which the participants were encouraged to write their thoughts. The features on the cards for the first part of the workshop were:

1. Automatic login
2. Wall
3. Check-in
4. Statistics
5. Polls
6. Video
7. Photos
8. Comments
9. Share
10. Search
11. Smileys/Emoticons
12. Control functionalities
13. Messages
14. Chat
15. Like
16. Event
17. Calendar
18. Tags
19. Open Group
20. Closed Group
21. Pages
22. Hashtags

The participants were further encouraged to collaboratively discuss their own use and views of the different features. These reflective findings were difficult, if not impos-

sible, to establish through the observed practices. The participants' discussions of the features and how they are used were therefore highly desired for this part of the workshop.

To conclude the "Feature Card" workshop the participants were asked to sort the cards from the most to the least used and useful features. The idea behind the card sorting was to make the participants reflect even further about what features they use the most – or perceive as most useful and beneficial.

8.2. Cognitive Cards

Cognition deals with how people perceive, learn, remember and think about information (Sternberg, 1996, p. 2). In order to make the workshop participants put words on what outcomes the different features have, a set of cognitive cards were made. These cards were partly focused on results and developments in pupils, including psychological benefits, or issues, implicit in the use of SNSs. An implicit cognitive feature can for example be force or motivation.

The cards for this workshop were determined by findings in previous research related to learning in the context of different SNSs. These findings are related to SNSs positive influence on informal learning processes (Greenhow & Robelia, 2009) and the process of identity formation (Ericson, 1968). These findings resulted in a card simply called "personal development". Contrary to this was the card "subject related development" (formal learning). From a scientific standpoint, subject related development is difficult to evaluate from an observational standpoint. Andersson et. al. (2012) furthermore point out that the use of 1:1 computing in schools (which can be transferred to mandatory use of SNSs for educational purposes) is enhancing the gap between high performing and low performing students.

A card called "motivation" was also presented. This card reflects Callahan & Bower (2011) research which present that SNSs promote motivation in students compared to traditional teaching. Finally cards related to students abilities to determine private and public mediated spaces were also used in the workshop. Bazarova et. al. (2013) concludes that students express themselves differently when in a private online space compared to a public online space. All together these previous findings resulted in 11 "Outcomes and Benefits Cards":

1. Concentration
2. Motivation

3. Communication
4. Surveillance
5. Force
6. Cooperation
7. Reflection
8. Help/Support
9. Creativity
10. Personal Development
11. Subject Related Development

The cards related to “Force” and “Surveillance” are results of the findings in the Persuasive Technology analysis. Force is related to the implicit psychological processes of conditioning. Surveillance is both related to a bigger perspective of data rights, but also more specifically to teachers’ abilities to watch whether pupils have read posts or not.

The participants were asked to pair the 11 Cognitive Cards to the Feature Cards. This was done in order to make participants reflect on which features generate certain outcomes. These reflections were not directly observable in the Facebook pages through the analysis. Again, the participants were encouraged to discuss their perceptions in order to express tacit knowledge (Reber, 1989). The participants were told to only add the “Outcomes and Benefits” cards, if they could see a relation.

The reason for the collaborative discussions amongst the participants was based on a need to clarify the following:

1. Level of reflection of use of features in both teachers and pupils,
2. Correlations in the participants reflections and statements to observed practice on Facebook,
3. Thoughts on how practices can be developed or modified.

9. Workshop Results

9.1. Feature Card Workshop

In the Feature Card Workshop 6 teachers and 5 pupils from Hjørring Ny 10. participated in two separate groups. All participants had experience with Facebook in relation to their educational activities. Some participants expressed a greater level of experience than others.

The teachers report that they use their own personal profiles on Facebook when posting and communicating with the pupils. One teacher reported that she used to have a separate profile for work relations, but she states that this became too complicated and therefore only uses her normal account today.

The participating teachers and pupils wrote down the following statements on the cards after collaboratively discussing the features. The statements from the teachers and pupils are presented together to enhance the reader's overview. After the statements the author's comments are reported.

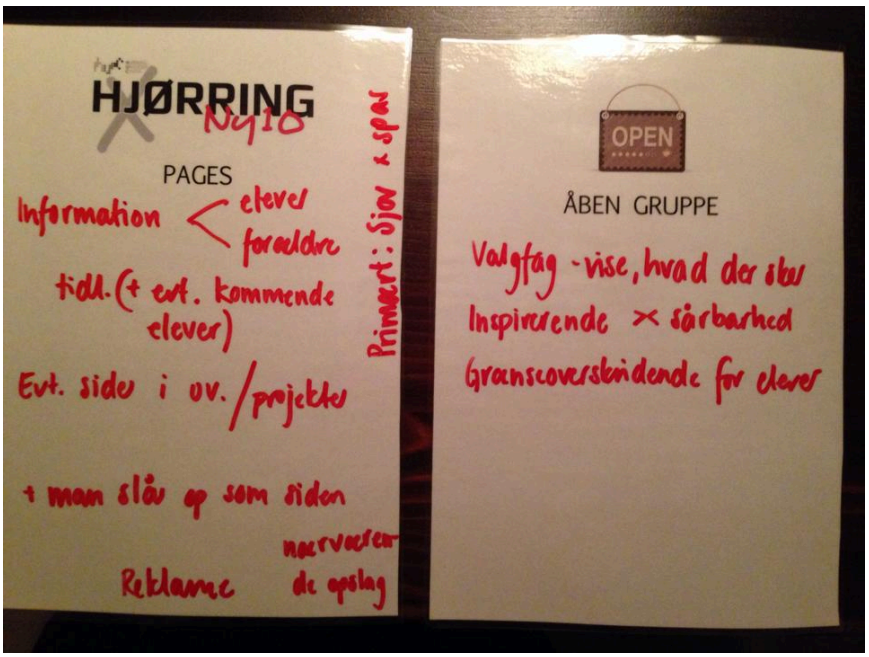

Figure 15. Example of Feature Cards with teachers' written statements

Automatic login

Teacher input

Few teachers expressed that they always log out on work computers due to fear of misuse. One even reports that he has experienced other people using his account. Others explained that they like the automatic login because it saves them the hassle of remembering and typing passwords and user-names. The argument for using the automatic login is that it makes the media more available.

Pupil input

At first the pupils show difficulty in understanding the card, but reach understanding by discussing the feature. They agree that the automatic login makes them return to the media more frequently. One pupils express worries about using the automatic login on school computers, but all pupils use the automatic login on their phones.

Author's comment

The automatic login can be seen as a key feature of the process of reduction according to Persuasive Technology. The fear of misuse is reflected in both teachers and pupils, which can limit the process. However, some participants reflect that this feature makes them use the media more than if they would have to login every time.

Wall

Teacher input

The teachers do not add much information to this card. They all agree that this is the backbone of Facebook and they use it for informational purposes.

Pupil input

The pupils are aware of the feature and report that teachers can post homework for them on the wall.

Author's comment

The participants all use the wall and are familiar to the feature and that it is used to share and post content.

Check-in

Teacher input

Only two of the six teachers report that they have ever used this feature – and this use was not work related. They all agree that the check-in feature has potential and could be used, for example for check-ins doing outdoor activities such as orienteering runs. One teacher asked whether it is possible to check out. Another reports that other

people have checked her in at places without her permission, and she would prefer that not to happen.

Pupil input
The pupils have difficulties adding any information to this card. They can't see how this is beneficial for educational or communicative purposes. One pupil suggests that check-in could be used as a tool to check attendance.

Author's comment
The check-in is partly seen as a feature of surveillance. The teachers express worries about the possibility of being checked-in without their consent. In this lies a fear of not being in control of their online activities, including who might be watching. At the same time, the teachers are interested in the possibility of being able to observe where the pupils are, which is also a form of surveillance. In the discussion amongst the teachers it is revealed that some lack knowledge about privacy settings (e.g. abilities to control who can tag one in posts and check-ins). The fear of not being in control could therefore be rooted in missing information in relation to privacy settings.
The pupils show poor reflection of this feature, but does to some extend tie the feature to processes of surveillance (attendance control).

Statistics
Teacher input
Only one teacher expresses knowledge of the feature of statistics on Facebook. He is the administrator of the main page of Hjørring Ny 10., and has used the statistics from the main school page to make conclusions about what to post and how frequently posts should be made. He explained that if he posts too many "boring" posts in a row, then fewer and fewer pupils watch them. Boring posts are mentioned as being posts of informative character. Pictures and videos are further mentioned, by the administrative teacher, as a good tool to increase the number of views. The other teacher's knowledge of the statistical feature is limited. The example of the "view counter" in groups is presented, and the majority of the teachers were familiar. The "view counter" or "seen by" feature shows how many users have read a post in a group. The teachers point to this feature as being advantageous in order to check what posts pupils have or have not read.

Pupil input
The pupils have difficulty recognizing this feature, but reach understanding by discussing the card. They focus on the "view counter" which shows how many people have seen a specific post. All pupils see this as something annoying. One pupil ex-

presses that it is positive for the teachers, that he or she can see who has read the post. It is negative for the pupils because they can't lie and say that they did not see the post.

Author's comment

The majority of the teachers reveal a lack of knowledge of the statistical features on Facebook. After being presented with it, they agree that this feature holds great advantages. The advantages are pointed towards surveillance of the pupils. The participating pupils see this surveillance as something negative. From their point of view the counter is a trap.

Surveillance can be a Persuasive Technology if the pupils are aware that they are being observed, which is the case for the workshop participants. The problem is, that they do not express a need for a behaviour change. They feel forced to do their homework when teachers can see that the post was read, but they did not ask for this kind of control.

Polls

Teacher input

This feature allows users to make a survey in a group. None of the participating teachers had previously used the survey function on Facebook. They agree that this tool could be used to evaluate teaching and other arrangements. The participants further discuss how this feature can be used to measure the pupils' feelings towards different subjects.

Pupil input

The pupils have to have the card explained. Afterwards a few pupils express that they have seen this feature but never used it. They discuss that the card could be used for votes or polls.

Author's comment

Both teachers and pupils reveal little knowledge about this feature and how it can be used. In a Persuasive Technology perspective, the "Polls" card can be a persuading tool, which is making things easier to do, motivate or put things into systems (Fogg, 2003).

Video

Teacher input

One teacher in particular has used the video functionality on Facebook for different purposes. She explains how the multimodal approach enables pupils to see things multiple times, whereas a traditional lesson can only be seen once. By recording a video, the pupils can return and watch the lesson later, for example before attending an exam. The teachers discuss the benefits of making pupils publish presentations in their Facebook groups. An argument is that pupils are less reluctant and shy when, for example, talking a foreign language to an iPad compared to classmates. All participating teachers agree that they have to get better at using videos as part of their teaching practices.

Pupil input

The pupils cannot recall ever using the video feature while at school. But they agree that videos could be uploaded as a part of teaching.

Author's comment

The accessibility of video feature on Facebook facilitates social acting and is a strong Persuasive Technology. The technology is yet again a facilitator. The Information Architecture supporting this feature makes it very easy to use. This is partly related to the broadness of the structure of the SNS where almost everything is available on the front page. The ability to express emotion and feeling in a video enhances the abilities for both communication and social acting. The workshop participants are all familiar with this feature and how it can be used. The teachers can see many positive opportunities using videos as a part of their own and the pupils' practices.

Photos

Teacher input

All teachers agree that photos are very useful for enhancing the pupils feeling of being part of the school community. One teacher, the Hjørring Ny 10. admin, explains how they have uploaded more than 4000 photos of pupils and teachers to their school page on Facebook. Only a few posts have later been deleted on request from the pupils. Other teachers report how pictures from previous years suddenly become attractive and commented and shared by former pupils. For more educational purposes the teachers agree that photos often say more than words and that photos seem to attract the pupils' attention.

Pupil input
The pupils' agree that photos can be used to take pictures of what has been written on the board instead of taking notes.

Author's comment
As with the video feature, the ability to upload photos is highly accessible and easy to administer. The participating teachers primarily focus on how photos enhance social processes, which matches the persuasive technique of social acting. The wish to upload photos can also be seen as a need to personalize or even simulate the physical environment (Fogg, 2003).
The pupils mainly focus on their educational practice and do not recall any social aspects of uploading photos.

Comments
Teacher input
The teachers agree that comments enable recognition of pupils. The teachers explain that they feel like they support the pupils by commenting posts, partly by showing their presence and interest. It is also argued that pupils use comments to ask for help and that pupils further have better time to reflect on how to formulate a question or a statement when using the comment feature than when talking in a non-mediated forum. The teachers see this reflective communication as something positive. The teachers further discuss how they have experienced their pupils being very well behaved. They have not experienced bad language or misuse of the abilities to comment. The teachers agree that they should not interfere when pupils discuss on Facebook, but that the tone in general is very good.

Pupil input
Comments are especially useful to ask questions to teachers. The pupils further see comments helpful in relation to important information and homework.

Author's comment
The teachers statements related to the this card is supported by Bazarova et. al. (2013) findings related to language on SNSs. The fact that teachers explain how they have not had major problems with bad language, bullying etc., shows that the pupils are most likely aware of the arenas grades of directedness or publicness. The comment-feature used on Hjørring Ny 10. is most likely to fall into the hybrid between directedness and publicness.
The "comment" feature hosts a range of Persuasive Technologies. It uses reduction in the way that comments are very easy to do – compared to replying to an email or

other more traditional mediated communication. The feature also facilitates social acting and simulation of environments.
The pupils are less reflected than the teachers and place focus on how comments can be used in relation to homework and are less preoccupied on social processes.

Share

Teacher input

The teachers are all familiar with the sharing feature on Facebook. Their practical experiences with the feature in relation to education purposes is limited, but they agree that feature holds great possibilities with regards to sharing material and information. A discussion on what should be shared by teachers is sparked. One teacher has recently shared a mathematics joke, which the other teachers report that they did not find very amusing. It is discussed what should and should not be shared, in order to keep the pupils interest intact. The teachers agree that shared content has to be in the pupils' interest; otherwise they will stop paying attention.

Pupil input

The pupils express that sharing can be useful in relation sharing homework or websites, but reveal that they have not used the feature much.

Author's comment

The sharing feature relates to a process of reduction. It is no longer necessary to copy a link and then paste it, in order to share it with others. The sharing feature furthermore simulates a physical environment. In a non-mediated environment, pupils might get photocopies of a text or assignment. By sharing in Facebook, this action is transferred into the simulated online environment.
The feature has not been used much by the participating teachers or pupils. The teachers show a high level of reflection about how to use, or perhaps more important, how not to use the feature.

Search

Teacher input

The teachers briefly talk about this card. They explain that they use it to find groups and pages and do not have much else to add.

Pupil input
One pupil explained that he has used the search to browse information about what school to attend next year.

Author's comment
With regards to search, the unspoken must be considered to be of great importance. In this case, teachers and pupils do not express any dissatisfaction with the search functionality. From this it is possible to conclude that, they have not experienced any major issues with the feature. It provides the search functionalities that are expected by the users. A search system, which is one of the four main components in Information Architecture, should provide the user with useful results which can be difficult to find on a larger website through navigation (Morville & Rosenfeld, 2006). From the lack of comments from the participants it can be concluded that the search system most likely fits the user's needs and expectations, which is supported by the findings in the analysis of the search system.

Smileys/Emoticons:
Teacher input
Smileys are something all the participating teachers use. The teachers quickly move into a discussion about how and why smileys are used. One teacher explains how she uses smileys to express a mood. This can for example be to comfort pupils before an exam. It can also be to soften the edges of serious messages. The teachers further discuss if they are imitating the pupils, trying to talk their language by using smileys and what happens if they stop using smileys. The teachers agree that there is no way back once you have started using smileys.

Pupil input
The pupils left this card empty. They express that they use smileys, but not for educational purposes.

Author's comment
Expression of emotion seems to be of high priority to the teachers. They want to be able to express emotions, which they are otherwise able to in non-mediated communication. The participating teachers reveal a high level of reflection of their own use of smileys and how the pupils perceive this.

The pupils surprisingly chose to leave this card blank and expressed that they could not see any benefits from using smileys in relation to their learning. Their reflections seemed limited in regards of their own practice. Through the observed data it has been

concluded that pupils regularly use smileys. The pupils' statements are therefore conflicting the observed.

Previously smileys were made out of written signs. Today medias like Facebook offer a wide range of personalized smileys, or what is called emoticons. Emoticons have developed into small cartoon-like characters, which are used as smileys. An example of this is the cat "Pusheen", shown in Figure 16, which can express different moods and feelings. This development of personalization in smileys can be seen as a result of users wanting to be able to express themselves with emotion and personality in mediated spaces.
Smileys and emoticons are Persuasive Technologies in the sense that they function as social actors. They also attempt to simulate the physical environment where emotions are naturally are expressed. This simulation is interesting in the reflection of the users' perceived type of environment. The teachers' use of smileys suggests that the space where the communication is situated is not perceived as being entirely public, hence the wish to express emotion. This again places Hjørring Ny 10.'s use of Facebook in the hybrid between a public and a private space (Bazarova, et. al., 2013).

Figure 16. Examples of emoticons used on Facebook. The emoticon cat "Pusheen".

Control Functionalities

Teacher input
Some confusion amongst the teachers occurs when this card was presented. Some teachers were not sure what the control functions or settings were. The teacher, who is administrating the main page of Hjørring Ny 10., explains that he has used filters to block out certain words. He explains that this has primarily been done in order to limit the pupils' abilities to talk badly about a rival, private school. He further explains that he rarely filters any words or messages. Another teachers explained how she used to divide her networks into work, private and so on. This became too complicated, so she stopped doing this. The teachers discuss that the filtering of words could be used for educational purposes, for example in language teaching.

Pupil input

The pupils express that they use the control functionalities to remove things, which they find unserious. They also use the feature to correct posts, if they have made spelling mistakes.

Author's comment

Some lack of knowledge about control functions are revealed by the teachers. The teachers, who previously have used control functionalities to sort their networks, found this to be too complicated. The teachers express no concerns about using their private Facebook profiles in relation to work. The pupils seem aware of aspects of the feature in relation to editing and blocking/removing posts that they are not interested in.

Messages/Chat

Teacher input

When reviewing the card "messages" the teachers express different levels of usage. One teacher tells that she has never used messages in relation to her pupils. Instead she uses the school intranet, but admits that her messages are often left unread. Other teachers explain that they use the message functions on Facebook often and that Facebook guarantees success in getting in contact with pupils. The teachers agree that the Facebook messages have replaced mobile text messages between pupils and teachers.

Pupil input

One pupil explains that he uses messages to send files to himself, in that way his files are available to him at both the school and at home. Another pupils express that chat is a quick way to write to others about homework.

Author's comment

The messages and chat feature was in the workshop presented as two separate cards because they hold different functionalities. In messages it is possible to attach files, etc. Chat does not have this option. When a message is posted it is shown in both the chat and message feature. None of the participants, teachers or pupils, could recognize the differences, therefore the two cards are analyzed together.

The teachers express clear indications of Facebook as being their primary mediated message tool. They furthermore express that the communication facilitated by the SNS is very successful compared to using the schools intranet. Both messages and

chat are, compared to sending an email or using the school intranet, characterized by the process of reduction. To this can be added the already discussed features of smileys and emoticons, which are likely to add more personality and emotion in messages that more traditional mediated communication can provide.
The teachers' statements can further be related to importance of teachers' roles when using social media for education purposes. The teachers that use Facebook for communicating with their pupils must be considered available and present to the pupils. This is an important factor to using SNS in teaching successfully (Callahan & Bower, 2011).
The teachers' statements reflect a successful practice. The statements also reveal that the participants did not have explicit knowledge about what the feature of messaging holds in relation to the chat feature.
The pupils express that they use messages to communicate but also as a "cloud" function to enhance availability at home and at school. This use is particular interesting because it can be seen as non-intended.

Like

Teacher input

The participating teachers express that "liking" is related to acknowledgement. It is explained that "liking" is like saying: "I have seen you", and the teachers see this as a motivating action. It is further stated that, the teachers themselves are motivated by likes, and they feel that the pupils are as well. It is debated what it does to a pupil if his or her post is not liked by anyone, and they all agree that this should be avoided. One teacher compares "likes" to real life. She has experiences pupils liking her mathematics posts – she express that this kind of pupil-teachers acknowledgement is unlikely in a traditional, physical classroom.

Pupil input

The pupils explain that likes can be used to show, that a post has been read. They further add that they especially like photos, which have been taken from school arrangements.

Author's comment

Likes have, in the previous analysis, been compared to a social process of conditioning. This can be linked to the teachers' statements about likes in relation to motivation and expectations. They like the acknowledgement that a "like" has, and they feel that the pupils feel the same. Likes can be seen as a way to motivate learning processes, but a level of collective manipulation is also playing a part. Levels of intrinsic and extrinsic motivation must be discussed when determining motivation through likes.

The “like” feature has become one of Facebook strongest and most recognizable elements. The reason behind this is likely to be found in the strong conditioning effect, that “likes” seem to have on the users. Other reasons for this features success can, as with many other features, be explained by the positive effect of facilitation of social acting. The teachers’ statements are interesting when viewing the groups on Facebook as simulations of a traditional classroom. Their statements prove that behaviour is different in mediated and non-mediated environments.
The teachers show a high level of reflection in relation to the “like” feature. The pupils express less reflection of their practice in regards to “likes” but reveal that they use the feature.

Event

Teacher input

Only a few teachers have used this feature in their practice, but all teachers agree that this feature is a potentially useful tool. One teacher expresses that it could be a help to some pupils in relation to exams or other important dates. Further applications are discussed, e.g. assignments which could be made into events in order to remind and help pupils.

Pupil input

The pupils state that they use the event feature to see who is attending social activities both at the school and privately.

Author’s comment

Facebook’s event feature is very accessible due to processes of reduction and the broadness in the navigation system. Events, as with almost every other feature, can be reached within one click when the main page is entered. Despite this features accessibility it does not seem to be a widely used tool by the teachers or the pupils. The pupils place their focus on social activities and the teachers express that they hardly ever use the feature.

Calendar

Teacher input

None of the teachers have used the calendar on Facebook and some confusion occur when calendar and event is presented as two different features. All teachers agree that the feature has potential in regards of homework and other study related activities.

Pupil input
The pupils express that the calendar has possibilities in regards of homework and exam dates, but they have not used the feature previously.

Author's comment
The teachers are not aware of the feature but agree that it is functional. The pupils know about the calendar but have not used it. The situation appears similar to that reported with the "event" card.

Tags
Teacher input
One teacher immediately expresses how she does not like this feature. She feels that she looses control over what content she is associated with when other people tag her in posts. The other teachers explain that she can avoid this by changing her privacy settings – this leads the teachers into a discussion about how important the privacy settings are. It is reported that pupils like to be tagged in posts and especially in photos taken by a teacher. The teachers explain how pupils often ask the teachers to tag them, when a photo is taken. The teachers see this a need for self-promotion. It is agreed that tags are like "throwing information in the pupils faces". When they are tagged they "have to" respond to it. The teachers further discuss how they could use tagging in the future in relation to their practice. It is suggested that absent pupils could be tagged in posts related to exercises and homework to keep them updated.

Pupil input
The pupils cannot recall this feature being used from any educational viewpoint, but state that teachers could tag pupils, who are not attending. In this way they would be able to see homework.

Author's comment
Tagging is related to several persuasive mechanisms; surveillance is undoubtedly one. As one teacher express, she fears being tagged in content she is not familiar with. This surveillance technique could be used to change behaviour in pupils, but ethical concerns must be evaluated.
Perhaps more positively the tagging feature enables social activities. According to the teachers' statements, the feature of tagging seems highly popular amongst the pupils. This adaption is interesting because it is not rooted in any non-mediated forms of interaction – it is not possible to "tag" anyone in the physical world. Tagging is therefore a good example of adaption to new technologies and how mediated interaction

holds different options than non-mediated interaction. Tagging further facilitates the persuasive element of social acting.
It can be concluded that not all teachers are familiar with privacy settings and how they are able to control them. Besides this, the level of reflection and understanding of the feature of tagging is high amongst the participating teachers.
The participating pupils show little reflection about this card and cannot recall ever using the feature for educational purposes.

Groups

Teacher input

The ability to create groups on Facebook was presented as two separate cards; closed groups and open groups. The teachers chose to debate the differences of these two together. One teacher tells that she has changed her groups from open to closed to give the pupils a sense of privacy. When the teachers started using Facebook in their teaching practice, it was decided that their groups should be open. This was decided in order to inspire other pupils, who would be able to follow what was going on in e.g. elective subjects. The teachers express that this openness made some pupils feel exposed, resulting in some teachers making their groups closed. The teachers discuss what open and closed groups can achieve – which users can see content and what the benefits of closed groups are.

Pupil input

The pupils state that their schools main page on Facebook should be an open group and available for everyone. Subject related groups should, in their opinions, be private.

Author's comment

The teachers reveal high knowledge and reflection of the functionalities of Facebook groups. They have experience in using open and closed groups and the effects of these. The pupils and most teachers prefer closed groups because this enhances the pupils' contributions. Even though the pupils do not put as many words and reflections on the group cards they express a need for open and closed forums.
Initially the teachers thought that open groups were the best solution, but their opinions have later been changed. The closed community within a group can be related to several things. One is the difference between publicness and directedness (Bazarova et. al., 2013). The closed groups reflect a need for directedness in order to make pupils participate and feel safe. This can be further be correlated with a simulated environment (Fogg, 2003). In a traditional classroom personal interactions are required, and the surrounding world is not invited into the room – learning can be seen as a

private affair, which requires trust and pupil-pupil and teacher-pupil relations. In the simulated environment on the Facebook groups for Hjørring Ny 10., an open group can be compared to opening the door a classroom and inviting externals to observe. The closed group and its effect on the pupils' sense of safety can therefore be seen as a good example of the persuasive technique of simulating an environment.

Pages

Teacher input

The teachers express that they use the schools page on Facebook a lot, and that the page has great activity. Sometimes even activity which stretches further than the amount of likes that the page has. The teachers discuss that the page probably is a good marketing tool because future pupils and parents have the ability to follow the page. The admin of the schools page explains how he has to be careful with regards to what content is published on the page. The content has to be interesting and present to the pupils otherwise they stop paying attention. Pictures and videos are mentioned as useful in order to keep pupils watching. Another teacher adds, that parents are also following the site.

Pupil input

The pupils state that their school's page is being used to announce parties, news and other arrangements. They all express that they have "liked" the page and are following it.

Author's comment

The teachers see great possibilities in using the "page" feature in order to communicate to pupils and their parents. They further see pages as a way to promote their school. The teachers have put a lot of thought and effort into making their school page functional and attractive to their pupils. Pages are by default open – this gives them a different purpose than groups, which the teachers mostly keep closed and private. The openness of pages relates them to the aspect of publicness. Lastly teachers express that they are available and participating in activities on the schools' page, including subject related groups. As previously mentioned, teachers presence on the SNS plays an important role in successfully using the media for educational purposes (Callahan & Bower, 2011). The pupils express less reflection but seem aware of the functionality of a page.

Figure 17 shows the statistics of age groups on Hjørring Ny 10.'s Facebook page. The age groups ranging from 13-24 (79 %) must be considered present and previous pu-

pils. Interestingly the age group ranging from 35-54 are represented with 15 %. This age group are likely to be pupils' parents.

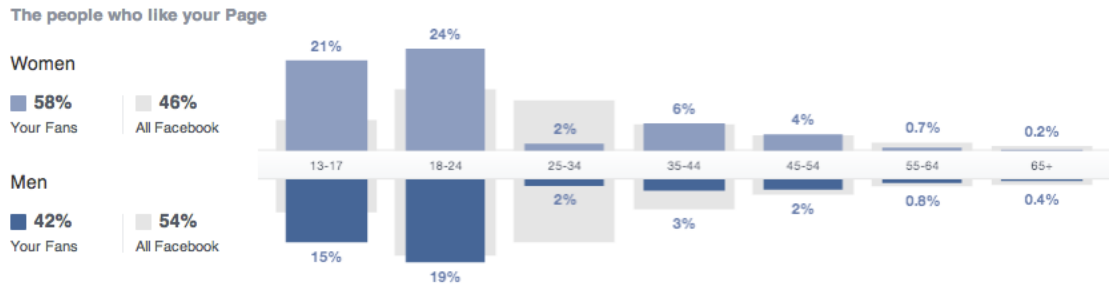

Figure 17. Facebook age statistics related to Hjørring Ny 10.'s page.

Hashtag

Both the participating teachers and pupils need to have the card and feature explained. They have never used the feature the teachers leave the card empty. The pupils suggest that hashtags could be used to tag different subjects.

Author's comment

Hashtags are an example of user-generated categorization. It is relatively new on Facebook, but is the backbone feature of e.g. Twitter and YouTube. On these SNSs user categorization is necessary in order to reach users other than ones friends or followers. The workshop participants' lack of knowledge of this feature might be caused by its recent implementation.

Ranking of features

After discussing the feature cards, the participating teachers and pupils were told to rank the cards according to their most frequently used features.

Figure 18. Teachers ranking Feature Cards

The participants chose to rank the cards in the following order. The teachers chose to share certain ranks because they felt that some features are used equally:

Pupils:	Teachers:
1. Automatic Login	1. Pages
2. Wall	2. Open/Closed Group
3. Search	3. Wall
4. Chat	4. Pictures/Video/Share
5. Smileys/Emoticons	5. Comment
6. Message	6. Like
7. Pictures	7. Message/Chat
8. Video	8. Statistics
9. Like	9. Smileys/Emoticons
10. Comment	10. Calendar/Event
11. Calendar	11. Tag
12. Pages	12. Poll
13. Event	13. Check-in
14. Open Group	14. Automatic Login
15. Closed Group	15. Control settings
16. Share	16. Search
17. Tag	17. Hashtag
18. Control settings	
19. Polls	

20. Statistics
21. Hashtag
22. Check-in

Some inaccuracy was revealed in the pupils' ranking during this exercise. Previously it had been stated that they do not use smileys in their educational interaction. When ranking the features, smileys/emoticons were ranked as number 5. The ranking of the card in this exercise matches the observed usage better than the pupils' original statements. From this exercise it is noted that the participating pupils do not see themselves use the more technical features of Facebook such as control settings, polls and statistics. The teachers saw themselves as more frequently users of the statistical features. This is likely due to a need to observe and evaluate practices and approaches.
The pupils state that the automatic login is the first thing that happens, when Facebook is entered, therefore this card is first. The teachers, as stated in the first part of the workshop, were more reluctant with regards to making the system remember their logins.

9.2. Cognitive Card Workshop

After ranking the feature cards the participants were introduced to the Cognitive Cards and were asked to match these card to the feature cards. The participants were again encouraged to discuss their thoughts. The cards were presented as cards containing outcomes of using Facebook for educational purposes. The results of this process are given in Table 2.

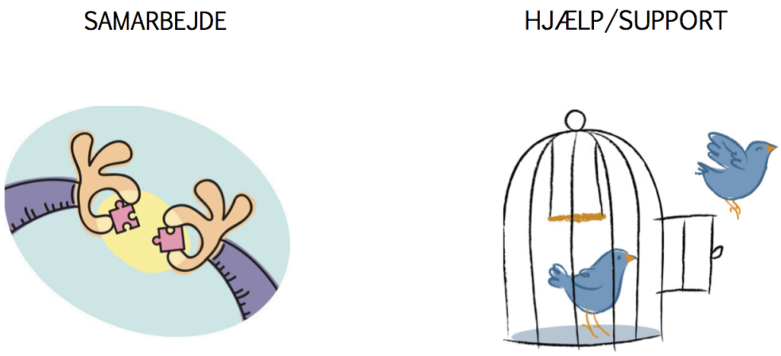

Figure 19. Examples of Cognitive Cards

Feature Card	*Cognitive Cards, teachers*	*Cognitive Cards, pupils*
Wall	Communication	Surveillance
Pages	Communication, surveillance, help/support, creativity	Communication
Open Group	Communication, Motivation, Creativity, Surveillance, Personal Development, Subject Related Development, Help/Support, Reflection, Teamwork, Concentration	Communication
Closed Group	See Open Group	Subject Related Development
Tags	Communication, Motivation, Help/Support, Surveillance, Personal Development, Teamwork	Force
Calendar and Events	Communication, Motivation, Help/Support, Concentration, Teamwork	Help/Support
Smileys/Emoticons	Communication, Motivation, Personal Development	Motivation, Reflection
Like	Communication, Motivation, Reflection, Personal Development	Motivation, Reflection
Message and Chat	Communication, Teamwork, Motivation, Reflection, Subject Related Development, Personal Development, Help/Support	Teamwork
Check-in	Surveillance, Personal Development, Communication, Subject Related Development	None
Automatic Login	Motivation, Help/Support	Motivation, Reflection

Hashtag	Creativity, Teamwork, Communication, Subject Related Development, Help/Support, Surveillance	None
Search	Help/Support, Reflection, Subject Related Development, Concentration	Personal Development
Control settings	Help/Support, Communication, Reflection, Surveillance	Concentration
Polls	Communication, Teamwork, Reflection, Help/Support, Subject Related Development	Subject Related Development
Statistics	Reflection, Help/Support, Surveillance, Communication, Motivation	Force
Comments	Communication, Motivation, Teamwork, Reflection, Creativity, Personal Development, Subject Related Development, Help/Support, Concentration	Help/Support
Share	Motivation, Teamwork, Communication, Help/Support, Reflection, Concentration, Subject Related Development	Communication
Pictures	Creativity, Motivation, Reflection, Personal Development, Subject Related Development, Communication, Teamwork	Creativity
Video	Personal Development, Reflection, Teamwork, Motivation, Concentration, Subject Related Development, Creativity, Communication, Help/Support	Creativity

Table 2. Assignment of cognitive cards to the feature cards by teachers and pupils.

The pupils and teachers interpreted the exercise differently. Generally, the teachers applied multiple Cognitive Cards to the Feature Cards. The pupils mainly chose one Cognitive Card for each Feature Card. The participants were allowed to apply the cards in the way they found appropriate in order not to bias their thoughts.

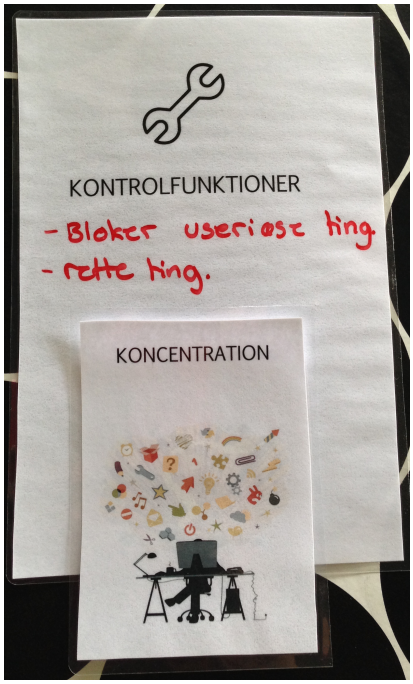

Figure 20. Example of pupils' matching of cards

Even though the participating pupils chose to apply fewer cards, their reflections show similarities between pupils and teachers perceptions of what cognitive attributes the different features have. It should be noticed that the teachers left the card "force" out completely. They did not see any of the features as being related to force. The pupils thought differently, and stated that tags and statistics as having an element of force. They expressed that this force is applied by the teachers to make pupils read things or do their homework - an element that the pupils did not find positive. Both pupils and teachers focused largely on the communicative and motivational benefits from using Facebook in related to their educational practices.

10. Discussion of Findings

In the workshops the pupils showed less reflection about their own interactions on Facebook than the teachers. This is likely to be explained by the teachers' educational backgrounds and the fact that they collaboratively have decided to use SNSs in their teaching practices.

From the workshops it can generally be concluded that none of the participants have used all available features on Facebook. Many participants, both pupils and teachers, expressed doubts about the purpose and usefulness of some features. Some of these elements are designed to persuade, e.g. hashtags, automatic login and polls. The potential of these persuading elements is not questioned, but it can be questioned whether the lack of knowledge about some of these features prohibits the users from experiencing the full persuasive effect and thereby limiting possibilities for changes in behaviours or attitudes.

Nonetheless, statements from both pupils and teachers point towards the fact that Facebook is a media that offers different and sometimes extended possibilities in relation to education compared to the school's normal intranet and non-mediated practices. This positive outlook on the use of Facebook in relation to educational purposes is caused by the following:

1. A search system that matches user needs. None of the participants mention the search system as being difficult to use or presenting wrong answers to their searches. Many things were not said in relation to search. This can be interpreted as something positive because the users are not required to understand the search, the search is required to understand the user.
2. Specific features, such as automatic login and those that support communication, are mentioned by the participants as key elements for frequent use of the media.
3. The media supports communication in a more accessible way than other medias can offer. These communicative practices are supported by a range of features e.g. chat, messages, likes, comments and wall posts.
4. The abilities to make pages and groups public, facilitates abilities to promote the school and differentiate environments.
5. Simulations of a classroom, which is seen in the closed groups, enhance the pupils' motivation and sense of having a safe learning environment.
6. Features allowing surveillance are by the teachers seen as a positive tool to monitor the pupils. The participating pupils find it hard to see the positive benefits from

the surveillance, but are aware of, that the teachers do it for the benefit of the pupils.

With regards to the Information Architecture and Persuasive Technology analysis the following can be concluded:

1. There is overall broadness in the organization and navigational system. These are elements that belong to Information Architecture and further explain structures and hierarchies. Facebook's hierarchical broadness makes almost all features available on the front page. In this case, the broadness can be interpreted as enhancing accessibility.

2. The navigational overview and consistency plays a role for the users frequent habits of use. This might be true in a broader context, but it is also why the SNS of Facebook contains possibilities within education.

3. Consistency in labels and icons make the SNS recognizable.

4. The search system provides the users with abilities to search within the content on Facebook. The search offers filters and autocomplete, which are likely to enhance findability.

5. Some features belonging to Persuasive Technology use conditioning. This is an effective tool, but can be difficult to argue ethically. The impact of conditioning features can be considered covert (not visible to the user), which defies the general wish for Persuasive Technology to be overt and not using coercion.

The analytical findings and workshop results address the two presented hypotheses:

Hypothesis 1: Facebook facilitates a range of communicative and didactic practices which previous and traditional platforms used in schools do not support.

Statements from both participating teachers and pupils show that they will rather use Facebook than their traditional medias, such as the school intranet. The participants reveal that several features on SNS give them abilities to communicate and connect more easily. Pupils express that they use the media widely in a private context, which means that they are already familiar users.

Hypothesis 2: The facilitation of communicative and didactic practices is of persuasive character and enhances the motivation in pupils and communication between pupils and teachers.

The teachers express that mediated communication works better on Facebook than any other media or platform. Teachers and pupils furthermore express that they find the media motivating. This motivation is likely rooted in persuasive technologies related to reduction and processes of personalizing (tailoring). The Information Architecture used on the SNS of Facebook might indirectly be motivating because it is rigorously designed and structured, and yet provides users with abilities to structure content by adding metadata (tags). This ability is likely to give users a sense of control and participation. It can therefore be concluded that Facebook does enhance communicative practices and that this happens partly due to persuasive elements.

11. Design Suggestions

It has been stated that ethical aspects in particular need to be considered when using Facebook in relation to educational practices. This is especially true when considering the use of conditioning as a persuasive tool. It has been discussed whether conditioning on Facebook is overt (open) to the pupils. If not overt, Fogg (2003) would argue that it is not a persuasive tool. To avoid the ethically grey area in conditioning methods, theory related to the zone of proximate development has been presented. This theory considers the pupils internal motivation and relates to previously conducted research stating that teachers' roles are important in order to use SNSs successfully in teaching.

The ethical considerations are further related to third party involvement in relation to data rights and storage. This is why a set of design suggestions for the redesign of existing and future educational platforms is needed. In the following a set of design suggestions are presented based in the workshop of analytical findings:

1. Practices related to communication and participation are ranked as being very important. This means that features facilitating communication should be presented as a main feature.
2. The hierarchical structure and organization of an educational platform must be broad. It is possible to present the user with many different options on the front page without creating confusion.
3. Content must be personalized in an overt way. This can be done by allowing users to personalize content themselves or by asking users how they would like their content to be ranked.
4. Labels must be short and descriptive and contain supportive and recognizable icons.
5. Consistency is key. Labels, navigation and organization need to be consistent in order not to confuse users. This also applies to language.
6. The overall design should be recognizable and contain icons which are easily recognizable
7. Search features must provide an autocomplete function in order to help the user. The search feature can furthermore use a limited amount of filters on a secondary page.
8. Features enabling a sense of teacher presence have to be available. The teachers' presence must be visible to the pupils.

9. Tagging is a functional feature for both pupils and teachers in order to direct content and messages. Tagging should be provided both in terms of adding metadata to content and tagging other users in relevant posts.
10. Automatic processes are important in order to make both teachers and pupils return frequently. This is primarily related to an automatic login feature.

12. Conclusion

Emerging educational practices involving Facebook have been observed. From these observations hypotheses regarding usability and design were established. Through the Information Architectural and Persuasive Technology analyses it has been concluded that the SNS of Facebook serves as a functioning tool for educational and communicative practices in the investigated school. The media furthermore serves as a platform for communication between parents and teachers. The media provides users (teachers and pupils) with a usable and well-structured design, which enhances findability, navigation and search. Abilities to tag content and users furthermore provide the users with abilities to direct content. Applied persuasive techniques contribute to features that are effective, but in some cases ethically difficult to defend in relation to educating pupils at compulsory school level.

Abilities to create open and closed environments contribute positively to pupils' engagement and motivation. Closed groups are used in teaching and open groups and pages are used to present information of general character. Analyses furthermore point towards processes of personalizing as being important in order to make users feel connected and familiar to the network. It has been pointed out that the range of users on Hjørring Ny 10.'s page is noticeable. Within a few days, posts are seen by thousands of users form different age groups. From statistical data it can be concluded that an age group matching the pupils' parents are frequent users of the schools Facebook page.

Features determined in the analysis formed the basis of workshops conducted with teachers and pupils. These workshops were designed with the intention of uncovering the users tacit knowledge. Different perceptions and levels of use between pupils and teachers were revealed. Generally, teachers showed a good level of reflection with regards to using Facebook in their practices. The participating pupils revealed less reflection in relation to their practices on Facebook. All participants, both teachers and pupils, agreed that Facebook provides tools for communication, which other medias do not offer. These tools were, for example, comments, likes, groups and messages.

On the basis of the analysis and the results of the subsequent workshops, ten suggestions for redesigns of future educational platforms have been presented. Issues related to data rights and covert, behaviourist features on Facebook raise a need to develop better and intentionally designed educational platforms. Redesign of already existing educational platforms can be inspired by persuasive elements seen on Facebook, but

should to a greater extent take pupils' intrinsic motivations into consideration. Intrinsic motivation can be supported by adding features enhancing pupils' zones of proximate development rather than attempting shaping of behaviours.

13. BIBLIOGRAPHY

Anand, S. & Mobasher B. (2003). Intelligent Techniques for Web Personalization. *ITWP'03 Proceedings of the 2003 international conference on Intelligent Techniques for Web Personalization*. 1-36.

Andersson, A. et. al. (2012). Reclaiming the students – coping with social media in 1:1 schools. *Learning, Media and Technology, vol. 39, No. 1,* pp. 37-52.

Barczyk, C. & Duncan, G. (2013). Facebook in Higher Education Courses: An Analysis of Students' Attitudes, Community of Practice, and Classroom Community. *International Business and Management, Vol. 6, No. 1, 2013,* pp. 1-11.

Bazarova, N. et. al. (2013). Managing Impressions and Relationships on Facebook: Self-Presentational and Relational Concerns Revealed Through the Analysis of Language Style. *Journal of Language and Social Psychology, vol. 32, No. 2*, pp. 121-141.

Boyd, D. & Ellison, N. (2007). Social Network Sites: Definition, History and Scholarship. *Journal of Computer Mediated Communication, vol. 13, No. 1,* pp. 210-230.

Callaghan, N. & Bower, M. (2011). Learning though social networking sites – the critical role of the teacher. *Educational Media International, Vol. 49, No. 1,* pp. 1-17

Danish Ministry of Education (2014). *IT in Schools.* Retrieved May 2014 from http://www.uvm.dk/Uddannelser/Folkeskolen/I-fokus/Oeget-anvendelse-af-it-i-folkeskolen/Initiativer-til-at-oege-brugen-af-it-i-folkeskolen

Ericson, E. (1968). Identity, Youth and Crisis. W.W. Norton.

Fogg, B. J. (2003). Persuasive Technologies: Making Computer Change what We Think. Morgan Kaufmann.

Føllesdal, D. (1994). Hermeneutics and the Hypothetico-Deductive Method. *Reading in the Philosophy of Social Science.* Massachusetts Institute of Technology.

Greenhow, C. & Robelia, B. (2009). Informal learning and identity formation on online social networks. *Learning, Media and Technology, Vol. 34, No. 2,* pp. 119-140

Halskov, K. & Dalsgård, P. (2006). Inspiration Card Workshops. *DIS '06 Proceedings of the 6th conference on Designing Interactive systems.*

Herring, C. (2007). A faceted classification scheme for computer-mediated discourse. Retrieved May 2014 from: http://www.languageatinternet.org/articles/2007/761/

Khawar, M. & Fyfe C. (2012). Review of web personalization. *Journal of Emerging Technologies in Web Intelligence, Vol. 4, No. 3*, pp. 285-296.

Landrum, T. & McDuffie, K. (2008). 21st Century Education, Red. Good, T. Sage Publications Inc.

Leary, M. & Kowalski, R (1990). Impression Management: A Literature Review and Two-Component Model. *Psychological Bulletin, Vol. 107, No. 1,* pp. 34-47.

Marshall, M. (1996). Sampling for qualitative research. Oxford University Press.

Morville, P. & Callender, J. (2010). Search Patterns. Sebastopol. O'Reilly.

Morville, P. & Rosenfeld, L. (2006) Information Architecture for the World Wide Web. 3rd Edition. Sebastopol. O'Reilly.

Pew Research (2010). Social networking sites and our lives. Retrieved May 2014 from:
http://www.pewinternet.org/2011/06/16/social-networking-sites-and-our-lives/

Pew Research (2013). *Teens haven't abandoned Facebook yet.* Retrieved May 2014 from
http://www.pewinternet.org/2013/08/15/teens-havent-abandoned-facebook-yet/

Pew Research (2014). *New Facts About Facebook*. Retrieved May 2014 from
http://www.pewresearch.org/fact-tank/2014/02/03/6-new-facts-about-facebook/

Reber, A. (1989) Implicit Learning and Tacit Knowledge. *Journal of Experimental Psychology, vol. 118, No. 3,* pp. 219-235.

Schön, D. (1983). The Reflective Practitioner. New York. Basic Books.

Sternberg, R. (1996) Cognitive Psychology. Fort Worth Harcourt Brace.

Thurman, S. & Schifferes, N. (2012). The future of personalization at news websites: lessons from a longitudinal study.

Vygotsky, L. (1978). Mind in Society. Harvard University Press.