UNIVERSITY OF OSLO
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User created content as aid in the creative process

Master thesis

(60 credits)

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Abstract

New technology, especially mobile phones and the Internet, have an increasing influence on society. These new technologies are utensils that are becoming progressively more ubiquitous and accessible for the masses. This gives the opportunity for a growing number of people to produce and publish; the users are also becoming the creators.

The aim of this thesis is to discuss user created content as aid in the creative process. The fundamental focus is on how the creative process unfolds when users are presented with the opportunity to create and share their own content. It also looks at what effects that user created content, generated with mobile phones and shared over the Internet, can have on the creative process and the opportunity it presents for new creative thinking on the subject of cultural heritage.

To order to do this, the technologies along with their history and present day uses are presented in-depth. The phenomenon of user created content is introduced and the process of user created content explored. Existing user created content and its creators, as well as framework for thinking about creativity are presented.

Two case studies were conducted to be able to explore this in real-life, one in a museum setting and the other at a youth club. Both present teenagers with the opportunity to express themselves in regards to their cultural heritage.

Foreword

This is a master thesis from the Department of Informatics, University of Oslo.

The summer before I started working on my master thesis, I was really interested in learning how to slack line. I began doing some research on the web, looking at people doing different balancing acts on the slack line, and how to get started with sack lining. Everything that I looked at came from different user-created web sites, such as YouTube and wikihow. In the middle of seeing all of this I came to the realization that I have become very dependent on user created content, and that I often get my inspiration from what other users have done.

Since I first began my studies in digital media at the University of Oslo five years ago, digital media has undergone some major changes. It has become something that affects so many lives in so many ways. This is why I wanted to take a look into aspects of how user created content are and can affect the society that we live in today.

Ine Fahle

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1 Introduction

1.1 Motivation

Computers and the mobile phone are becoming more and more integrated in daily life today. All of these technologies are increasingly becoming highly interconnected to each other, and in the developed world information systems have become ubiquitous (Avison and Myers 2002). The new technologies are affecting and changing many lives today. Society is facing obstacles, but also new possibilities, such as new ways of creation and collaboration. Computer coders have for long periods of time developed a culture where masses of people work together and share their knowledge and ideas.

When talking to the chief editor of a major newspaper in Norway about how the newspaper draws upon user created content to contribute to the newspaper. He told me how they use forums and other similar separate places for readers to contribute. I asked him if they did anything to incorporate the readers even more, but he believed that user created content should have its separate place. However, with the development that was, and still is happening, I believed that he is probably underestimating the power of user created content. For that reason a very important aspect of this master thesis was to strive to get the user created content incorporated into the environment itself and not just a separate place where people might happen to go. The users should be able to feel like they are taking part. Richardson, Third and MacColl believe that (Richardson, Third et al. 2007): “it is urgent that research be undertaken to assess the impact of the mobile phone and its role in promoting social inclusion and the creative potential of young people.” Humans are social by nature and because of this will always have the need to collaborate and communicate with other people (Sharp, Rogers et al. 2007).

Many past studies conducted in regards to creativity have focused on the individual, but much focus has shifted to creative collaboration (Paulus and Nijstad 2003). Keith Sawyer (Sawyer 2007) is one of those who argue that "collaboration is the secret to breakthrough creativity." Lawrence Lessig, a contributor to the launching of Creative Commons, works for a world where there is a balance between control and freedom of ideas and expressions. He argues that ordinary people can be included in the creative process by utilizing digital technology (Lessig 2002). Since the phenomenon of user created content has many of the traits described I saw the need for taking a closer look at it in relation to creativity.

1.1.1 Cultural heritage

Creativity, especially collective creativity has been the topic of many collaboration researches in relation to the workplace and to a certain degree other settings (Inakage 2007). With this thesis I wanted to explore the adoption of this concept to settings where end-user creativity has not been prominent. The case study was conducted in settings involving cultural heritage, which is an area where user participation has been limited in the past. Erhard Berndt and José Carlos Teixera define cultural heritage as: "Everything specific to a region/country/continent, in the context of social development phase. It belongs to the whole world and should be preserved and used for the benefit of humanity". This means that cultural heritage can be everything from buildings, to customs (Berndt and Carlos 2000). On their webpage, UNESCO (United Nations Educational, Scientific and cultural Organization) states that (UNESCO 2008): "Heritage is our legacy from the past, what we live with today, and what we pass on to future generations."

Cultural heritage is often associated with museums. This is due to the fact that the job of places such as libraries and museums are to preserve the past (Nelson 2001). In 1683 the Ashmolean Museum in Oxford, Britain was the first public museum to open. However, it would take almost two hundred years before museums became how we know of them today (Henning 2006). The things that are saved in museums are often the heritage of the fashionable and the rich. The things that were admired at the time were saved and everything else is often lost (Nelson 2001). However, was it not the life that we live today that was the heritage? Therefore everyone should be able to save their personal culture heritage. Since heritage is about everyone, not just a few researchers, it was of interest to see how user created content could get everyone to be able to tell their views and opinions about their past, present and future.

Digital tools can create a virtual space without changing the physical space noticeably. There are no major alterations to the physical objects, which are often important instruments for setting the right atmosphere around the exhibition. Ethnographer Terje Planke explained that the Viking ship museum was built in a way that creates an elevated feeling around the ships; a way of expressing that they are and were of great importance for Norway.

1.2 Aim and research questions

This master thesis will address user created mobile content and the underlying technologies that make it reality. The problem areas include user created content, the technologies that make it possible to create and share, and how users utilize them as an aid for creativity. The focus of this thesis is on how the interplay of new technologies can strengthen creativity.

Problem definition:

> How does user created content affect creativity, and in what ways do a combination of mobile phones and the Internet contribute to this effect?

In order to look in to the problem area there are two main research questions that will be explored and discussed.

Research questions:

1. In which ways does user created content create forms of collaboration?

2. How is the process of generating user created content an iterative one?

On the bases of the theory explored and the empirical evidence from the case study this thesis will attempt to answer these questions.

1.2.1 Delimitations

New technologies, such as the Internet and mobile phones, which are explored in this master thesis, have developed fast and are still changing at a rapid speed. This has an enormous impact on society which has to consider the ethical, legal and social issues that have aroused and will arise in the future (Berners-Lee and Fischetti 2000; Baase 2003). These issues are very important for how society and technology will coexist. Due to time and recourse constraints regarding this thesis, all of those issues cannot be discussed in great depth in this paper.

Furthermore, the debates regarding what and how content should be copyrighted is both interesting and relevant, but also a colossal topic. Hence going into a detailed discussion on the topic in this master thesis, could not be justified.

Creativity is an enormous field that still has unsolved parts, because of that this study will only focus on user created content and its ability to aid the creativity especially among young people. The mystery that concerns creative insight, when a creative idea comes to a person, will not be resolved here.

1.2.2 Ethical aspects

Issues regarding privacy did arise when doing this research. For example the mobile phones were tracked as one of the functions of the Bluetooth system that was used in the RENAME project. Only the first names of the participants were used to represent their mobile phones and content. The blog at the youth club that was created utilized accounts that were created in advance. These were called user 1, user 2 and so forth. It was also explained to the children at the youth club that they were supposed to take pictures of things and not people, hence avoiding them

taking pictures that could identify them. Privacy is a sensitive issue and because of that, measures were taken to make the effects as small as possible. The measures that were taken were sufficient enough on the scale that we worked on, but may not be as suitable in other situations and especially not on a larger scale.

1.3 Overview

Chapters 1 and 2 are an introduction to the master thesis and describes why and how this master thesis came to life. They are intended as a guide and incentive for further reading of the thesis.

Chapters 3, 4 and 5 present the theoretical background for the thesis, which evolved from the literature study, and are the framework for the discussion.

Chapter 6 presents the case study; the empirical work of this thesis. The questionnaire, the interviews and the observations conducted are also presented here.

Chapters 7 and 8 are where the research questions presented in the introduction are discussed and conclusions are drawn. This is done by discussing the empirical findings in respect to the theoretical framework presented.

1.4 Chapter overview

1. Introduction

This chapter gives an introduction and explains what this master thesis contains; it provides the rational for this thesis. It is supposed to serve as a guide and hopefully motivation for prospective readers.

2. Methodology

The aim of this chapter is to explain why and how the case study was conducted. It also presents a rational for using the methods questionnaire, interview and observations in the empirical work of this thesis.

3. The mobile phone and the Internet

The two technologies used in this master thesis are the mobile phone and the Internet. This chapter presents their history and existence today.

4. User created content

This chapter gives an introduction to the phenomenon of user created content. It also looks into the content created and its creators.

5. Creativity

Creativity is a vast field; this chapter will look into creativity in relation to this master thesis. It presents some frameworks for thinking about creativity.

6. The case study

The case studies were conducted in two different situations, with the RENAME project and Trosterudklubben. The RENAME project revolves around using multimedia to tell the story related to the third Gokstad boat. Trosterudklubben is

a youth club located in Oslo. Both cases are concerned with presenting teenagers with the opportunity to express themselves about their cultural heritage.

7. Discussion

The theory presented is used as a framework for discussing the empirical findings from the case study. It presents what has been learned in the studies conducted in relation to the research questions.

8. Conclusion

On the foundation of the discussion conclusions are made and future research is suggested.

2 Methodology

The work of this thesis is based on qualitative research using case study as the approach. Qualitative research methods are designed to aid the researchers in understanding the people and their social and cultural context (Avison and Myers 2002). Both the social and cultural context is of importance with regards to the problem area of this thesis and therefore it was appropriate to conduct qualitative research.

2.1 Literature studies

A major part of the knowledge that is held within the field that this thesis covers, was acquired through literary studies. At first the literature studies helped define the problem area, as well as being preparation for conducting the case studies. Later on in the work on this thesis, it helped clarify and give a better understanding of the case study. The theories that are used in this thesis are collected from the literature studies.

There are vast resources of information available, both in libraries and on the internet. Problematically, the internet is known for having a lot of unreliable information. Since this master thesis studies user created content, some resources that rely on user created content such as Wikipedia[1], a user created encyclopedia, have been used. Those few cases are exceptions from the rule of using literature that is of an academic format.

The major obstacle here was not to find information to read, but to read what was relevant and not include arbitrary sources only because they are interesting.

[1] www.wikipedia.org

Finding relevant literature about creativity was one of the biggest obstacles, mostly due to the fact that "creativity" is such a frequently used term. This, consequently, leads to a lot of different opinions about creativity. Since user generated content is a relatively new phenomenon, it was difficult to find reliable information in related to creativity.

2.2 Case study

According to Punch (Punch 2005):

> The basic idea is that one case (or perhaps a small number of cases) will be studied in detail, using whatever methods seem appropriate. While there may be a variety of specific purpose and research questions, the general objective is to develop as full an understanding of the case as possible.

The collected data used in this thesis is from two cases that were studied. One of the reasons for choosing to conduct a case study was due to the fact that it is suitable for the exploration stages of research (Benbasat, Goldstein et al. 2002). Another reason was that it gives a closeness to the reality (Flyvbjerg 1991).

The case study was conducted at the youth club Trosterudklubben and in connection to the RENAME project. The case study at Trosterud worked in many ways as a preliminary case, because it helped narrow down the focus of this thesis. Partially it was conducted to get a better understanding of how teenagers use the Internet and their mobile phones. The findings were used to prepare for the case study done with the RENAME project, at the same time as relevant findings were related to the problem area of this thesis. The pre-observation conducted in relation to the RENAME project also had a preliminary objective, which was to see how the set up worked and what might have to be changed and what not. It

was also conducted to get an idea of how the concept would actually work in a museum.

David Silverman indicates that cases are often not chosen randomly, but are merely a result of what cases the researchers are allowed access to (Silverman 2005). That was the main deciding factor. Hence the cases chosen were ones that were easily accessible, however, when focusing on the research, theoretical options were chosen. Having read about the RENAME project that Dagny Stuedahl was conducting in relation to the third Gokstad boat, it was decided that it was a relevant and fascinating project, because it was related to user created content. Stuedahl was contacted and permitted me to partake in this project. While working with Stuedahl on the project, Ida Heyerdahl, a fellow student, contacted me and informed me that she was conducting a case study at a youth club called Trosterudklubben where there was going to be a similar setup to the RENAME project. The youth club is part of a project called Groruddalssatsningen, and it was through this project that contact was established with the youth club. The management of the club granted us permission to conduct the sessions at the club and they were kept informed about the project by e-mail, phone, and conversations at the youth club.

The two case studies were both conducted in a limited physical space. In Trosterudklubben the physical limitations were the building, where the club was located, and the space just outside the club. The physical limitations in the pre-observation with the RENAME project consisted of the physical space restricted to interior of the Viking Ship Museum, while the main observations related to the study were conducted in a studio located at InterMedia, University of Oslo.

The participants were children between the ages of 10 and 17 years old. All together there were 64 unique participants. At Trosterudklubben participation was voluntary. With the RENAME project the groups of participants were school

classes and therefore more formal and involuntary. The reason behind the focus on teenagers is because they are often open to new ways of using technology (Lasica 2005). They are of a generation that has grown up with mobile phones and the Internet as a natural component of everyday life. An American study shows that teenagers embrace new technologies that allow them to create content and distribute it. Over half of the teenagers between the age of 12 and 17 living in the USA create content for the Internet (Lenhart and Madden 2005). This is an age group that has grown up with media, such as video/computer games, which let them participate and interact, not just consume.

As mentioned, collaboration with fellow students and researchers was present on both of the case studies, but this thesis is a result of individual work. Since Ida Heyerdahl's thesis[2] also evolved around teenagers and their use of the Internet, this collaboration was found to be beneficial. Each of us looked at different aspects and had different problem areas, but had good discussions relating to both of our theses. The other case study was done in collaboration with the RENAME project, where all the researchers involved were interested in different aspects of the same case, hence their own set of problem areas and definitions.

To document the sessions at Trosterudklubben different types of data recording methods were used. These included taking notes, pictures and audio recordings. A mobile phone with camera was used to take the photographs. It was a deliberate choice to use a camera phone because by using the same technological tool as the participants, we were trying to get closer to them as users. Research conducted by Lin Prøitz confirms that there are benefits with using mobile phones to take pictures, because people seem to be less affected and aware of being photographed with mobile phones compared regular cameras (Prøitz 2007). To audio record the

[2] Ida Heyerdahl's thesis: Participatory digital design - a study with teenagers.

sessions a camera with an audio recorder was used. In addition to digital tools some notes were taken by using pen and paper.

The data collection tools used for the pre-observation at the Viking skip museum were still cameras and notes. During the main observations with the RENAME project notes were not taken, but instead the sessions were video recorded. There were three video cameras used. One video camera was placed in a corner of the room and was able to capture almost the whole room. The second camera followed a set of participants through the entire session. The last camera was used to capture a subjective first person view of the sessions. Using video cameras to capture data was possible in this situation because the setting was basically limited to one room and little mobility was needed.

In the case study done at Trosterudklubben three different methods were used; questionnaire, participant observation and interview. In the RENAME project, the methods used were participant observation and interview.

2.2.1 Questionnaire

At Trosterudklubben the participants filled out a questionnaire (see Appendix B) before they started. This was done for two reasons; the questionnaire was in the first place created for practical reasons. Mobile phones were available for the participants to borrow if needed, therefore measures were taken to ensure that none of the phones got lost or disappeared for other reasons. Filling out the questionnaire made it clear to the participants that the mobile phones were for them to borrow only when completing the task. The information gathered would be useful if the mobile phones were to be taken. By adding a few questions it also worked as preparation for us. The questionnaires provided information about how

the participants were used to using their mobile phones and the Internet. This ensured a better understanding of the participators.

2.2.2 Qualitative interviews

At Trosterudklubben we were interested in having the interview objects explain and show how she or he uses the technology in their everyday life, and to get their preferences in what technology they used and in which way. Therefore it was chosen to conduct semi-structured interviews. There was a pre prepared list of questions (see Appendix C) that guided the interview sessions in order to maintain a certain consistency in the interviews. To encourage the subjects to express their thoughts and to explain themselves many of the questions were open-ended. The list of questions was only used as a guide and therefore it was the interview objects that partly guided the sessions by following his or her thought process. All the interviews were conducted face-to-face, with the interviewees answering by talking and demonstrating on a computer. Both verbal and non verbal communications was of equal importance here.

At Trosterudklubben there were four semi-structured interviews conducted and all together there were seven participants, four females and three males, between the age of 13 and 16 years old that were interviewed. The participants were selected randomly, but because participation was on voluntary basis, it was up to each single individual whether they wished to participate or not. It was also their choice if they wanted to be interviewed in small groups or individually. The number of interview objects in an interview session varied as well as the length of the interviews, which lasted between 10 minutes and 30 minutes.

In the RENAME project there were two short group interviews after each of the observations. The interviews were unstructured and were conducted to get

feedback from participants on what they felt about the session and the activities that they had participated in.

2.2.3 Participant observation

Silverman(Silverman 2005) describes participant observation as “a method that assumes that, in order to understand the world ‘first hand’, you must participate yourself rather than just observe at a distance.”

In all the observations we took an active role and were not passive observers and thus participant observation. We never became true insiders to the group, because we had a certain detachment to users due to our role as observers (Sharp, Rogers et al. 2007). Another reason for this was limited time spent together with the participants, but there was a significant difference to the degree of acceptance especially seen at Trosterudklubben, where we spent several afternoons.

Altogether, seven observations were conducted. Three of the observations were conducted at Trosterudklubben. The initial plan was to conduct one pre-observation and three additional sessions at Trosterudklubben. However, the youth club turned out to be closed on the day that the pre-observation was to have taken place because of a local government election. Due to other activities taking place at the youth club, it was decided to limit it to three observations. Each of the observations lasted during the opening hours of the club.

One pre-observation and three main observations were conducted in relation to the RENAME project. Since it was not possible to implement a full working system at the Vikings ship museum the main observations were done of a temporary display related to the third Gokstad boat.

2.2.4 Data Analysis

Sharp et al. states that transcribing can take a lot of time and in some situations there is only a need to transcribe sections, because great detail is not necessary (Sharp, Rogers et al. 2007). This was the situation here; the recorded data was transcribed in both cases, but only the sections that were needed.

Transcribing the data that was captured worked as a useful first step in the process of analyzing the data. In the data analysis qualitative analysis was used. The degree of detail in the data gathered reflected how the data was used in the analysis. The case study at Trosterudklubben and the pre-observation with the RENAME project provided an overview of the situation and the problem area and because of that only the main events that happened was needed. The purpose was to look for the overall themes. Having more detailed data recorded in the main observations in the RENAME project, made it possible to go into more detail with regards to the research questions in this thesis. Hence, making it easier to focus in greater detail and get a better understanding of the themes observed at Trosterudklubben.

Being able to work with other people in the process of creating this thesis has proved to be highly beneficial. Regular meetings were arranged and that made it possible to get to know each other's problem areas and thus have meaningful discussions that contributed to each other research. The discussions of the cases and the findings helped build a better understanding and this, it was felt, improved the quality of this thesis. As Benbasat et al. argues, working with research partners makes it possible to increase the richness of the captured data and the researchers can be more confident in the accuracy of that data (Benbasat, Goldstein et al. 2002). Since there were multiple methods used, triangulation was beneficial to be able to support the conclusion (Sharp, Rogers et al. 2007).

2.2.5 Reflections on Method

The problem when researching creativity is that it is so personal that it is difficult to evaluate and define. It is hard to get people to express what they actually are thinking and what really causes them to be creative, since they hardly know themselves. The technology, on the other hand, can have limiting aspects, such as the transfer speed of Bluetooth, which does influence the actions of the participants.

Because of time constraints in both case studies, pilot studies were not conducted. This would have been useful to make sure that the technology was working properly. This would also have been helpful for other aspects such as comprehension of information. The topic that was used in the case study with the RENAME project might have been too difficult for some of the youngest children to comprehend.

3 The mobile phone and the Internet

For the more recent part of human history technology has had a significant role in the preservation and distribution of knowledge. A significant change in society occurred with the introduction of printing media. With the emergence of broadcasting as it is known today, society has changed due to technology's ability to reach so many people at a rapid speed (Shneiderman 2000). In the earlier years of media production, rather large and expensive equipment was necessary in order to be able to create content, and when the content was created a publisher was needed. On many levels, the century old process of creating and sharing has changed. Certain tools for content creating are increasingly becoming available to the masses, and the Internet is a medium where everyone connected to it, has the opportunity to publish their creations. As Naughton states, the Internet is the first unrestricted communication system (Naughton 2000). In this research the mobile phone is used as the content creating tool and the Internet is the platform for sharing the content.

3.1 The mobile phone

For many people today, the mobile phone has become an important part of everyday life. It has so many areas of use: it can be a business tool, social tool and so forth. It was in 1946 that Bell Labs launched the first radio phone, which is seen as the predecessor of today's mobile phones (Jones and Marsden 2006). When the mobile phones first were created they were meant as tools just for two way dialog from any location. Now the mobile phones are also becoming a tool for creating content for many people, since they contain features that make it possible to use them to take pictures, videos and write texts. For others they already are a powerful personal tool that can be used to create content. For

example with the recent improvements to the quality of integrated camera and display, it is possible to create video clips with the mobile phone. Memory capacity and video compression, which are both crucial for saving captured video clips, have advanced rapidly and allowed for more content to be stored. Because of these advancements an increasing number of people are using their mobile phone to capture smaller video clips (Lahti, Westermann et al. 2006).

According to statistics from 2008 presented by Medietilsynet, Norwegian media athorithy, 86 % of children in Norway between the age of 8 and 18 years old have mobile phones. In the age group 8-12 years old 72 % have mobile phones. The percentage has increased to 97 % in the age group 13-16 years old, so close to everyone has a mobile phone by this time in their lives. Of those that have mobile phones 94 % have mobile phones with a camera (Medietilsynet 2008). Statistics from 2006 show that the areas with the highest usage are: sending SMS (90%), talking on the mobile phone (74%), taking pictures (65%) and sending MMS (53%). The usage area that increased the most with age was taking pictures with the mobile phone. Of the children between 9-12 years old only 52 % used their mobile phone to take pictures, in the age group 13-16 years old 75 % did the same (Medietilsynet 2006).

3.2 The Internet

The Internet has had an enormous impact on society; in fact its impression on society has been so immense that John Naughton argues that the Internet is one of the greatest human developments. To be truly able to understand the Internet and its degree of influence, one needs to take a closer look at how the Internet emerged. The exact historical origin of the Net itself and its features are hard to pin point, as both Gisle Hannemyr and John Naughton express in their books

(Naughton 2000; Hannemyr 2005). Naughton summarizes it like this (Naughton 2000): "Any starting-point for an historical trail is likely to be arbitrary." Because the Internet has so many building blocks and each of these building blocks has its own characteristic and historic background, it is particularly difficult to summarize it all here. That is why the focus will be on the building blocks of the Internet that are especially relevant to user created content and creativity.

One of the Internet's seeds came with Vannevar Bush, a scientist that in the 1930s began to think about problems with the traditional way of storing and retrieving information. He believed that it did not match up to the way humans find, organize, store and share information by using associations (Hannemyr 2005). An article with his ideas, along with a description of this new machine called memex, was published in 1945 in Atlantic Monthly with the title 'As you may think'. At that time there was no appropriate technology available for his ideas to become reality, but this article has been a source of inspiration for many scientists later on (Naughton 2000).

J. C. R. Licklider is one of the scientists that became inspired by Bush. Building on Bush's ideas, he envisioned a net that he called the 'galactic net', a place where everyone has access to information. He also expressed that he believed that computers should facilitate communication between humans. Licklider worked at ARPA (The Advanced Research Projects Agency) from 1962 to 1964, and even after he had left ARPA his ideas where still present. When physiologist Robert Taylor joined ARPA he realized that the researchers always wanted more computers with increasing power. This is when he apprehended that Licklider's 'galactic net' could be of use. In 1966 the head of ARPA, Charles Herzfeld agreed to start building such a net and Lerry Roberts were to lead the project(Hannemyr 2005). This was the beginning of the ARPAnet, which had as one of its primary undertakings to facilitate the ability to share resources (Sawyer 2007). The ARPAnet is the original packet-switched network, which is basically splitting data

in to smaller packages that can be sent individually. Instead of having one line between the sender and the receiver, the packages are sent from point to point in the network. The first four nodes were up in 1969 and by 1972 the number of nodes had increased to 15. In 1973 Norway was the first country outside the USA to be connected to the ARPAnet (Hannemyr 2005).

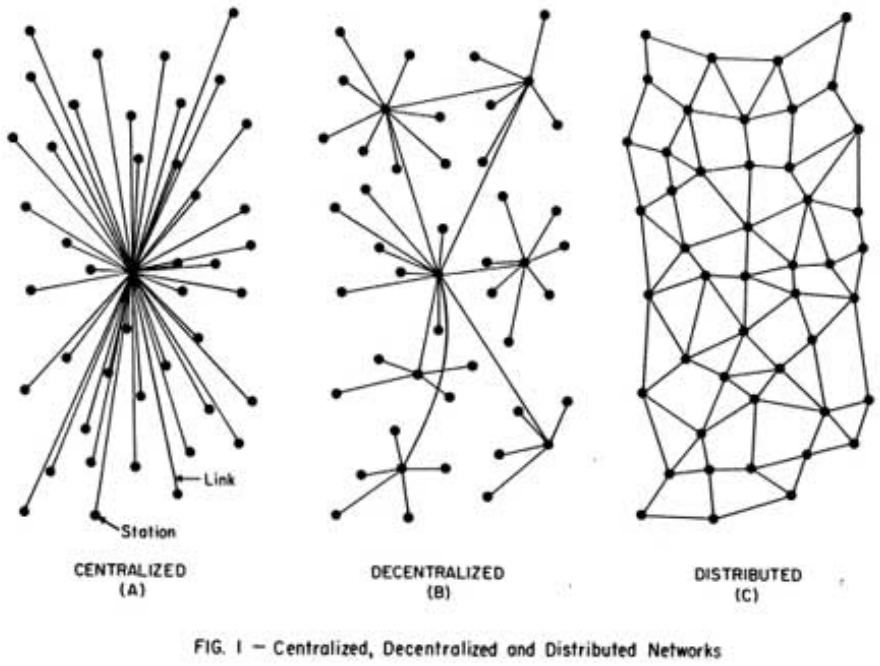

Fig. 1 Paul Baran's Illustration of the distributed net (Naughton 2000).

3.2.1 Innovations on the Internet

The most used Internet service in the 1970s and 1980s was the electronic mail (e-mail). There had been a developing need for sending text messages over the net, and in 1970 Ray Tomlinson developed a small test program which turned out to be a hit among the users of the net. There are two major reasons why services such as e-mail have become reality and new ones can become reality in the future. First of all developing new services for the net is done relatively easily, and second,

those services are easily made available on the net itself. This has made the internet a fruitful place to realize ideas (Hannemyr 2005).

Lessig separates the communication system into three layers, a model which he acquired from Yochai Benkler. The three layers consist of the content layer, the code layer, and the physical layer. At the Speakers' Corner in London the physical layer is the park, the language is the code and the content is whatever the person chooses to express, which are all free in this setting. When considering the layers in relation to cable TV it is the other way around, all of these layers are controlled. What is different with the Internet is that each of these layers are not just controlled or totally free, they consist of a mix. The physical layer is typically owned and controlled. The Internet's code layer is built on the principle of being free. The content layer is a strong mix of being controlled and free (Lessig 2002).

Lessig argues that innovation on the internet is produced because of this mix of it being free and controlled. He also uses the three layers of communication to argue why innovation is encouraged on the Internet. Firstly it is because the building blocks of the Internet, the code, are a common. Control is in many ways not present, meaning that ideas have the opportunity to surface instead of being blocked by a controlled system. The second reason is due to the inexpensiveness of reaching a whole world, the inexpensiveness of the physical layer. Furthermore, the code layer gives the opportunity to use information and data resources that in the real world are rather expensive (Lessig 2002).

At an Association for Computer Machinery conference in 1965 the idea of none sequential text on computers was introduced by Theodor Holm Nelson. He called this form of none sequential text for hypertext. His ideas were published in 1974 in one book that actually contains two books. One book is called the *Computer Lib* and is one of the earliest expressions of a vision for the computer to be a place where people could come together for creative expressions. In the other book

Dream Machines, he explains how he thinks that his ideas can be put into life by connecting all computers with each other—not just on the physical and electrical plane, but also connect the information that the computers contain. An important part of his idea is that this information is not only suppose to be passively displayed but also have the ability to be modify and adjusted depending on its aim (Hannemyr 2005).

There are no systems that have been able to set all of the hypertext ideas, described in Nelson's book, into life. Hypertext systems using some of his ideas have been created such as the World Wide Web. The introduction of the World Wide Web in 1990 has been essential for the increase popularity of the Internet, because it made it available for regular people (Hannemyr 2005). No single event or a single idea made Tim Berners-Lee create the Web. Tim Berners-Lee states that he created the Web for a social effect; he wanted somewhere where people could work together. To him the Web is not as much of a technical creation as it is a social creation (Berners-Lee and Fischetti 2000). It was while at CERN (European Organization for Nuclear Research) that he in 1990 started the project with the World Wide Web. One of the many conceptions that Berners-Lee had about the Web was that it should be as easy as possible to share information with others. He chose to publish the results of his developments on the Internet; consequently other people could have and use his programs as a basis for further developments. As a result of this choice the browser Mosaic was developed in 1993. The browser was an important contribution to the initial success of the World Wide Web. Eric Bina and Marc Andreessen had created a browser that had a good graphical interface and was able to show not only text, but images as well. This is when the Internet really started growing and began to become main stream (Hannemyr 2005).

3.2.2 Today

The Internet was intended as a place where everyone should be able to share. In the beginning stages of the more public World Wide Web, there was a hierarchical structure with the clients and the centralized web servers that would broadcast. This structure, as we have seen, was not how it was intended to be. With the rise of the personal computer and increase in people getting connected to the Internet, the use is changing to become how it was intended (Lessig 2002). With the growth of the Internet, the society is changing by giving individual users greater control. Users are able to find other people with the same interests and problems, something Shneiderman sees as one of the greatest gifts that the internet have given to the people (Shneiderman 2000).

The many new Web applications often go under the term Web 2.0, but this so called new generation of the Web is also known as the web of participation, web of people and social network's web (Carboni and Zanarini 2007). A deep discussion of the term Web 2.0 is out of the scope of this thesis, but an overlook of its relation to user created content is relevant. According to Tim O'Reilly the term came out of a brainstorming session between him and MediaLive International, when they were trying to find a name for a conference about the web (O'Reilly 2005). As the term implies many regard it as refereeing to a second edition of the World Wide Web. But the term is controversial because the technology that is being used has excised in much of the World Wide Web's history, so it is more about different ways of using these technologies (Carboni and Zanarini 2007). That is why it is often said to be a phenomenon (Cooper 2007). Paul Graham argues that Web 2.0 is to use the web as it was intended in the first place (Graham 2005). The term is used in many settings and because of that it is very hard to define. But the main building blocks are said to be interaction, community and openness (Millard and Ross 2006). Graham argues that there are two components that most people agree upon are cornerstones of Web 2.0 and those are Ajax and

democracy. Ajax, which stands for Asynchronous JavaScript and XML, allows for development of responsive web-applications and democracy is that everyone has the equal opportunity to contribute to the web (Graham 2005).

3.2.3 Gift culture

The open source community has existed as long as the Internet. One of the forerunners is Richard Stallman, who started out working at the Artificial Intelligence Laboratory (AI Lab) at MIT at the age of eighteen. When he first started out much of the code was written collectively, they were shared with others, without any professional secrets. Their only judgment was by their peers. According to Naughton, Stallman had seen for a few years that this culture was threatened and the realization that something needed to be done happened when many of his collaborators left the AI Lab to found Symbolics. Stallman disapproved of the fact that they had gone from working openly to becoming secretive, and did not want a part in that. Instead he created The Free Software Foundation, which was launched in 1984. Stallman believes that software should be free, and to explain what he means by free he refers to “free speech”, not “free beer”. Meaning that software should be free in the way that users can run, copy, distribute, study, change and improve it. That is why he introduced the licensing system of copyleft, which requires anyone that redistributes the software to pass that freedom along with the software (Naughton 2000).

Stallman disapproved of the fact that the operating system UNIX, that used to be free, became a product in 1984. Therefore, he started to create a clone off of UNIX, which he called GNU (Gnu’s not UNIX). Stallman and the other GNU participants were able to create and spread many subsidiary programs, which the operating system needed. Their only problem was that they were never able to

create the kernel, which is the heart of the operating system. Then along came Linus Torvalds, who after a series of events started to create an operating system, which was to become Linux. It started out by Torvalds posting a message on a newsgroup in 1991. There were ten people that downloaded the first version of the program. Of those ten people there were five people that sent back a contribution in form of bug fixes, improvements and even new features. People participating in the development of Linux have grown tremendously over the years and in 2000 there were 10 000 actively contributing programmers. What many people find astonishing is that with all of the collaborative work that found place there was quality, order and progress. Naughton argues that there are three factors that made this possible; one of them is the willingness to share with others. With the copyleft licensing system they always show their work, so that others can learn and contribute. The second factor is that the net itself allows programmers to work together in collaboration. The last aspect is the mindset; the programmers are not so interested in the money, what they want to do is to create great code. They would much rather have great codes than anything else, which Naughton calls the emerging gift economy. Today project such as these are often referred to as open source movement (Naughton 2000).

Gift cultures are said to emerge where there is no shortage on goods that are needed for survival. And in a gift culture as Naughton expresses it (Naughton 2000): “social status is determined not by what you control but by what you give away.”

4 User created content

Users have often been considered to be passive information consumers (Kaasinen 2003). Here we are going take a closer look at how this is changing. The term user created content, also often referred to as user generated content, is very self explanatory and stands for content that is created by the users themselves. According to Cha et al. it is re-shaping people's perception of media and its use. It influences many aspects of people's lives, such as it changes how people view the media, how people socially interact and it also gives users the power to be creative. Instead of merely being the consumer, they are becoming self-publishing consumers (Cha, Kwak et al. 2007), and as a result even business models are changing (Tapscott and Williams 2006).

The Web 2.0's ingredient democracy is essential to user created content. Amateurs are creating what Graham characterizes as good enough content. With information being free and open it allows for a type of conversation to emerge through linking. He goes on to argue that the most striking example of the democracy is the production of ideas. That some user created content might even be better than what is read in newspapers and explains this with the influence that editors have in those kinds of media (Graham 2005).

According to Eija Kaasinen what users miss in location-aware mobile services is personalized information. He goes on to suggesting that content created by other users, which is dynamically changing, might be better for the users than just providing the general information. His research showed that the users liked the ability to create and store their own information, and that the information contributed by other participants was looked upon as interesting (Kaasinen 2003).

4.1 Creations

There are examples of great important creations happening online. The number of virtual places where the outsiders can create are increasing. An example of this is that businesses are starting to open up aspects of their business that used to be inaccessible to the public. Websites such as InnoCentive[3] gives firms that struggle with a problem an opportunity to get a solution to their problems. InnoCentive does this by connecting the problem seekers and problem solvers. The problems that are posted here are problems that used to be solved by using the companies own time and resources. Instead companies offer cash prizes to the participants with the best solutions (Sawyer 2007).

The second edition of the book Code and Other Laws of Cyberspace by Lawrence Lessig is an example of a book being created in collaboration. The creation of the second edition was formed by people all around the world. Lessig kept the basic structure from the first edition and only revisions were made. The first edition of the book was posted on the web as a wiki, where he received rewritings of the text, comments and criticisms. Then he took these contributions with him and created the second edition (Lessig 2006).

Those examples just mentioned have a certain niche trait to them and are not known to that many people. Wikipedia[4], YouTube[5], Flickr[6] on the other hand are three of the most known websites that base their content on user created content, where the users are also the contributors. Without the users these websites would be nothing (Jazayeri 2007). One of the key differences between websites based on user created content and other non user created content websites are according to Cha et al. that their content production rate is very high. The production efforts

[3] http://www.innocentive.com
[4] http://www.wikipedia.org
[5] http://www.youtube.com
[6] http://www.flickr.com

that are required are also smaller and there is a vast amount of publishers (Cha, Kwak et al. 2007).

4.1.1 Wikipedia

Wikipedia[7] is an online encyclopedia that is a wiki-based project operated by Wikimedia Foundation. Today Wikipedia is one of the most popular websites on the internet (Jazayeri 2007). Wikipedia's own slogan is (Wikipedians 2008): "The free encyclopedia that anyone can edit." This gives a clear message that this is a website where everyone is encouraged to contribute. It is said to be one of the most successful utilizations of collective knowledge to be seen yet. Wikipedia has grown at a rapid speed and is continuing to grow today (Kittur, Suh et al. 2007). According to the encyclopedia itself as of April 2008 it had over 10 million articles when combining 253 languages (Wikipedians 2008).

With any encyclopedia there are three key components that are crucial: that there is information presented, that the information is structured and that it is indeed accurate. Instead of relying on writers and editors for this Wikipedia relies on social structure. The users are volunteers that do the job of writers and editors. By constructing the process this way the information is constantly updated. Each individual piece is important, but it is the collaborative product that is the great value. As with any other encyclopedia the value is in the content, the difference here is that Wikipedia's value is added by the users themselves (Jazayeri 2007).

[7] http://www.wikipedia.org

4.1.2 Flickr

Flickr[8] is a public website where users can store and share their photos. As with Wikipedia the users are responsible for the content. With the increase in users that participate there is an increase in content on the website. Participants can tag, title, and describe their photos and also view and tag photos from other participants that are publicly available (House 2007).

4.1.3 YouTube

YouTube[9] was founded in 2005 and is a website that offers everyone the opportunity to post their video clips within certain limits. It offers the world's largest user created content video-on-demand collection (Cha, Kwak et al. 2007). Daily there are more than 100 million viewings and over 65 000 new videos are posted (Li, Chang et al. 2007).

4.1.4 Blog

Blog is one of the features that have come with the rise of Web 2.0. The first blogs started to appear on the Internet around 1999. The word blog is an abbreviation of the word weblog which was the original name used for blogs (Doctorow, Dornfest et al. 2002). Log means "diary", in the way that it is a written record of what happens each day (Hewitt 2005). Laurel Clyde states that a widely recognized definition created by Peter Scott is "a web page containing brief, chronologically arranged items of information"(Clyde 2004). One of the

[8] http://www.flickr.com
[9] http://www.youtube.com

qualities of blogging is that it is created to be easy and fast to use. Today it is very easy for everyone that has access to the internet to create blogs. Blog could be generated and managed by writing and updating every page by hand, but there are also providers that do this process automatically. By using providers such as Blogger[10] and WordPress[11] creating blogs are pretty easy even for novice users. The most popular use of blogs is as a form of a diary and the blog posts are usually organized in a chronological order. The blogs usually have a personal nature, containing personal beliefs and the opinions of the writer. Most blogs are often updated on regular basis and the updating is typically done whenever the writer gets the urge to do it. Even if blogs often are described as personal there also exist blogs created by institutions and are collective blogs (Clyde 2004).

4.2 Creators

With peer-to-peer networks the content is created by peers, equal people and not a few selected. It is a place where equal people can come together and share (Lessig 2002). When it comes to blogs Hugh Hewitt argues that there are two reasons why bloggers actually do blog, which are to persuade, and to leave a record of themselves. He claims that writers still have the same motivations for writing as before the internet, but are instead using a different publishing channel. Writers usually had to persuade someone to be able to be published; with the Internet the writers do not need to persuade anyone to be published, the information monopoly within some fields have been broken (Hewitt 2005). To be able to publish information, alter it or contextualize it, there are no longer the same need for editors, publishers, vendors, or catalogers (Harris 2005).

[10] http://www.blogger.com
[11] http://www.wordpress.org

4.2.1 Generation C

The term generation C, also called the content generation or gen C, was first used by trendwatching.com, an independent trend firm, in March 2004. It is the generation of people that are creating content. Trendwatching.com state that the C stands for content, but the C have later also been linked to Creativity, Casual Collapse, Control and Celebrity. With creativity they mean that creativity often leads to content and they explain casual collapse to be what they believe to be the downfall of the current beliefs, rituals, formal requirements and law of the traditional society (trendwatching.com 2004). According to Tapscott and Williams this generation that have practically grown up online brings with them a new set of ethics, such as openness, participation and interactivity (Tapscott and Williams 2006).

Humans like to be in control. The increasing ability to customize and co-produce leads to increasing control transferred to the people. Last but not least the 15 minutes of fame are closer than ever. The dream of becoming a celebrity is not a new one and defiantly not a fading one. For generation C, there is a shorter road to be paved, because they themselves are able to produce, display and distribute their own content to millions of other people. There is still a discussion going on what the C really stands for, and more suggestions have come up, such as connectivity, community and communication (trendwatching.com 2004). What is agreed upon is that this generation, as The Media Center at the American press institute expresses it (mediacenter.org 2005), “creates, produces and participates in news and information in a connected, informed society.”

Trendwatching.com explains this relative newly found drive behind generation C by two main components. Firstly, among the motivation for the development, everyone has the urge to be creative, second reason is the development of content

creations tools. The tools have been there, but they are becoming more and more available to the masses (trendwatching.com 2004).

According to Frances Harris, the information means basically nothing to teenagers without communication. With time, communication and information are melting together and so having one without the other is becoming increasingly difficult. To facilitate development among teenagers, information and communication technologies are good utensils. Information-seeking and information-sharing are activities that teenagers combine and it is a natural part of their culture (Harris 2005). The new generation is told to be the collaboration generation for one major reason and that is because instead of just receiving information through the TV such as their parents, they are interacting with each other online (Tapscott and Williams 2006). Blogs for teenagers can be serious writing and used as an outlet such as for creative writing or political expressions (Harris 2005).

5 Creativity

Creativity is a very important part of human life and nature, because it is in many ways the seed of human evolvement and vital for survival of humans (Ward, Smith et al. 1999; Paulus and Nijstad 2003). But still it is often portrayed as something diffuse and unknown. By some it is often described as almost a magical process, while others regard it as a regular problem solving activity. There exists many theoretical approaches to creativity (Matlin 2005). The focus here will be based on creativity as a cognitive process and the contributions of external factors.

Cognition comes from the Latin word cognoscere and means "to know". It is how humans process information in everyday life. These processes include attention, perception and recognition, memory, learning, reading, speaking, listening, problem-solving, planning, reasoning and decision-making. It is the cognitive processes of thinking, comparing, and decision-making that allows us to be creative and come up with new ideas (Sharp, Rogers et al. 2007). A primary element of creative thinking is according to Edward de Bono to acknowledge that there might exist alternative solutions and consequently search for these solutions (De Bono 2000). The ability to be creative is something that everyone possesses, but the degree of creative potential varies (Boden 2004).

So what is creativity? The definition of the term creativity has great variation. A short definition of creativity from Sternberg's book on cognitive psychology states (Sternberg 2003): "a cognitive process that leads to the production of something that is both original and worthwhile." So creativity must, within this definition, result in a creative product. A thought on its own is not said to be creative unless it becomes more than a thought. But just to create and produce something does not make an act a creative one. If that were the case, then copying someone else's

work could be considered a creative act (Hayes 1989). As Boden argues the discovery and creation of ideas or artifacts are only a result of creativity if they are considered to be new, surprising, and valuable (Boden 2004).

A new creative idea does not necessarily need to be original. There is a distinction made between psychological creativity and historical creativity. Historical creativity is when no one has ever thought of that idea before; the idea is totally new to humankind. Psychological creativity, on the other hand, only needs to be a new idea to the person who thought of it. Children are often creative, but that does not mean that they are creating ideas that are new to everyone. This makes no difference, however, because what matters is that the ideas are new to that person. Regardless of how many people have had that exact same idea before, it is still considered creative. Creativity in its purest form is historical creativity: ideas that are truly original (Boden 2004). Creativity is connecting things or ideas in a way that have not been done before (Su, Adrian et al. 2007).

An idea can be surprising in mainly three different ways. If an idea appears to be unknown and seems unlikely it is surprising because it goes against the natural way, the statistics. Another way that the new idea can be surprising is when it works and it was not expected that that particular idea would work. Ideas that come to you might feel impossible and are surprising because the ideas simply seem impossible. Last but not least for an idea to be creative it must also be useful and valuable (Boden 2004). Valuable can be in the form that it represents an improvement to something already existing (Kaufman 2006).

A central component of creativity is prior knowledge. Ideas are often built on existing knowledge. High leveled creative people work for years before they fulfill their potential. Scientists devote many years of research to become knowledgeable in areas before they have the ability to create a new idea based on

their life-long studies. It is the preparation that a person does that facilitates him or her to be creative to the fullest (Hayes 1989).

Neither every single analog creation nor digital creation, such as novels, photographs, and so forth, can be considered creative. The introduction of digital technology such as the digital camera did change society by allowing more people to create. The reason for this is that compared to its analog ancestors, digital technologies are even easier, faster and cheaper. With the increasing access to powerful digital tools the creative potential is increasing and because of that creative acts are becoming more common (Shneiderman 2000).

There are many developed frameworks for which to think about creativity. A newer framework developed by Ben Shneiderman which he named Genex (generator of excellence), divides creativity into four phases (Shneiderman 2000):

- Collect: learn from previous work stored in libraries, the web, etc.
- Relate: consult with peers and mentors at early, middle, and later stages.
- Create: explore, compose, and evaluate possible solutions.
- Donate: disseminate the results and contribute to the libraries.

The framework is intended as a guideline for creating user interfaces that support creativity. Compared to other earlier frameworks it takes into consideration the interplay that happens between individuals. Shneiderman also argues that the creative process, hence the four phases, are nonlinear and iterative (Shneiderman 2000).

5.1 Collective creativity

There are some thinkers who will argue that creativity is an ability that only a few individual possesses, and when retelling the history usually only one person is credited as the creator of a new idea. Reading history books allow for one to get the impression that past creators have all worked alone. This is not the case: their ideas and knowledge have evolved from somewhere. For example, Darwin and his theory on "natural selection" is very well known, but few know that he worked in collaboration with the naturalist Alfred Russel Wallace and that he was inspired by the two economists Thomas Malthus and Adam Smith. Tim Berners-Lee himself, the inventor of the World Wide Web, has expressed that the idea of the web did not come out of nowhere. As he writes in his book (Berners-Lee and Fischetti 2000): "The web arose as the answer to an open challenge, through the swirling together of influences, ideas and realizations from many sides, until, by the wondrous offices of the human mind, a new concept jelled." Mihaly Csikszentmihalyi, as Robert Sternberg quoted him, argues (Sternberg 2003): "we cannot study creativity by isolating individuals and their works from the social and historical milieu in which their actions are carried out…what we call creative is never the result of individual action alone."

The credited people are/were all very creative and it is possible that they used more and have more creative potential than other people, but their ideas were not worked out in isolation. When consulting other works and people there might be some disadvantages and pitfalls, but the profits can be massive. With increasing participatory processes Shneiderman argues that the positive outcome will increase and the negative effects will decrease (Shneiderman 2000).

According to Sawyer, groups are better in the real world where they are not suppose to create lists of ideas but instead deal with real and complex situations

and ideas. Sawyer argues that many innovations have been created because of the power of what he calls the collaborative web. In relation to business he lists five key features of this collaborative web (Sawyer 2007):

1. Each innovation builds incrementally on a long history of prior innovation.
2. A successful innovation is combination of many small sparks.
3. In collaborative webs, there is a frequent interaction among teams.
4. In collaborative webs, multiple discovery is common.
5. No one company can own the web.

Lawrence Lessig also argues that to be able to create content it is required that there is already some content available. He argues that the new always builds on the old, and to some degree the new depends on access to the old. Already used and set guidelines are used in the creation of new creative works (Lessig 2002).

When many individuals in a network come together to collaborate and contribute so that new creations can come to life, it is collective creativity, which is an approach to creative activity (Inakage 2007). Brainstorming is the most well known and popular form of conducting collective creativity sessions. The term was coined by Alex Osborn in the 1950s but is still widely used today. Osborn created four basic principles for brainstorming; no criticism, all ideas are welcome, quantity is the goal and one should improve on previous ideas. Those principles are still in use today. Unfortunately research shows that brainstorming groups do worse than individuals that pool their ideas together later (nominal groups). Research shows that there are three possible reasons for this as Sawyer explains: production blocking, social inhibition and social loafing. Production blocking is often caused by topic fixation and can be avoided by interchanging between individual work and group work. Because it is a group session it is influenced by social inhibition. Many people are reluctant to speak their mind, for the reason that they fear what others might think. With group production the pressure is not

on each single individual to do well, hence the pressure to participate actively is less than in individual sessions (Sawyer 2007).

5.2 Enhancing Creativity

How to enhance creativity has been, and currently is a topic of many theories and is desirable in many areas. Many researchers, business people, educators and so forth are trying to find the right way to enhance creativity. This thesis focuses on the setting and the technology, and so the few theories that are presented here are just a small portion of theories on enhancing creativity. However, they are relevant for the topic of this thesis.

According to Runco, the environment holds a critical role in creative activities. If the setting is not permissive and supportive the creative creations will never find place. There is a great deal that can be done to formal educational settings to encourage creativity. Runco argues further that there are at least three things that are needed to create settings that nurture creativity (Runco 2007):

1. Provide opportunities for children to practice creative thinking.
2. Value and appreciate those efforts.
3. Model creative behaviors themselves.

In group creativity, as Dennis and Williams argues, another aspect that is of great importance is communication. Research shows that if the communication within groups does not function properly the creative outcome will be less than with the nominal groups. With the new technologies new ways of supporting group sessions such as brainstorming are made possible. It started out with Group support system (GSS) in the 1980s, which used computer technology to support creativity and it proved to be useful in the task of generating ideas. The sessions

were often limited to within a room where each participant had their own computer. With the introduction of internet and it becoming more ubiquitous the sessions were not limited to the physical space of the room. It gives the people the opportunity to share ideas with others and even comment on each other's ideas over the Internet (Dennis and Williams 2003).

Dennis and Williams takes it even further than Sawyer as mentioned earlier in looking into the factors that affects group brainstorming and compare electronic brainstorming to nominal group brainstorming and verbal brainstorming. They argue that there are two important factors that potentially can increase the process gains, these are synergy and social facilitation. There are five factors that potentially can increase the process losses, which are production blocking, evaluation apprehension, social loafing, cognitive interference, and communication speed (Dennis and Williams 2003). By doing this they were able to look into which factors that electronic brainstorming could affect in a positive way to increase creativity.

Synergy happens when an old idea sparks a new idea. According to Dennis and Williams this is potentially the strongest source of process gains. The way to affect this is by adding diversity to the group and to draw attention towards ideas. Furthermore, they state that with the increase in group size the synergy is likely to increase in electronic brainstorming. The other possible process gain comes from social facilitation, the fact that people's performances are affected by the presence of others. If a person believes that they can do well they are likely to do well in the presence of others, but on the contrary people believing the opposite will not do well in the presence of others. It is not so much the communication that affects the people, but the setting. According to Dennis and Williams in smaller activities such as brainstorming this is considered to be process gain, but with only some effects on electronic brainstorming (Dennis and Williams 2003).

Dennis and Williams state that the most crucial factor of process losses is production blocking, which takes place when people are not able to contribute their idea when they first think of it. Since electronic brainstorming allows the users to contribute ideas simultaneously the production blocking is essentially nonexistent (Dennis and Williams 2003).

A second potential process loss is referred to as evaluation apprehension. Even if one of the basic rules in brainstorming is not to criticize other ideas the fear is still present by some participants that their idea will be subject to negative reactions. If the electronic brainstorming is conducted anonymously the evaluation apprehension should according to Dennis and Williams, be expected to reduce or even be eliminated (Dennis and Williams 2003).

Social loafing is a third potential process loss to be explored, which is that individuals tend to use less effort in groups than they would have done individually. With the increase in groups' size, social loafing usually increases. With anonymity in electronic brainstorming it is also seen that there is a stronger chance of social loafing. This might happen for several reasons, such as participants feeling like their contributions are not needed or there might be confusion around responsibility (Dennis and Williams 2003).

In brainstorming there is a strong chance of cognitive interference which is the fourth area of potential process loss. According to Dennis and Williams this is where electronic brainstorming can be most useful, because the participants' cognitive focus can be structured and directed. Cognitive interference finds place if a participant's chain of thoughts is interrupted by other participants, being in a way, the opposite of synergy. Since the ideas are saved in electronic brainstorming the participants are less likely to be affected by cognitive interference because they can think by themselves whenever they want to and they can access the other participants' ideas whenever that fits their thought process. In

many cases it also allows them to have multiple conversations simultaneously and research shows that this can be stimulating, but there is also the danger of information overload (Dennis and Williams 2003).

The last potential process loss that is discussed is communication speed. Dennis and Williams are arguing that electronic brainstorming can be affected because it often involves some kind of creational process to be able to share the ideas. They use the example of sharing ideas by having to type the ideas instead of expressing it verbally, which probably will slow down the process (Dennis and Williams 2003).

Combining these factors Dennis and Williams come to the conclusion that the electronic brainstorming can be very beneficial for larger groups, three participants or more. They also conclude that when people are getting more used to using the technology it will be even more beneficial because they will be able to use them more effectively (Dennis and Williams 2003).

6 The CASE study

This chapter presents the two case studies that are the ground work for my empiric work. One was conducted in relation to the third Gokstad boat and the other with the youth club Trosterudklubben.

6.1 The Gokstad Boat

The Gokstad ship was found in Vestfold, Norway in 1880. It is estimated to have been built around 890 A.D. The reconstruction of the Gokstad ship was done in the 1920. The Viking ships are often considered to be a symbol of Norway. Inside the Gokstad ship there were three smaller boats that were chopped into pieces. Two of them were reconstructed at the same time as the ship, but the last boat was stored for a long time in the basement of the Viking ship museum in Oslo.

Fig. 2 Fragments of the third Gokstad boat.

Ethnographer Terje Planke did, as part of his post-doc project at the University of Oslo, initially plan to create two reconstructions of the third boat. This way he would be able to show people how his choices when interpreting the parts, could result in quite different boats in the end. During the process of reconstruction there were a lot of questions around the form, procedures, material used and the overall use of the boat, such as how the pieces were suppose to be placed together in order to reconstruct the boat. Building the first boat took much more resources than he had expected and he was not able to reconstruct more than one version of the boat. That is why he ended up with only one interpretation of how the pieces could be assembled. Because of this he wanted to find a new way of communicating that the boat he had built was not the only possible truth, but rather a result of his choices and interpretations regarding the questions that occurred during the process. This is where the digital media can present a possible solution to his problem.

6.1.1 Pre-observation

The pre-observation took place in June 2007 at the Viking Ship Museum. It was in collaboration with a school class that consisted of 25 pupils. The context was the real museum, but in the gallery there was setup a mobile media center.

Technology

At the pre-observation the mobile media center contained three Macs where the participants could access over the internet the webpage which contained the blog[12]. They used different kinds of mobile phones that were handed out by us. The mobile phones were advanced phones that allowed the participants to take

[12] http://www.intermedia.uio.no/display/gokstad/Gokstadbatprosjektet

pictures and small video clips. Bluetooth was used to transfer the content directly from the mobile phones onto the Macs.

Pre-observation

At first the participating school class was told about the project and then asked a few questions on how they use their mobile phone in everyday life. Then they were asked to form groups of two that would share a mobile phone and create a blog together. They got to explore and become familiar with the mobile phones before they moved into the museum. When they first went into the museum Terje Planke talked to them about the museum and the exhibition. In the beginning of Planke's talk the children were fiddling around with the mobile phones, taking pictures and so forth. But when they were asked to put them away and pay more attention to what Planke was talking about, they did as they were told.

Then Planke took them on a short tour of the museum. They were told to take pictures with their mobile phones as they were moving along. The group was often split up, because the participants all wanted to take pictures in different places. However, they usually caught up to Planke once he made it clear that he wanted their attention again and started to talk about a new part of the exhibition.

The last thing Planke had the children do was to photograph what is called the "Buddha bøtta". Then he asked them to take a look at the picture they had just taken with their mobile phones. He asked them what they saw and what they thought it was used for. The children answered that it was a bucket that they believed was used to carry things in, but was not sure what kind of things. So Planke told them that not even the scientists know what it was really used for and that there are different theories about what was stored in it. A lot of the children

paid attention to the story, but there were still children that had more of their attention towards the mobile phone.

Fig. 3 Terje Planke showing the participants the Gokstad boats while they capture it with their mobile phones.

Then they were told to solve one of the two assignments on a handout (see Appendix A) in pairs, by using the mobile phone and blog. Most of the guys went straight to the three Macs that were set up, but the girls went out to take some more pictures before they came back. Most of participants were not familiar with Macs. But when they were shown how to do something once they were, most of the time, able to do it on their own the next time the problem occurred. Because all of them had taken quite a bit of pictures the transfer of pictures from the mobile phone to the computer using Bluetooth took a little bit of time. Some of the participants lost what they had created because they had forgotten to save their work. All of them got to answer the questions in their own way by using the

mobile phones and blog, but most of them used the combination of pictures and writing.

Fig. 4 Participants taking pictures with mobile phone.

6.1.2 The main observations

The observations were conducted on February 14. 2008 at a studio located at InterMedia, University of Oslo. The displays were set up by the Encode and RENAME projects. The display consisted of three parts that were called the fragments, the model, and the boat building. Each part of the display represented the main parts of the reconstruction process that Terje Planke went through with the third Gokstad boat. There was no intended order to visit the parts of the display, hence up to each of the participants themselves to choose the order. Each display consisted of two posters and some objects. One of the posters contained information and the other one contained a question regarding that part of the

process. The objects at the display regarding fragments contained some miniature paper pictures of the fragments and some cardboard cutout of actual sized fragments. Both of which the participants were welcome to touch and play around with. The model display contained two boat models. One of the models Planke actually used in the reconstruction process and the other model was in an early development stage, giving the participants the chance to build on it if they wanted.

The last display contained full sized keel, sail and two oars assembled together to bear a resemblance to an actual boat. The lighting in the room was set up to draw the attention towards the displays. In addition to the display there was a media center in the middle of the room with three Macs and a projection on the wall.

Fig. 5 The display regarding fragments.

Fig. 6 The displays regarding the model and boat building.

Technology

The remaining observations used similar technologies as the pre-observation, but it was more integrated in the display. The technologies that were used at this display were Bluetooth (BLIP systems), Macs and different mobile phones. What differed from the pre-observation was the use of five Bluetooth zones that were placed in relation to the different parts of the display. The Bluetooth zones transmitted and received content. When content was sent to one of the Bluetooth zones the content would be posted on the blog, where the participants later on could access the content that they had sent, and also see the content that the other participants had created. There was also a projector that continuously showed the content that the participants were sending in. If the participants had their own mobile phones they were encouraged to use them, but we also provided mobile phones to those that needed it.

This setup was only a prototype and when conducting the observations it was also the first time this system was tried with external people, because of this a few aspects were not as solid as what had been ideal. For instance, during the first observation unfortunately the program that showed the pictures on the wall had a system bug, so that not all of the pictures were showed by the projector.

Procedures

There were several adults at the observation that the participants could ask and get help from if they wanted. Before they entered the room they had to stop at the first zone, which was at the entrance of the room. This was the welcome zone where a welcome soundtrack was sent by Bluetooth to each of the participants. To register the mobile phones everyone had to send a note from the mobile phone to

the zone. By arranging the first zone this way we were able to register the participants and their mobile phones at the same time as they were taught how to send and receive content to and from the zone. The three other zones were equal to each of the parts of the display. In the first two observations the participants were from a fourth grade class split up into two groups. The reason for splitting them up into two groups was the limited amount of resources such as mobile phones and physical space.

Observation # 1

Group one consisted of boys that were about ten years old. The length of the session was approximately an hour. Before they were taken into the room with the displays, they were given an introduction by Dagny Stuedahl. She started out taking about the technology and then proceeded to instruct the students about the project and what they would see in the room that they were about to enter. They were asked if they knew what Bluetooth was and if they had used it, and they all said they knew what it was. At the end of the introduction they were told more specific about what they were going to do with their mobile phones. The participants that did not have their own mobile phone borrowed one, so each child had a mobile phone to their own disposal.

They all went together to the first Bluetooth zone, where they were shown how to send and receive content. They receive a soundtrack saying welcome, and then they were told to send a text to the Bluetooth zone. They instantly went on the mobile phone to send a SMS. It became clear straight away that they had never used notes to send text before. With some help everyone was able to create and send a note containing their name back to the zone.

When entering the room, the trend among the participants was that no one really read the introduction cartoon that they met, but instead went straight out into the room and over to the displays. When receiving information from the zones a few encountered some problems, such as only receiving sounds or not receiving anything at all. Some of them did not know how to do it, so they were shown, but it was also because some of the mobile phones were not able to play the format.

Fig. 7 Two of the participants using the mobile phone and projection.

When they first went to the media center a few looked at the pictures that were taken by the participants of the pre-observation that were available as a blog. At a later point in the session a few of the participants started sending content straight to each other instead of to the system. What made this possible was that the list over Bluetooth units that were displayed when they were to send back content to the zone. The mobile phones did not only show the Bluetooth zone, but also every other mobile phone that were in the room.

Observation #2

This group of fourth graders consisted of only female participants. The session lasted for approximately an hour. The introduction done by Stuedahl this time focused more on the history and the display itself, than the technology. They were asked to form groups consisting of two people. Those that had their own mobile phones used them, and the others borrowed mobile phones. The actions and reactions that took place at the welcome zone were the same with this group as with the group in observation #1.

This group stopped by the introduction cartoon and then spread out into the room. They started out by reading the information that they came over and discussed the questions that were on the posters without documenting it. And then they started to interview each other. When realizing the limited time they had when filming with the mobile phone they were short and to the point when answering the questions. They were not only filming when they were answering the questions, but also made video clips of activities that they carried out, such as cutting out cardboard fragments. Not all the participants were sure about how to create content and send it by Bluetooth, but by asking the adults they were able to do it. They expressed strong interest in seeing what they themselves had created. When video clips were projected on the wall, they paid more attention than when picture or text was displayed.

Fig. 8 Three girls about to capture their activities.

Observation # 3

The observation consisted of a group of eight teenagers that were 14 years old, six females and two males. The participants in this observation took part on voluntary basis, but all of them are part of the same school class. These students had also been part of the pre-observation done at the Viking Ship Museum and were asked to participate again. The session lasted for approximately one hour.

First they were introduced to the project and given some information to as what they were to expect in the room that they were about to enter. Their first stop was also in this observation the introduction station, right outside the display room. They accepted the welcome soundtrack and sent in a note with their names to register their mobile phones. Not many of them knew how use notes and send them by Bluetooth, but with some guidance they figured it out. When everyone had been able to register their mobile phones, they were shown in to the display

room. They spread out into the room and started to read the posters that belonged to each display.

When they were standing close enough to the Bluetooth stations they started to receive video clips. As they were receiving video clips some were commenting on how long of a time the video clips took to download onto their mobile phones. While they were waiting for the video clips to download they pursued other activities such as reading the posters. They expressed confusion to all the messages that were appearing on their mobile phones.

Some of the participants had problems with their mobile phones, such as getting their mobile phones to download all of the content from the Bluetooth transmitter. Their focus was to answer the questions that where on the posters. They also centered a lot of their attention towards receiving all of the content that the Bluetooth transmitters were sending out. When wanting to send the content that they had created they had to choose the Bluetooth receiver and some of them did not grasp which one to choose when sending their content and why it really mattered.

At first they were saying that they were confused, but after explaining that we were interested in their opinions about what they would have done if they were the researcher they started making their own content that expressed their opinions on the matter. Most of them used a form of reporting. In the groups there would be one behind the video camera, in this case the mobile phones; this participant would ask the others in his or her group the questions that were on the posters or create new questions. The answers were only vaguely discussed before they started to film and the answers were mostly created spontaneously as they went along. Those that were filmed would express their personal opinions regarding the questions asked. They answered by explaining what they physically would have done if they were in the position of the researcher, as well as expressing how they

would have felt if they had been in that situation. They wanted to create longer video clips than the mobile phone allowed them to create. They solved this problem spontaneously by instead of making one long video clip, they made several smaller ones.

Right after they had sent in video clips from the first display that they visited they did not pay that much attention to the information poster at their second display. Instead their focus was on the question poster. They still wanted the information from the Bluetooth transmitter. While they were waiting to get the video clips from the Bluetooth transmitter they started to discuss what they would answer to the question from the question poster, instead of reading the information poster as they did on the first display that they visited.

They started to form larger groups and discussing what they had answered on the questions. They did discuss the questions, but they also got sidetracked by discussing the mobile phones, such as what problems they were experiencing.
While they are discussing in larger groups they discovered the projection and pointing when their contribution were displayed. Their attention towards the projection on the wall increased with the increase of content displayed. One of the female participants was saying that she wanted a video clip removed from the projection because it had been shown so many times.

At the display fragments, there was a large group of girls that answered the question together. They did not discuss the question before they started to film. Instead all the girls came up with spontaneous answers to the question when the camera was pointed towards them.

Two female participants were told by one of the researchers that there were not many of the participants that had expressed themselves about the models. Hearing this they went straight over to the models and one of them started filming the

unfinished boat model and asked the other participant what they thought about this model. The participants answered right away that they did not think it looked totally done and that they thought it was cool.

Up until this point the participants had not paid much attention to the media center. After having been at all the displays they were now all settling down by the media center, and Stuedahl tried directing their attention towards the media center by asking if they had looked at the blog and created their own. They still did not transition their attention away from their mobile phones and the projection. What changed the situation was that two female participants were not seeing one of their video clips on the projection, so they began looking for it on one of the Macs. While doing this, they realized that what they had created during the pre-observation was still on the blog, so they start showing to each other the content that they had created. As they were looking they were attracting more of the female participants. They started to read each other's posts out loud. By now all of the participants were using the Macs and some of them started to create their own new blog posts. The three participants, one female and two males, that were creating new blog posts were cooperating by pointing at the Macs and showing each other the content.

6.1.3 Group interviews

Group interview #1

At the end of observation #2 the participants from observation #1 and #2 were asked by Stuedahl to express their thoughts about what they had just done. They answered that they thought it was fun. Some expressed that they felt like it was slow sometimes and a little bit difficult with some of the technology. But it was

also expressed that they thought it was interesting to get to use their mobile phone instead of the pencil for a change.

Group interview #2

This group interview was conducted with the participants from observation three. Since most of these participants had partaken in the pre-observation at the Viking ship museum they were asked what they thought about this setting compared to the museum. They thought it was more exiting with the technology this time compared to the pre-observation, such as the content being projected onto the wall. The video clips that they received from the Bluetooth zone they experienced to be too long, and explained that they had cut it short because they found it boring in the long run. Those that had borrowed mobile phones expressed that it was hard to use an unfamiliar mobile phone. They understood that the questions were meant for them to answer with their mobile phones. Doing everything on the mobile phones was expressed to be stressful. At the beginning they said that they would rather have had a computer with web camera to answer the questions with instead. When discussing this with each other they realized that it would make them unable to take pictures of what they wanted. They attempted to find the solution to that problem, but did not find one.

6.1.4 Findings

The activities that took place were happening in a combination of the physical and virtual space. All of the participants in the groups were information seekers in the beginning, thus collecting information. When they had gotten a better understanding of the subject and what they were suppose to do they quickly started

to create their own content. Some of the content was created spontaneously other content was discussed before created. In both of the situations there was a lot of improvisation that took place. The content of the contributions differed; some were ideas to solutions to the questions, others were expressions on how the participants would have felt if the situation had been reality for them.

With the increase in information contributed their attention towards the contributed content increased, but they did not stop their own content creation process. They paid attention to the contributed content usually when it did not disrupt their creation process. In the middle of the session they were almost constantly collecting information, discussing it, creating their own content and sending that content to the Bluetooth zone. They were creating a lot of content, but what took time was transferring it by Bluetooth. When the content was contributed they were expressing that they were wondering why their content was shown so many times.

6.2 Trosterudklubben

This case study was conducted in September 2007 at Trosterudklubben, a youth club that is located at Trosterud in Oslo, Norway. The youth club is normally open two days during a week, but they are also willing to make special arrangements outside of their regular opening hours. This is a place where the children can come and do different activities after school. About 200 children are on average attending the youth club every week. The members of the club are separated into the groups "junior" and "youth", depending on their age. The "junior" group consists of the members that are between the age of 7-12, and the group called "youth" is the members that are between 13-18 years old. The youth club has seven employees that are responsible for many of the activities, but the activities are run by the members of the youth club themselves. At the time that the observation took place the youth club consisted of the following activity rooms: Song studio, film studio, media lab, Internet lab, computer game room, disco containing DJ equipment, dance room, kitchen, a room for soccer, basketball, etc. and a common room with billiard and Foosball tables. The members also belong to different activity groups, which they sign up for. The members themselves are in charge of the groups and they arrange events such as trips, dance competitions, and so on. For example one of the groups is in charge of the website that the youth club has. The participation in activities at Trosterudklubben happens on voluntary basis and they also choose with what intensity that they will partake in the activities. This was a major reason for conducting one of the case studies here.

6.2.1 The observations

The observations were mainly conducted in the places called "Web Editorial Group Room" and the "common area". Each of the sessions lasted for one

afternoon during the opening hours of Trosterudklubben. The assignment given to the participants consisted of four tasks and was the same for every session conducted. First task was to fill out a questionnaire, and then they would be asked to use a mobile phone to take pictures of what they thought of as their cultural heritage. To make this task clearer we also said that we wanted them to express what represents Trosterud to them and told them that they were free to express this however they wanted to. Third task was to transfer the pictures from the mobile phone to the computer. The fourth and last task was to create a blog post. Since the sessions were conducted in a relatively limited space there was always at least one adult present to give assistance to the participants during the sessions.

Technology

The main technologies used in these sessions were mobile phones, computers, Bluetooth, and the Internet. With the first two sessions a stationary computer was used, which was the property of Trosterudklubben. The Internet connection was a standard broadband. While the remaining sessions took use of a laptop, that belonged to the researchers. In this case ICE mobile broadband[13] was utilized to acquire an Internet connection. Both of the computers used the operating system Windows XP. Since the participants were to take pictures with the mobile phones they needed to contained a camera. To transfer pictures from the mobile phones on to the computer Bluetooth was used and this implies that both the computers and the mobile phones had Bluetooth. The Blog[14] that was used was created for the purpose of this case study. It was created by using Blogger[15], which is a free

[13] A mobile wireless network offered by Nordisk Mobiltelefon Norge AS. This utilizes the NMT450-network, making it possible to connect to the Internet at almost any place. Source: www.ice.no [Accessed: 29/04/08]
[14] Due to the protection of personal data the URL for the blog is not presented.
[15] http://www.blogger.com

blog service that is provided by Google. The blog was created before the sessions, and user accounts were generated beforehand. For privacy and practical reasons the user accounts were simply named user1, user2, user3 and so forth.

Observation #1

At September 17th 2007, the first session was conducted at Trosterudklubben. We brought with us a Bluetooth device for the stationary computer, five mobile phones, and a laptop.

The members of the youth club were asked if they wanted to participate in the project by contributing to the blog and showing other people Trosterud and the youth club. There were eight people that completed the first task of filling out the questionnaire. Out of those people only three continued to the next task, which was to photograph with their camera phones whatever they wanted in relation to Trosterud. The participants that continued on were two males that chose to work together and one male working by him selves. All of them had their own mobile phones, which they used when carrying out the tasks. After having taken the pictures they came into the "Web Editorial Room" to complete the next task, which was to transfer the pictures from the mobile phone to the computer. The participants were unsure on how to use Bluetooth to transfer the pictures to the computer, so this was demonstrated to them. When that task was completed they were given a personal user and password for the blog so they could start to create their blog posts. The composition and content of the blog was totally up to the participants within the limits of the theme, Trosterud. When creating their blog post they were encourage by us to try to do as much without our assistance as possible, but there was wording used, such as the button called "publish", that

made them uncertain. They expressed that they did not grasp that this was the button that made the post publicly available on the Internet.

The three male participants in this session had a friendly inside competition to create the best blog post. This was not organized in any way, it just happened when the group with the two male participants where creating their blog post and another male participant came over to start creating his own blog post. Because we only used one computer he had to wait for the two male participants to finish. They started to compare each other's creations and commenting. Both the single male participant and one of the male participants in the group decided to go out to take even more and better pictures. This took place several times before the blog posts were finished. Most of the pictures in both of the blog posts had accompanying text that was very descriptive and expressing both on how the objects in the pictures were used and the participants' feelings towards them. The text in both of the blog posts had also been experimented with by using different colors and fonts.

Observation #2

On September 22nd 2007, the second session was carried out. At this session there was a very low turn up of people at the youth club, which the employees explained was very likely because Ramadan[16] had just started.

There were two females that participated in this session, one that was 15 years old and one 16 years old. They were asked in the same way as in observation #1 to carry out the same assignment. At this observation the participants were also

[16] Ramadan is the 9th month of the Muslim year when they fast from sunrise to sunset. Source: http://www.encyclopedia.com/topic/Ramadan.aspx [Accessed: 29/04/2008]

offered cake and candy with the combined purpose of motivating and showing appreciation for them taking part in the project. The two female participants decided to work together. The mobile phone that they used was one that they borrowed from us. Since the female participants were not used to using that mobile phone they were able to lose the pictures that they had taken, which made them lose some interest in finishing the remaining tasks. But the 16 year old female decided to go and take another picture, and then come back to transfer it to the computer. She had used Bluetooth before but needed help to get it transferred. When that was done she created a post on the blog.

Observation #3

On September 24th 2007, the third and last observation was conducted. Because we had only had a few voluntary participants in the past sessions we carried out some design actions. Instead of being located in the "Web editorial group room" we set up a laptop to use in a more central setting, the "common room". And instead of giving the candy as a reward at the end, it was given during the session. Other than this the procedures and assignment were the same as in the previous observations. Participating in this observation were five participants, three female and two males. All of the participants chose to work on their own except for two females. They all used their own mobile phones. Even if some of them had used Bluetooth before they all had in common that they needed help with transferring the pictures from the mobile phones to the computer.

One of the male participates had to leave for soccer practice and because of that he did not have time to upload more than one of his pictures and text to the blog. The other male participant in this session chose to have his blog post containing only one picture as well. They were the only participants in this session that had their

blog post containing only one picture. The females in this session on the other hand added quite a few pictures to their blog post, but the group chose not to add text to their pictures. When the two females were creating their blog post there were people, which were not participating, standing around the computer and giving verbal comments to the pictures. During this time, a 13 year old female also came over and asked if she could participate. She ended up creating a blog post with quite a few pictures with short comments.

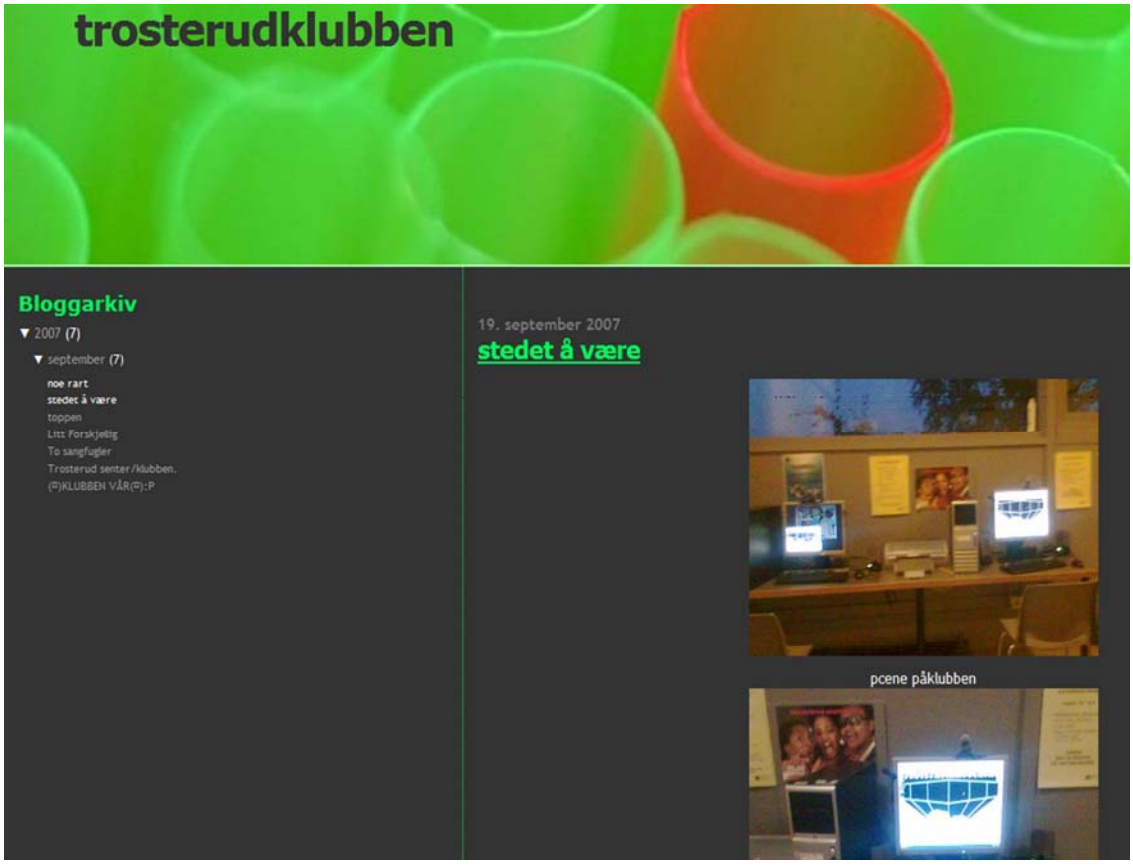

Fig. 9 A screenshot of the blog.

6.2.2 The Interviews

The interviews were conducted at the club during the opening hours on Monday the 8th of October 2007. The interviews took place in either the "Web editorial group room" or the "Media room", and the computers used depended upon whatever computer that was the closest and available.

Interview # 1

The first interview was with a group of three females that were 13 years old. The interview lasted for about 30 minutes. One of the stationary computers in the "Web editorial group room" was used during this interview. The three females were reading magazines when being asked by the researchers to participate. It was usually one of the female participants that took charge of the computer, but all of them contributed to explaining and showing how they use the Internet.

They all agreed with each other that they preferred using the Internet compared to other media. They also used the Internet more compared to other media, because they could do more things at the same time. All of interview objects had what they characterized as homepages. What they characterized as homepages were actually spaces on social networking websites. On these spaces they would have content related to themselves and their lives. They expressed that the information that they wrote on their spaces were mostly meant for their friends. They liked to be entertained when using the Internet so they would play games and read gossip magazines online. If they were on a computer they would almost always have an instant messaging service running in the background. They stated that they used their mobile phones mostly for sending SMS to friends, but they also used it to take pictures.

Interview # 2

The second interview was with a 16 year old female and lasted for about 20 minutes. She had also participated in the one of the observation sessions that had been conducted earlier. One of the stationary computers in the "Media room" was used during this interview.

She showed us the websites that she used the most, which were social networking websites where she kept in contact with her friends. These are also the websites where she would contribute content. Her main reasons for using the Internet was to communicate and to be entertained. She also used the Internet for some school work. The mobile phone she mostly used for sending SMS, because she did not have a mobile phone with many other functions.

Interview # 3

The third interview was with a 13 year old male and lasted for about 10 minutes. The interview was conducted in relation to one of the stationary computers in the "Media room". At first he stated that the only thing that he does on the Internet is to play online games. When showing us those online game websites he started to play some of them, which pretty much took away all of his attention towards us. He became more interesting in playing the games. We tried questioning the interview subject some more and the last thing he shortly explained was that the only other thing that he might use the Internet for is to lookup information regarding the outcome of soccer games that had been played.

Interview # 4

The last interview was with a group consisting of two males that were 14 and 15 years old and lasted for about 20 minutes. In this interview a laptop was used in the "Media Room".

They started taking very freely about how they use the Internet. Both of them expressed that they mostly used online games on the Internet. When they were asked if they had their own homepage they clearly expressed that homepages are for girls. Both of them had spaces on social networking websites, but did little effort to personalize them. They explained that the only reason that they do have their own profiles is to be able to look at other people's spaces. They also used instant messaging services and they showed us how many contacts they had. SMS was the most frequently used function on their mobile phones, but they thought that games and Mp3 players on the mobile phones were essential for the mobile phones.

6.2.3 Findings

The participants started out by collecting information from us when we were explaining to them the tasks that we wanted them to carry out. Then they were able to do the task of capturing their cultural heritage in their own pace, whenever, and wherever they wanted because of the mobility that the mobile phones presents. The mobile phone also made it easy for them to create and share their creations both in the physical and virtual space.

They had their own ways that they were used to using the technology. Some of the tasks and wording used did not always matchup to what they were used to.

Even if the technology was the same they became unsecure when unfamiliar terms were used. The participants had to be explained that when posting something on the blog it would be publicly available on the Internet.

The social interactions in the physical space had a positive effect on the contributions. Such as the competition between some of the participants that caused them to interact both in the physical and virtual space. A more social scene in the physical space also had a positive impact on the participants and other contributors. In a more social setting they were more willing to participate and contribute.

They were looking at previous blog posts and were influenced by them, but they created individual content. The finished blog showed a diverse set of pictures that all together showed a joint picture of Trosterud.

Pictures posted on the blog of:	**Number**
Rooms at Trosterudklubben	12
Objects inside the club	7
Trosterudklubben outside	7
Trosterud shopping center	7
Trosterud in general	6
People	2
Total	41

Fig. 10 The photographs divided into categories.

7 Discussion

This chapter discusses the findings from the case study in relation to the problem definition presented. The aim of this thesis was to look into how creativity might unfold when introducing the opportunity for users to contribute their own content in settings where only a selected few have been the creators of the content in the past.

7.1 Different forms of collaboration

From the sessions I observed that there were different ways that collaboration and collectivity took shape. Here I will look into and discuss how the individual creativity is tied together with collaboration and collective creativity in settings with user created content and discuss how these ties are beneficial for the creativity.

7.1.1 Individual and collective time

Mobile phones allow people to create and sometimes contribute whenever they come up with ideas. Sometimes people experience that their ideas come up all of a sudden, but they might not be in the presence of others or the right context. Because of this some artists often bring with them, for example, a notebook just in case they stumble upon ideas that might be useful later on (Sawyer 2007). Since so many people always carry with them their mobile phone they can capture their ideas and also share them with other people, because the mobile phones work both as a creation tool and communication tool. In the case of the Trosterudklubben part of the setting was that the users could take however much time they wanted, do whatever activities they wanted, and come back with their creations to share

when they wanted. In the time period that they were absent, they would bring with them their mobile phones to capture what they saw fit. Mobile phones, the Swiss army knife of new technology, give new possibilities in capturing the sparks and sharing them.

In all of the settings there were individuals or groups of two-three participants that created the content. With the RENAME project in each of the session, the participants practically started out with clean slates and building the content from scratch. The only content that they had to build on was the content that the experts had created. About the first half of each of the sessions ended up resembling nominal group brainstorming session quite a bit; the participants would enter the room and see the background information created by the experts along with the questions that they were going to work around. Then they would start out by creating their own ideas in relation to those questions. There was not much attention paid towards what the other participants were doing during the first half of the each of the sessions, because they were busy concentrating on their own tasks. This individual time decreases the chances of production blocking and cognitive interference because it helps minimize the chances of being prevented from generating new ideas (Dennis and Williams 2003). The participants worked individually for a period of time, while simultaneously contributing content. The content was stored in the system, so they were pooling their ideas while they underwent their individual time. When they had visited the different displays the projection on the wall was starting to contain more content. With the increase in information being projected more of their attention was drawn towards it, but they were still creating new content at the same time and had increasing amount of ideas to be triggered by. The key factor is that they were still able to go back to their own idea generation whenever they felt like it; because of this there was synergy, which is, according to Dennis and Williams, the biggest potential for process gain, but nonexistent in nominal group brainstorming (Dennis and Williams 2003).

7.1.2 Physical and virtual space

The most interest and motivation shown by the participants seemed to be when there was a combination of physical and virtual collaboration. It was interesting how they were affecting each other. We experienced as Shneiderman states (Shneiderman 2000): "that making creativity more open and social through participatory processes will increase positive outcomes while reducing negative and unanticipated side effects." There were different ways in which this was experienced. One of the ways was as a form of competition setting that evolved between some male participants. They were comparing pictures both on the blog and on the mobile phones. The aim of the competition was to create the best blog post. Since it was a rivalry they were interacting and socializing, and in doing this they were looking and comparing each other's content in an open matter. The competition and their communications were taking place in the physical space, while their creations were in the virtual space.

In hopes of increasing the number of participants, candy was offered to those involved. In the beginning, the candy acted as a reward for those that participated. But when moving out into the "common room" the candy became more of a social facilitator than anything else. We had more candy than we needed and because of that we ended up giving it to anyone that wanted some. Moving into the "common room" also seemed to lower the barriers of entry because it became part of a more social setting than before. Those two factors seemed effective, since more people were gathered around and it became an interaction with people in the physical space. Additionally, there were more people wanting to participate. At one point when there were two female participants creating their blog post, they were joined by some other people. These people were not participating in the project themselves at the time. Despite this, they were contributing in the form of giving the participants their thoughts and comments on the pictures that the participants had created. Furthermore, there was also a female who wondered whether she

could participate as well. This indicated that the interest and motivation increased when there was more openness and a more social setting in both the physical and virtual space. The physical space created a process gain in form of social facilitation. The social presence of other people had a positive effect on the performance of the participants. This, as well as research conducted by Malene Charlotte Larsen, confirms that the virtual space is in many ways an extension of the physical world (Larsen 2007).

7.1.3 The impact of quantity

With user created content there is a massive amount of creations that often gets produced; and the quality of the content created, especially when created with mobile phones, are quite variable when it comes to the quality of the footage and the content in itself. Maybe even a majority of the content is not of particularly high quality and could even be misleading. Does this mean that it should not be shared? My experience is that all of the contributions are important in some way because each individual contribution has some form of impact on an individual level and a collective level.

Most of the participants at the Trosterudklubben looked at the blog before, and some during, their quest to capture the youth club and its surroundings. What they had seen displayed on the blog did in fact affect their choices on what the subject of their pictures would be. An example of this is that every contribution was different in some way. They looked at what the other participants had created but did not go out and mimic the first person's work in pictures or writing. In fact, the participants became more inspired to find something new of which to take pictures and about which to write. Existing creations inspired the participants to create something new and different from what had been created before. Everyone contributed something new and different, which had simultaneously been affected

by other participants. The contributions had a synergizing effect; the ideas of some participants sparked new ideas in other participants (Dennis and Williams 2003). The first pictures that were taken were all of rooms that exist in the youth club, but as more pictures were taken they became more surprising and more focused on details. One of the male participants took an interesting picture where he captured some of the essence of Trosterud. The picture contains two houses that are built in different time periods and an apartment building. The picture is taken with a mobile phone camera, but what it represents is not affected by this at all. This was one individual's creative expression, which might not have been captured without the influence of the other bloggers, and the picture probably influenced the bloggers that participated after him.

Fig. 11 Picture taken right outside the youth club by one of the participants.

Another aspect of this is that the expression that was created when the content was looked at all together. At Trosterudklubben the participants started out without

any content at all on the page and one by one the users created the content. It was individual content that had been combined. The blog in relation to the Trosterudklubben had pictures and the text that focused on different aspects of theme within the limits of the assignment given to them. The pictures' subjects vary; one displayed the water dispenser, while another showed the local subways station. Together they represented the youth club and the surroundings from the collective eyes of the participants who were collaborating to show how proud they were of their youth club and its surroundings. Each of the pictures and the text, such as the one just mentioned, shows different aspects of the youth club and its surroundings. When all of those expressions come together they create one big, more diverse, valuable expression.

7.1.4 A combination

Before doing my research some of my fears were that most of the pictures would be of the participants themselves, that they would create much of the same content, or that they did not want to participate at all. Of course that in both in the voluntary setting and in the more formal setting there were different degrees of engagement within the participants, but the observations showed me that the collaboration both in the physical and the virtual space did minimize the extent of this becoming the case.

User created content and the process and tools that are involved increases the power that the groups have because it minimizes some of the problems with group creativity, such as brainstorming, that groups have had in the past. In both case studies' setting, there is a combination of individual time and group thinking. Each individual can go around doing their own activities before even thinking about what the other individuals have done. This decreases the chance of topic clusters.

Having the context and the blog in common each individual used their personal tool to create something individual and creative. The blogs were collective, but at the same time the participants did have an individual thought process of, for example, what exactly to capture, display, and write. The blogs were therefore both an individual and a collective picture of their cultural heritage that was built in collaboration in both the physical and virtual space. The blogs and their content is a product of individualism and collectivism coming together on many different levels through collaboration.

7.2 Creativity, iteration and sharing

Both theory and empiric evidence show that the creative process is indeed iterative and nonlinear. Shneiderman explains that his framework for the creative process called Genex, which consists of the four phases collect, relate, create, and donate, to be non-linear and iterative (Shneiderman 2000). Looking at Genex in relation to the project proved to be very helpful in seeing how this iterative process unfolded in the observations. Here I will first apply Shneiderman's four phases to the process that takes place in the physical museum without any form of user creations in order to be able to see and discuss the change that is possible when introducing user created content. Thereafter I will discuss the suitability and adequacy of Shneiderman's framework in relation to user created content (Shneiderman 2000), and will propose sharing as an additional concept in relation to user created content.

7.2.1 The physical space in museums

At some museums the visitors can get the feeling that conversation is discouraged. For example, at the Viking Ship Museum the structure of the building makes sounds reflect off of the wall and a little bit of sound can become very loud. The guards at the museum make sure that people are not talking too much and especially not too loud. With classes of school children they walk over almost immediately and hush them. It is understandable in many ways: because it is the most visited museum in Norway they have lots of visitors at the museum every day. It would probably be unbearable to be in there with all that noise. However, limiting noise also limits people's opportunities to share their experience with others, and they lose the relate phase of the creative process.

The ethnographer Terje Plank, who is part of the Gokstad boat project, said that he believes that in some cases after you have been to a museum you might be more stupid than you were before you went in there. This is because most of the information is presented as facts and only confirms people's thoughts. It does encourage the visitors to question, what he/she identifies as the so-called facts. Because they are given the impression that the information given to them is 100 % correct, visitors have no reason to question them; they have no motivation for thinking differently or creatively. The old ideas are there, but people do not build on them because they are given the impression of that being the only possible way. They do not have a reason for creating something new.

An object discovered with the Oseberg ship, The "Buddha bøtta" (Buddha-pail) does not really have a satisfactory explanation presented at the museum. There are some theories about how it was used and where it originated (Gulliksen 2006). The museum exhibit does not offer these different ideas. When Planke told the participants that there are different stories around the bucket they found that

interesting. Because of aesthetic reasons there is only room for a limited amount of information displayed in the physical world of the museum. Therefore the physical museum gives no real space for the donation of information.

By summing up, this means that a regular visitor of the physical museum is pretty much left with only the collection phase. With the introduction of a new place where ideas and thoughts are more welcome, new possibilities are feasible as I will discuss now.

7.2.2 Collecting

The first phase in Shneiderman's framework is the collection phase, and every session started out with the participants collecting information. In the RENAME project they first received a briefing before they went in, and when they were inside all of them collected more information. They would upload the video clips of ethnographer Planke, read the posters with information, look at the display and so forth. They were active information seekers, but there was an individual difference in the degree of information each participant collected in this phase.

7.2.3 Collecting and relating

There was a tendency that in the beginning the participants would use longer time periods going back and forth between the collecting phase and the relate phase. This appeared to be caused by two reasons: firstly, they were unsure about what the display was all about and were seeking information that would make it clearer. Secondly, one of the sources of information was the informational video clips that they could receive from the Bluetooth zone, but downloading the video clips were

time consuming. They filled that time by reading and discussing the information displayed on the posters. Those two reasons were clearly displayed and expressed by three female participants who started out by the model display. First they read the main question for the model display and decided to read more on the information poster. When reading half of it they discussed it and expressed to each other that they were confused and their attention switched to working on receiving the informational video clips. They realized that this would take a while, so they decided to read more on the poster and also started to discuss some again.

7.2.4 Creating

After this, the time spent deliberately collecting and relating decreased. Those that were working in teams might consult their team member and have short discussions regarding the questions that they were prompted with. In some cases there were discussions regarding what should be captured before the video clips or the pictures were created, in those cases the discussions were very brief and what they had discussed did not necessarily end up being what they captured. Most of the participants would start out very quickly to create content. In other cases there was not really done any planning at all. The creation of content seemed to come spontaneously and utilized a lot of improvisation when answering the questions by using video clips. One participant would start to capture the other participant that began talking spontaneously without any real direction. Hence they forced each other to improvise. The answers and even some questions were therefore improvised. This means that there was little filtering of the ideas that were created. Due to the time limits that mobile phones have regarding video capturing, they were forced to come up with the answers as quickly as possible. There were only a few cases in which the participants actually redid the filming before sending it in.

7.2.5 Collecting peer creations

With the increase of contributed content the participants would gradually start collecting the content created by the other participants by paying more attention to the projection on the wall. To a certain degree it did not matter where in the creative process they were; if they found what was displayed on the projection interesting, and they were not in the middle of creating content, they would pay attention to the projection. It still seemed like the creation of content came was prioritized.

7.2.6 Sharing

Shneiderman has named the fourth phase “donation”, and explains this phase to be where the results are disseminate and contributed to libraries (Shneiderman 2000). In relation to my observations, this concept and characteristics seems to not give the right analytical focus. I therefore suggest the concept of sharing as focusing on another level of user creation and participation. The reason why “donation” is not a sufficient concept is probably because Shneiderman’s framework is related to a different level of creativity. As he explains his focus is on what he calls evolutionary creativity, which he defines as creative acts that changes someone else’s life (Shneiderman 2000). What is mostly taking place in the observations of this thesis can be defined to be more on a personal level, even if more highly creative creations might have taken place. A more descriptive name for the fourth phase as experienced in these observations is sharing, because the content that was created and contributed was not meant as the result in the form of scientific results. The content was a result of personal expressions and ideas that the participants wanted others to hear about. They were expressing the ideas and thoughts that

they had at a certain point in time and not an answer that they believed to be totally correct.

From these observations it was noted that the participants were interested in sharing throughout most of the phases of the process. The exception was in the beginning of each session when they were collecting information to get an idea of what was going on in the setting and what they were supposed to do. Sometimes it seemed as if the goal of dissemination by using the projection on the wall in the RENAME project was more of a means to share with close peers, than with everyone. This was also demonstrated by the fact that some participators were sending the content that they had created directly to each other. The participants wanted to share information with other people, thought sometimes they were more interested in sharing the content that they had created with people they already knew. There was no intended support for direct sharing in any of the settings, but since all of the mobile phones assembled a list of Bluetooth units that were close by, the participants quickly made the technology work for them. When the participants were creating blog posts they seemed to think about that as an act of not only sharing with their peers. However, they still expressed that they did not grasp the fact that they were sharing with everyone on the Internet. The fact that they seemed to want to select who they share with does in many ways reflect how teenagers use the internet today, which is often to be connected to and share with people they already know (Larsen 2007).

7.2.7 Rapid iteration

The iterative process of user created content was seen to happen at a rapid speed because of the possibilities that the new technology offers. As a matter of fact, a significant difference between the settings that incorporates user created content and the real world, or even websites generated by an organization, for example, is

the high rate in which new content is produced and shared (Cha, Kwak et al. 2007). The past contributions often become regarded as old very fast. This is evident in many user created content websites. On YouTube, for example, the videos that are on the weekly most viewed lists are usually less than a week old (Gill, Arlitt et al. 2007). The participants expected this to be the case here as well. They seemed to have the impression that the content is suppose to be substituted frequently. They brought with them their experience, understanding, and use of the dynamic content which is present on many user created content websites. One of the older girls wondered why one of the video clips of her was displayed so many times instead of something new. They expected new contributions to keep coming, substituting the old. This is another reason why the donation phase is not suitable to be used in relation to user created content. The users are often not contributing with the belief that the content will be relevant for longer periods of time. They expected their content to be substituted quite quickly, not have the content preserved and presented over long periods of time, like in libraries.

7.2.8 Individual and collective

The process that the participants went though was definitely not a linear sequence, and it was an iterative process just as Shneiderman describes. But Shneiderman's framework does not incorporate the process of collective creative expression. From the observations there was seen both iteration on an individual level, and on a collective level. Meaning, the participants went through the creative process on a personal level. They improve, change, and build on their own ideas and thoughts though collecting, relating, creating, and sharing. But the iteration did not start or stop with that. It takes place almost like a relay race that never stops and the batons are the ideas that get passed along. How long of a leg each person does varies greatly and is dependent on the person. The thing is that together they are

creating something that is of interest. A single individual running around the track is often not that interesting, but adding other runners in forms of team members and competitors quickly makes the situation more intriguing. Shneiderman describes the benefits of building on previous work, but not the benefits of building something together. The participants were not only creating individual content to a library, but together they went through a process of also creating one big creation.

8 Conclusion

Exploring how user generated content can affect the creative process has been the focus of this thesis. The creation and publishing of content has traditionally been for a selected few and still is in many settings regarding cultural heritage.

The Internet and the mobile phones are, in the way that we use them today, relatively new, and because of that they are constantly developing. Creativity on the other hand has existed for as long as we are aware of civilization. What both these technologies and creativity have in common is that there is a great deal to learn about them. In that respect, looking into how they work together was ambitious, and I do not believe I have all of the answers here. But from the research that I have done I am convinced that user created content and the process behind it has the ability to help individuals and groups come closer to their creative potential.

The research has shown that mobile phones and the Internet can be a brilliant and powerful match for each other and grant a lot of new creative power to the users. The technologies have a way of facilitating the creative process. One of the most important aspects is that it gives the users space where they have the opportunities and are encouraged to practice creative thinking. This is not just because the technologies give the users the power to create and share, but also because of their attributes, such as that the Web encourages participation.

What is created by users does not substitute what is created by the knowledgeable and trained creators; instead it plays a supplementary role. My experience is that information regarding cultural heritage should not consist purely of user created content nor merely content created by experts. There should be a balance between displaying content created by experts and content created by the users. The

experts are those that have the most background knowledge, but having the users created content and reading other's content encourages the users to think creatively about what they are experiencing. Displaying the user created content also gives a message to the users that their creative thinking and contributions are valued.

When that is said, merely introducing such technologies is not enough. This is because the physical space, even after the introduction of such technologies, has a significant effect on the degree of creativity. With the mobile phone and the internet users are given the opportunity to express their opinions regarding their cultural heritage, but this does not necessarily change how the setting makes them interpret the information. The technology used should be technology that the users are familiar with using, because otherwise there is a big chance that the technology will be a hinder both to the experience of the setting and the creative process.

8.1 Future research

When using any kind of new technology, issues do arise because they have an impact on how things are done. We have only seen the beginning of all the possibilities that the mobile phone and the Internet offer, and because of that many questions and issues are unresolved. A few of those questions are raised here.

Since user created content is something that is becoming increasingly widespread, further research is required to see how this can work on a larger scale and not solely with teenagers who have grown up with this type of technology.

The web and what it has to offer with hypertext, for example, gives great possibilities when it comes to creating stronger interconnections between the

stories that the users have created. This again leads to the question of how much structure is necessary, and if structured, and what kind is needed. There are also unanswered questions around how much control the original author should have over his/her creations.

With the increasing amount of information that will be contributed by users there will be a need for finding good solutions on how to display this information in an orderly and presentable way. The good ideas have to be found among the increasing amount of information. Can for example a form of social navigation system be used to activate the collective masses to help the process of finding the great creative works among the information?

9 References

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10 Appendix

Appendix A

Museumsbesøk knytta til GOKSTADBÅTPROSJEKTET

Mandag 11.juni 2007
Klasse 7a Skøyen Skole

*Gokstadfunnet, det vil si skipet, de to rekonstruerte båtene og gjenstander fra Gokstadfunnet, er spredt over hele Viikingskipsmuseet.

*Du kan bruke mobilkameraet og "samle" bilder av gjenstander – og laste dette over på besøksbloggen som er tilgjengelig på mediestasjonen på galleriet. Du kan også lage lydfiler på mobilen, der du kommenterer gjenstander og funn.

*På bloggen legger du ut materialet du har samlet og kommenterer i tekstfeltet. Du kan også komme tilbake til Gokstadbåtwebsiden og fullføre kommentarene dine hvis du ikke ble feridg under museumsbesøket.

*Vi har laget to oppgaver som du kan ta utgangspunkt i:

Oppgave 1: Planke- oppgave

*Samle så mye informasjon og hypoteser om Gokstadfunnet som mulig i museet. Det si både skipene og gjenstandene og tekstene. Men også diskusjoner som dere har og forslag til løsninger som dere finner ut sammen.

Oppgave 2: Fantasi-oppgave

*Hva tror du Gokstadbåten ble brukt til?
Ta bilder av gjenstander og tekster for å underbygge din teori.

Appendix B

The questionnaire that was handed out to each of the participant to fill out before participating.

1. Navn:
.....

2. Alder:
.....

3. Kjønn: Jente ☐ Gutt.☐

4. Har du mobiltelefon: Ja ☐ Nei ☐

5. Hvis ja, hvilken type:
.....

6. Hvor gammel var du da du fikk mobiltelefon? ..... år

7. Hva bruker du mobilen til? Du kan sette flere kryss.
Ringe ☐ Sende sms ☐ Sende mms ☐ Spille ☐ Chatte ☐ Ta bilder ☐
Annet ☐

8. Hvor bruker du PC? Du kan sette flere kryss.
Hjemme ☐ Skole ☐ Klubben ☐ Annet ☐

9. Hvor ofte bruker du PC? Du kan sette flere kryss.
Hver dag ☐ 4-5 dager i uken ☐ 2-3 ganger i uken ☐ 1 gang i uken ☐

Mindre enn en gang i uken ☐

10. Hva bruker du PC'n til? Du kan sette flere kryss.

Spill ☐ Skolearbeid ☐ Mail ☐ Chatting ☐ Legge ut bilder ☐ Blogging ☐

Surfe på nettet ☐ Annet ☐

11. Jeg har prøvd å overføre bilder fra mobil til PC: Ja ☐ Nei ☐

Fylles ut av Ine/Ida

Lånetelefon:

.....

IMEI:

.....

Brukernavn:

.....

Jeg godtar med dette at jeg er ansvarlig for mobiltelefonen jeg låner til dette prosjektet.

.....

Underskrift

Appendix C

Interview guide used during the semi-structured interviews conducted in this study.

Person

1. Hvor gammel er du
2. Hvilken klasse går du i?
3. Kjønn?
4. Hvilke kulturer føler du tilhørighet til?
5. Hva gjør du etter skolen/SFO?
6. Driver du med noen fritidsaktiviteter?
7. Hva beskriver deg?
8. Hvilket medium/elektriske ting bruker du/dere mest tid på?
    8.1. Hvorfor det?
9. Hvilket medium/elektriske ting liker du best?
    9.1. Hvorfor det?

Mobil

10. Hva er den kuleste funksjonen på mobilen din?
11. Hvilken funksjon bruker du mest?

Nett

12. Hvor mye tid bruker du/dere på nettet?
13. Hvorfor går du på nettet?
14. Kan du vise oss det kuleste du gjør på nettet?
    14.1. ser du bruker mye ..... hva er det som får deg til å bruke det?
15. Hvorfor gjør du dette?
16. Hva er det som gjør dette så bra?

17. Hva vet du er der ute?
18. Hva vet dere om som dere ikke bruker? Er det noen sider som dere vet som om høres kule ut som dere ikke bruker?
19. Hva kunne du ønske at du kunne gjøre på nettet?
20. Den perfekte nettsiden for deg, hva inneholder den?
21. Hva kunne du ønske at du kunne gjøre med mobiltelefonen?
22. Er det noen sider hvor du skriver/legger inn noe? Input/output
23. Har du noen gang lagt ut egen produsert innhold?
    - 23.1. I så fall hvor?
    - 23.2. Hvorfor ikke?
    - 23.3. Vet du hvordan?
    - 23.4. Vet du om noen steder?
24. Hvordan brukes datarommet/hvordan forholder du deg til datarommet?