It is New, Now Learn!
- A research on if computer and Internet usage contributes to learning from the students’ perspective

Det är nytt. Lär dig nu! – En undersökning om ifall dator- och Internet-användning bidrar till lärande från elevernas perspektiv

Charlene Rosander

Lärarutbildning 90 hp
November 2012

Examinator: Elisabeth Söderquist
Handledare: Lars Berglund
Abstract

In the research I am investigating if computer and Internet usage contributes to learning. I am doing this through interviews with six students at their first year in sixth form. My research question is: How do the students’ experience the usage of computers and Internet and how this affects their learning process? My aim is to contribute to the apprehension of how to adjust teaching involving computer and Internet usage by finding out in which way/-s the students find this educational format beneficial to learning.

I found that computer and Internet usages contribute to informal, assimilative, accommodative and convergent learning. It also triggers motivation, feeling and volition which are within the learning dimension strife. Interaction is filled in form of perception, mediation, imitation, participation and activity. Furthermore, it distinguishes content, perpetuate understanding and initiate life-long learning. However, I found that it can contradictory also make it difficult to create understanding and distinguishing content. It can also put a halt on motivation and be a distraction for learning.
# Table of Content

Abstract ........................................................................................................................................... 1  
1. Introduction .................................................................................................................................. 4  
   1.1 Aim and Research Question ........................................................................................................ 4  
2. Literature ....................................................................................................................................... 6  
   2.1 History Leading to Computer Emphasis ...................................................................................... 6  
      2.1.1 Computers at School ................................................................................................................. 7  
      2.1.2 The Appointed School .............................................................................................................. 7  
   2.2 The Curriculum ........................................................................................................................ 8  
   2.3 Previous Research ..................................................................................................................... 10  
      2.3.1 Previous Case Studies ............................................................................................................ 11  
      2.3.2 1:1 Project ............................................................................................................................. 11  
3. Theory .......................................................................................................................................... 13  
   3.1 Learning .................................................................................................................................... 13  
      3.1.1 Perspectives on Learning ........................................................................................................ 14  
      3.1.2 Piaget’s and Kolb’s Theory Including Modification .............................................................. 14  
      3.1.3 The three Learning Dimensions ............................................................................................ 16  
      3.1.4 Obstacles for Learning ........................................................................................................... 17  
4. Method .......................................................................................................................................... 19  
   4.1 Choice of Method ..................................................................................................................... 19  
   4.2 Choice of Participants .............................................................................................................. 19  
   4.3 Representativity ....................................................................................................................... 20  
   4.4 Reliability .................................................................................................................................. 20  
   4.5 Collecting Data ......................................................................................................................... 21  
   4.6 Processing Data ....................................................................................................................... 21  
   4.7 Ethical Aspects .......................................................................................................................... 22  
5. Results and Analysis .................................................................................................................... 23  
   5.1 Computer Usage amongst Students ......................................................................................... 23  
      5.1.1 Introducing Mac ...................................................................................................................... 24  
      5.1.2 Word .................................................................................................................................... 26  
      5.1.3 PowerPoint Presentation ....................................................................................................... 27  
   5.2 Internet Usage amongst Students ............................................................................................. 29  
      5.2.1 Google Documents ............................................................................................................... 29
1. Introduction

The increased usage of computers and Internet as a part of the educational format has triggered my curiosity as a teacher trainee in knowing which effect this has on the students. At my practice there is an emphasis on extension courses for teachers covering how to apply computer and Internet usage in their didactics. The underlying assumption, as I have interpreted it, has been that the teachers need to advance within this topic whereas the students already are advanced. Even though the students are covered with some training involving computers they are not necessarily provided with all the information they need. Instead the students are expected to have previous knowledge of this. My thought is that this assumption may affect their learning process. Generally, students do have a pretty high level of digital ability (Hallerström, 2008). But it still needs to be considered that this knowledge is not applicable to all or practiced by all and the subjects of knowledge might differ.

Somehow it seems as if high schools are striving to be more modern and along that road forget that the main purpose of school is that the students should be subjected to the didactics that will improve their learning. I hope that instead of throwing what is old and welcoming what is new we need to be critical to all different types of pedagogy which are expected to be taught. Ultimately we can find the new methods which actually work and let the old methods which do work remain timeless. Perkins discusses the continuous search for the saviour syndrome, ironically speaking, which lacks the understanding that education is complex and should be viewed with this complexity in mind (1992). Computer and Internet usage can be seen as the saviour syndrome presented at schools today.

1.1 Aim and Research Question

My aim is to contribute to the apprehension of how to adjust teaching involving computer and Internet usage by finding out in which way/s the students find this educational format beneficial to learning. As the students might not be familiar with what contributes to learning I will listen to their experiences and thoughts and analyse them according to learning dimensions and styles. I will limit my research to including six students who experience the same educational environment. The reason I would like to use the students’ point of views is
that I find as a trainee and that the students’ own thoughts on computer and Internet usage have somewhat been neglected or forgotten. Even though my practise has a questionnaire revolving computer and Internet usage which the students fill in the students have not necessarily affected the didactics as it ultimately is up to the teachers and headmaster to create an influence of the students’ thoughts.

To sum up, my research question is: How do the students’ experience the usage of computers and Internet and how this affects their learning process? As mentioned, I do not expect that the students should be aware of how the usage of computers and Internet affects their learning process. In fact I will not use the word learning at all whilst interviewing. Instead I will analyse their answers in correlation with different learning dimensions and styles. I will answer my research question by putting focus on some sub-questions:

- Which experiences of computer and Internet usage in the classroom do the students have?
- Do the students feel they have enough previous knowledge in computer and Internet usage to tackle the tasks handed to them in their education?
- Which tasks including computer and Internet usage do the students feel have contributed to their learning process and why?
- Which tasks including computer and Internet usage do the students feel have not contributed to their learning process and why?

By getting students to answer these questions in an adjusted and modified way in accordance to the interview situation I am hoping to collect information that will portray the students’ perspectives on the connection between computer and Internet usage and their learning process. Thereafter I will analyse their answers in correlation with learning.
2. Literature

I have studied previous research dealing with learning in correlation with computer and Internet usage. Hence, I have not specialised on the students’ perspectives whilst looking for literature. This is due to two matters. Firstly, I had difficulties finding material portraying the students’ thoughts on learning in correlation to computer and Internet usage which confirmed the necessity of conducting research from the students’ perspectives. Secondly, it is not of great importance to specifically find students’ point of views when concerning previous research as I am looking for inspiration of learning possibilities whilst using computer and Internet. The results from previous research will somewhat guide me in which theories considering learning I can put into test in my case study.

Furthermore, I will glance at the history concerning computer and Internet usage at Swedish schools and at the high school where I conduct my case study. Thereafter, I will also discuss the curriculum’s and syllabus’s guidance in this issue as the usage of computers and Internet today should be based on these national guidelines otherwise they ought not be practised. It is especially interesting looking at the curriculum in 2012 as in autumn 2011 a new curriculum was introduced which means that all involved and affected by this are still working on fully understanding the changes. Therefore, analysis of the curriculum will hopefully contribute to the development of comprehending the new curriculum.

2.1 History Leading to Computer Emphasis

The usage of computers and Internet belongs to a technical development which has expanded rapidly not only at school but in society in general. Therefore the knowledge it provides is of great importance to every student. However, schools world-wide and in Sweden have not implemented computer and Internet usage to the same extent so the knowledge circulating computer and Internet usage is not unanimous.
2.1.1 Computers at School

In Sweden’s society today where public schools have almost been forced by the competition of alternative schools to enter a lucrative business luring students by providing them with the latest technology to sign up at their particular school it is somewhat hard to imagine there being a time where computers were non-existent. The development of computers at schools has prospered pretty fast the last couple of years. The increase of computers in society simultaneously with the absence of them at some homes has created a clash in society that schools have tried to manage by making computers more available (Bolander, 2001). This is most likely one of the reasons as to why many schools provide students with a computer room or an individual laptop to be used during the school years. However, the development leading to this has gone through different stages.

It was as early as in the sixties the Swedish schools started recognising computers and the technology surrounding it (Jedeskog, 1998). I am claiming that it is early because even though it was recognised it took many years until it was introduced. In the seventies there was a backlash on computer usage at schools as the pedagogy was more focused on actual conversations (Jedeskog, 1998). However, simultaneously there were several projects initiated from the state researching how computers could be implemented at schools which were pursued in the seventies and early eighties (Jedeskog, 1998). An aspect completely neglected in this research was how to educate the teacher in how to use computers in a pedagogic way in their didactics (Jedeskog, 1998).

The eighties can be viewed as an eventful era concerning computers. In 1982 a new subject called Computer Sciences was established in the curriculum Lgr 80 (Jedeskog, 1998). The mid-eighties also provided several documents describing how computers could be implemented at schools. The results from this showed how it ultimately should be implemented.

2.1.2 The Appointed School

My internship is no exception to the rule of providing students with new technology. It is part of the 1:1 Project which will be explained in 2.3. Shortly, it is a project where every student gets their own laptop. It is fairly new at my internship, more precisely four years, and it is part
of a larger research where they investigate pros and cons with individual laptops. Previously all students got a PC but now new for the students in year one and two; they get a Mac.

At the school’s web page there is an emphasis on the usage of computers at school as it is written “[w]e work very actively to for example with the help of computers make the education diversified. Audio, visual, film, text, web etc. are natural elements in all our courses” (Pauli gymnasium). The school also advertises on their web page and on Open House nights that it is a school which emphasises and uses IKT Information- and Communicational Technique.

2.2 The Curriculum
The existing curriculum is freshly applied to the year ones and twos at Swedish sixth forms. I was surprised to depict that the curriculum does not substantially express the importance of computer and Internet usage. However, it does enhance computers being necessary tools during the students’ education, especially if you read in-between the lines. Nonetheless, it does not have any significance if the appointed teacher does not interpret the curriculum accordingly. I will demonstrate that the overriding curriculum portrays a diffuse guideline by analysing quotes. To maintain a flow whilst writing I will provide with English translations. The original Swedish versions are available in footnotes.

The students shall also be able to orient themselves in a complex reality with a huge information span and quick modification rate. Their ability to find, accumulate and use new knowledge is therefore of importance. (SKOLFS 2011: 144)

Through studies the students shall strengthen their foundation for life-long learning. Modification in the working life, new technology, internationalisation and the environmental issues complexity entails new demands on peoples’ knowledge and way of work. (SKOLFS 2011: 144)

---

1 Vi jobbar mycket aktivt för att bl.a. med datorns hjälp göra undervisningen omväxlande. Ljud, bild, film, text, webb med mera är naturliga inslag i alla kurser.
2 IKT informations- och kommunikationsteknik
3 Eleverna ska också kunna orientera sig i en komplex verklighet med stort informationsflöde och snabb förändringstakt. Deras förmåga att finna, tillägna sig och använda ny kunskap blir därför viktig. (SKOLFS 2011: 144)
4 Genom studierna ska eleverna stärka grunden för det livslånga lärandet. Förändringar i arbetslivet, ny teknologi, internationaliseringen och miljöfrågornas komplexitet ställer nya krav på människors kunskaper och sätt att arbeta. (SKOLFS 2011: 144)
These quotes initiate that the educational system needs to develop in relation to surrounding modifications. The outer world demands knowledge of new elements however it does not specify which these elements are. The diffuse term, new technology, is used which can contain more aspects than computers and Internet meaning that this aspect can be neglected. However, one can also easily interpret that computer and Internet usage is part of this definition.

In the goals concerning knowledge in the curriculum the term technology is still diffuse however the process of its usage is more detailed. The students should use "... modern technology as a tool for seeking knowledge, communication, creativity and learning” (SKOLFS 2011: 144)\(^5\). These purposes of usage inevitably contain the elements computers and Internet.

I will furthermore specifically analyse the curriculum concerning students belonging to social sciences (as that is the orientation my participants belong to) and the syllabus for the subject Swedish as it is a common ground for my participants. I will use the subject Swedish as an example to be able to give an example of how to interpret a syllabus in relation to computer and Internet usage. Hence, who the selection of participants is will be further described in 4.2.

The curriculum for social sciences is more straight-forward than the overriding curriculum as it pin-points which the new technology is by stating that “[e]ducation shall treat the medias and the information technologies postulations and opportunities” (SKOLFS 2010: 14)\(^6\). Furthermore there is an emphasis on developing “... partly abilities, in communicating and presenting their knowledge, inter alia with the help of digital tools and medias” (SKOLFS 2010: 14)\(^7\). This means that the students shall not just comprehend new technologies but also be able to interactively use them as a means of developing skills.

In the syllabus for Swedish it is stated that the education shall give students the ability to develop “[k]nowledge about genres plus story-telling skills and stylistic features, partly in literature in different eras, partly in film and other media” (SKOLFS 2010: 261)\(^8\). Once again

\(^5\) "... modern teknik som ett verktyg för kunskapssökande, kommunikation, skapande och lärande”\(^6\) “[u]tbildningen ska behandla mediernas och informationstecknikens förutsättningar och möjligheter” (SKOLFS 2010: 14)\(^7\) “... dels färdigheter i att kommunicera och presentera sina kunskaper, bland annat med hjälp av digitala verktyg och medier” (SKOLFS 2010: 14)\(^8\) “[k]unskaper om genrer samt berättartekniska och stilistiska drag, dels i skönlitteratur från olika tider, dels i film och andra medier” (SKOLFS 2010: 261)
there is an emphasis on creatively using media, inevitably including computers and Internet usage. In all levels of grading there is a continuous stress on the necessity of using technical tools as a help whilst conducting a presentation. Depending on the grade, the demands on the skills in this area ultimately increases and decreases. The educational content needs to entail the usage of technology but there is no emphasise on teaching how to use it. This reflection in particular is important in relation to learning as the students already are expected to know the first step and therefore do not necessarily need to be taught how to use their computer when presented with a task.

### 2.3 Previous Research

As computer and Internet usage has spread rapidly, researchers have been interested in its effects and possibilities. Many empirical studies have been done to see what type of learning computer and Internet usage may or may not contribute with.

One very important point of view considering learning and computers is that it is the students who choose which knowledge they will learn by being active and thereby available for learning (Bolander, 1998). Furthermore the student must find that the information is beneficial before they can accumulate it as knowledge (Bolander, 1998). This is relevant as computers can be challenging and at the same time an opportunity for the students as they need to motivate themselves in being active to get any learning results but simultaneously it gives them more availability for self-study. However if the students are active they do not necessarily understand what they are doing. Research shows that it is more common in life that practice comes before learning (Blander, 1998). In other words, learning by doing.

In schools there is an emphasis on learning not ending with the last day of school as it is a continuous process throughout life. This learning process has thanks to computers become more reachable (Bolander, 1998). Willoughby and Wood pinpoint the importance of informal learning (2008). In other words, learning when you are not forced to. The digital world therefore contributes to informal learning on the students’ leisure time (2008).
2.3.1 Previous Case Studies

Lars Bolander discusses in *IT and the Future of Learning* the impact IT has on learning, which is an approach lifted in my research as well. Bolander discusses separately how learning is visible in ten different case studies. I will not present each case. Instead I will give a brief summary of those case studies where the students are high school students and where he brings up learning in relation to computer or Internet usage. This evolves in two different students. Hence, the names used are fictional made up by Bolander.

Bolander found that computers can function as an inspiration for further learning. A student named Per with hardly any interest in reading purchased books of famous characters out of own interest thanks to the characters being existent in computer games (Bolander, 2001). In other words, Per got involved in the characters through computer games which enabled him to find motivation to read. Once he started reading fantasy he found it easier to read other categories and from other formats as well (Bolander, 2001).

Social media is a topic that often is considered as an obstacle for learning in form of being a distraction. However, it is found that chatting can improve language skills and is therefore also beneficial for learning (Bolander, 2001). A student named Ahmed who is a part of one of the case studies has been able to improve his Swedish as well as English thanks to chatting (Bolander, 2001: 37). Bolander also found that designing with the help of computers initiate constructionism which is when you create ideas instead of fulfilling ideas whilst initiating new knowledge (Bolander, 2001).

2.3.2 1:1 Project

1:1 Project has developed gradually with the vision in mind of an increased usage of computers at school (Hallerström, 2008). A mutual IT-plan was established in 2005 which was driven by a company and not just by teachers particularly interested in the subject (Hallerström, 2008). For several years there have been computers at Swedish schools allocated in a specific computer room (Hallerström, 2008). However, since 2005 new visions have spurred up such as each teacher having their own computer and eventually each student having their own laptop (Hallerström, 2008). Alongside this vision there has been an investment in increasing teachers’ IT skills (Hallerström, 2008). This vision has

---

9 IT och framtidens lärande
become a reality at many schools in Sweden. In other words, 1:1 Project is an investment where each student gets a laptop. This in turn means that the personnel at the schools undertaking this project need to get more education on how this pedagogically can be beneficial (Hallerström, 2008).

In 2007 two schools in Falkenberg’s municipality enhanced this project. I will present the results from the evaluation which is of interest to my study. The students find that education has become more fun thanks to their computers and that information is more easily provided (Hallerström, 2008). The Internet has helped students finding information whilst conducting their studies (Hallerström, 2008). The increased fun level is much due to that the students can design their work and presentations in a way they find neat with the help of their computers (Hallerström, 2008). One obstacle for learning though is that the students seem to find it hard not to be derived to use other functions on the computer that is not in term with their education (Hallerström, 2008). The students also explain that there is always a risk of the computer collapsing or material being lost some other way as for example if the computer is stolen (Hallerström, 2008).

The appointed school for my research has let each student at their school answer a questionnaire covering computer and Internet usage. The headmaster gave me availability to view the results from the internal quantitative research. This enabled me to select the results considering solely the class which my participants attend. Hopefully this will somewhat give a wholeness to my analysis as it gives a better understanding of the normality in the class. A detailed description of the results relevant to my research is enclosed.

To sum up the results, all the students in the class have access to Internet at home. In the questions the students got four options to answer and most answers added up to about 50% on the more positive side and 50% on the more negative side. However the answers which have more than 60% are solely on the positive side. This is true in three questions out of eight. The negative is predominant in two questions but with 55% on each question, meaning solely 5% dominance on each. This can be concluded as the students overall in the class being positive to 1:1 education.
3. Theory

Each individual learns in their own complex and unique way. It is somewhat difficult understanding which is the most effective way of learning for oneself in different situations. Even more difficult is it to figure out if learning actually occurs for someone else which a teacher most likely questions continuously. I will not be able to answer if computer and Internet usage actually has contributed to learning amongst the students I have interviewed. Instead, I can analyse through their experience if the usage has contributed to learning according to theory.

For this research it is important to pinpoint how we learn and when as I am interested in if the students perceive that the usage of computers and Internet has influenced their learning. As mentioned, I will analyse the student’s answers in correlation with theory without expecting that the students are aware of the specific theory. Furthermore I will not limit my research by looking exclusively at learning as I cannot presume that the students find that computer and Internet usage contributes to their learning process which is why I will also look at obstacles for learning.

3.1 Learning

Learning might be viewed as a common concept which has no need of being defined. However, as it is often carelessly used with no further reflection it can entail several aspects depending on who uses the word and in which situation and with whom. This complexity of the term requires a definition to how I am associating to learning in this research.

For this research I will entail some elements on learning that I find give a broad definition of the term and include different ways of processing knowledge. I am not neglecting that there are many more perspectives on learning that might be suitable. But as I am interested in the learning process amongst the appointed students relating to new didactics I am mainly interested in interpreting how open the students are in processing new information with existing knowledge which is why I am to focus on Piaget and Illeris interpretation, organisation and addition to Piaget’s thoughts. However, I will use parts of
Richmond’s and Cummings’s interpretation of Kolb’s theory as well as a complement to Illeris’s perspectives on learning due to them bringing up some of the same learning styles and Richmond and Cummings add yet another aspect which is interesting for this research. I have taken the freedom to translate Illeris terms from Swedish to English. His original language is Danish.

3.1.1 Perspectives on Learning
Illeris states that learning includes three dimensions which are content, strife and interaction (Illeris, 2007). Content and strife belong to the individual aspect on processing knowledge (Illeris, 2007). To be more specific, with content Illeris means knowledge, understanding and assets whereas with strife he refers to motivation, feelings and volition (Illeris, 2007). Interaction covers action, communication and co-operation (Illeris, 2007). I will discuss these learning dimensions more thoroughly in chapter 3.1.3.

Piaget was interested in figuring out how the human intellect develops (Illeris, 2007). He makes a distinction between two perspectives on learning, the dynamic and the structural aspect (Illeris, 2007). Piaget was more focused on the structural aspect which includes the content of leaning and how it is implemented (Illeris, 2007). The dynamical aspect which encounters the strife for learning and how this strife is developed was not of same importance for him (Illeris, 2007). Piaget argues that our mind divides the world up in different schemas where we categories our knowledge (Illeris, 2007). We can process our knowledge by assimilating it or accommodating it (Illeris, 2007). Illeris added two more learning styles after studying Piaget which is cumulative and transformative learning (Illeris, 2007). Kolb discusses four learning styles whereas two are shared with Piaget which is assimilative and accommodative. The two other learning styles are divergent and convergent. I have chosen to neglect the divergent learning style as I find that the students are not given tasks where they are able to implement this style of learning.

3.1.2 Piaget’s and Kolb’s Theory Including Modification
Cumulative learning happens when a person encounters knowledge which cannot be categorised in an existing schema (Illeris, 2007). In other words, a brand new schema is developed to access knowledge. The cumulative learning style is unavoidable in the beginning
of our lives as everything is new (Illeris, 2007). However, if confronted with for example new technology as a grown up cumulative learning might be necessary. But when a person already has a schema and new information from the outer world which can be categories within this schema is encountered than it is a situation of assimilative learning (Illeris, 2007). Hence, new information is implemented without rearranging the current schemas (Läge a. o, 2008). This is a comfortable way of learning as it strengthens the already existing schema and this is also the learning style most students are familiar with as it is supposed to be practised at schools (Illeris, 2007). The assimilative learning style is more associated with logical thinking and does not specifically involve social interaction (Richmond, 2005).

On occasions when we receive information and influences about something that does not fit with our schema we need to rearrange the foundation of the whole schema which is a case of accommodative learning (Illeris, 2007). By this our schema gets an individual outlook shaped of the influences and information that the individual encounters (Illeris, 2007). On the contrary from assimilative learning accommodative learning style is more demanding and therefore more often rejected (Illeris, 2007). Kolb argues that “… accommodative learners excel at accomplishing tasks by following directions, meticulously planning, and ultimately seeking new experiences (qtd. Richmond, 2005: 47). This requires a sense of curiosity and accuracy. Transformative learning is similar to accommodative learning with the difference that when transformative learning is in process several schemas are being rearranged simultaneously (Illeris, 2007). The rearrangement is processing in correlation with the three learning dimensions by Illeris which are content, strife and interaction (Illeris, 2007). In other words, this learning process enquires questioning accuracy of what is perceives as knowledge by the individual which happens when the individual interacts with something ground-breaking and to be able to change ones perception it is a necessity to keep the motivation for learning.

Convergent learning style is oriented towards problem-solving (Richmond, 2005). To elaborate: “Kolb suggests that the convergent learner’s greatest strength is the ability to efficiently solve problems, make decisions and apply practical ideas to solve problems (Richmond, 2005: 47). To put it differently, these people are inventive and welcome challenges. People who apply this learning style are more oriented towards technical stuff than emotions and social circumstances (Richmond, 2005). They are also seen to do well in intelligence tests (Richmond, 2005).
3.1.3 The three Learning Dimensions

Firstly content is, simply put, that which we learn and ultimately call knowledge (Illeris, 2007). However it is important to acknowledge that we simultaneously give meaning to what we learn so that we understand why it is to be seen as necessary content (Illeris, 2007). Therefore what is labelled content can differ depending on who confronts it. What is considered assets is different between individuals as we have different mind-sets and goals. The understanding of what is considered content is also determined by society as a whole (Illeris, 2007). In other words, a culture determines what is considered content. The artefacts used in our culture contribute to determine what relevant content is (Säljö, 2005: 74). Content is then ever changing just as culture.

Secondly, strife is our mental capacity of focusing on learning (Illeris, 2007). This element is prevalent in all learning filling the important factor which is finding motivation and volition for learning (Illeris, 2007). The asset of being able to focus on one specific thing, persist instant pleasure, control oneself by not letting negative thoughts obtain ones goal and problem solving is called emotional intelligence (Illeris, 2007). Emotional intelligence is important when maintaining motivation for learning (Illeris, 2007). Illeris pinpoints that what is essential for the learning dimension of strife to be sustainable is that the students need to face challenges that are interesting to them and these challenges need to be within the range of not being too easy or too difficult for them (Illeris, 2007). However the students themselves can trigger motivation from any task by personally getting involved in putting up goals for their studies (Stensmo, 2008). By this the students are in charge of their own learning (Stensmo, 2008).

Thirdly, the learning dimension of interaction deals with the aspect that all learning is localised in a specific place and it is through interaction with this particular situation and the one learning which shapes what is learned (Illeris, 2007: 150). There are different ways of interaction and Illeris has identified seven different ways being perception, mediation, experience, imitation, activity and participation.

Perception is when an individual receives impressions without being fully aware of it (Illeris, 2007). Mediation is when an individual mediates something to a receiver whom can be more or less interested (Illeris, 2007). The receiver in turn is the one getting an experience (Illeris, 2007). Imitation is a dimension when interaction contributes to learning as it means that you imitate someone else (Illeris, 2007). However, Dysthe argues that simply copying
does not initiate learning; instead the student needs to form schemas of knowledge (1996). Activity, on the other hand, I would argue contributes to learning. It means that an individual actively seeks content which is useful for that individual (Illeris, 2007). Therefore the individual will seek with curiosity which means that the student is motivated. Finally, we have participation where there is an activity which is driven by several people reaching for the same goal (Illeris, 2007). Stensmo discusses co-operative learning which covers participation in a group assignment as being far more beneficial than giving the students competitive assignments (2008). Dysthe’s perspective is that interaction enables the student to share structures of knowledge and ultimately implement it in their own structure (1996).

### 3.1.4 Obstacles for Learning

I am not solely interested in investigating how computer and Internet usage contributes to learning; I am equally interested in when it does the opposites. Therefore I will look closer at different obstacles for learning. The computer is a tool which has the potential to contribute to learning and therefore it is essential to from theory be able to analyse when learning can be implemented and when it can be blocked.

Inspired by Peter Jarvis, Illeris tackles different obstacles for learning. He combines one obstacle for each learning dimension. Fault learning can occur within content, defence against learning within strife and resistance against learning within interaction (Illeris, 2007). Fault learning is simply when an individual has learnt something in a wrong way (Illeris, 2007). In other words, what is learnt is not what was intended. This is common and can develop due to misunderstandings or lack of concentration (Illeris, 2007). It is easier to visualise fault learning when the answer only inquires yes or no (Illeris, 2007). Situations where analysis or several perspectives are necessary are therefore more difficult to collect if there has been fault learning. Fault learning is not a serious problem if it is noticed in an early stage. However, if fault learning becomes a starting point for more faulty learning it becomes a bigger problem (Illeris, 2007). A paradox for a teacher is to be able to make sure that the students do not implement fault learning whereas the teacher simultaneously needs to make sure the students draw their own conclusions (Illeris, 2007).

Defence against learning can be viewed as an attempt to protect oneself from information which will most likely weaken ones motivation (Illeris, 2007). This is an obstacle for learning as new information cannot be implemented as it is instantly rejected (Illeris,
The defence against learning is difficult to dissolve as the defence contributes in creating an identity and confidence (Illearis, 2007). Therefore, it might feel unsafe breaking down the defence barriers even though that is the only way for learning to perpetuate (Illearis, 2007). If one is situated with a learning situation without in any way being a part of it might result in defence against learning (Illearis, 2007). An example could be a salesman on a train trying to explain the functions and assets of changing phones to a passenger who has no intention of changing phones.

Resistance against learning is somewhat difficult to differentiate from defence against learning (Illearis, 2007). However, having a defence implies that it is built up before a learning situation whereas resistance is a reaction to a current situation (Illearis, 2007). Resistance occurs when an individual is confronted with something s/he thinks is completely unacceptable (Illearis, 2007). It could for example be when a student is confronted with a teacher s/he does not like or the student has to do something at school which is against that student’s personal beliefs (Illearis, 2007). The resistance the student puts forward does not necessarily abolish learning but the learning process will not take the intended direction (Illearis, 2007). Instead it might motivate the resistance further (Illearis, 2007). Despite this, it is necessary to put into consideration that in a democratic society resistance should take place and it is only through resistance that we thoroughly can rearrange our thoughts (Illearis, 2007). Allowing some resistance in the classroom encourages the students to analyse their resistance constructively. If this is not done the resistance might lead to future defence against learning (Illearis, 2007).
4. Method

4.1 Choice of Method

First to first, I am conducting an empirical research as I have stated a research question which positions me to collect data which I will process to be able to formulate an answer. Whilst formulating my research question centring the students’ perspectives I have inevitable interviewed students. This positions me in choosing between collecting quantitative or qualitative data.

In able to in detail enhance the students’ perspectives on which effect computer and Internet usage has to learning it is a necessity to go in depth when researching. The qualitative approach will function preferably as it is a method specialising in detail and the wholeness of a situation (Punch, 2005). Furthermore, a qualitative interview format enables the simplicity of an ordinary conversation combined with a focus which I as the interviewer ought to obtain (Kihlström, 2007). It is also a case study as the subject of discussion is within a certain boundary (Punch, 2005). In other words, my research is more likely to gather more perspectives in a detailed manner within a bounded territory in a qualitative research than covering a broader perhaps more impersonal quantitative research. More specifically it is an intrinsic case study, as I am particularly interested in creating a better understanding in a specific case (Punch, 2005). Here the case being how students view their learning process in correlation with computer and Internet usage. I have a genuine interest in my research to understand the students’ perspectives.

4.2 Choice of Participants

The students who will be the premise of my research are studying social sciences in their first year at sixth form. They started sixth form in August 2011. The school they attend is allocated centrally in the city of Malmö. It is divided into four blocks where social sciences (containing the orientations Bernadotte, law and civics), natural sciences, technique and adult education are active. Even though adult education is located at the same place as the other orientations it is not a part of sixth form. The population of students at sixth form is currently 814. The socioeconomic profile of the school is somewhat mixed but predominantly the students live in
neighbourhoods which are considered socially and economically disadvantaged. Most of the students have other origins than Swedish.

The appointed students are studying social sciences with Bernadotte orientation. What the students are studying is only essential to my research in correlation to the curriculum and syllabus as they state within which territories the focus is on computer and Internet usage. The reason I chose the appointed students is because I know, as a trainee, that the students use their computers repetitively with a specific teacher. I intentionally picked the year ones because their education follows the new curriculum for Swedish sixth form education starting 2011. Their educational structure lays the foundation for the future of Swedish sixth forms. Thereby, looking at the year twos or threes would not be contributing to school development as their educational system is fading out. Furthermore, I have six participants in my research whereas three are girls and three boys.

4.3 Representativity
I am aware that I have chosen an inadequate amount of students in relation to the existing amount of students in Sweden facing the increase of computer and Internet usage at school. However, I have chosen students with the same educational environment which means that they share the same amount of computer and Internet usage in the classroom. The result from interviewing them will give some form of idea of how students experience computer and Internet usage in correlation with learning. Simultaneously I am not claiming that they reflect all students. But by using in-depth interviews I will be able to let these particular students represent themselves in a way that might be applicable to other students with similar educational environments as them.

4.4 Reliability
The participants are students at my internship but they are not my students. We do not even circulate in the same building with the exception of the dining room. I am familiar to them but they do not know me. I being familiar could make them feel more comfortable and the fact that they do not know me might encourage them to be more open as I do not already have a certain opinion of them. In other words, they do not need to act or speak accordingly to a role they might have in a specific classroom situation.
I need to put in consideration that even though they do not have a specific role to obtain they might still want to portray themselves as someone different to who they are. For example a student might want to be portrayed as studious and therefore answers the questions in a way s/he considers is in favour of that. Another risk is that the student might not be able to recollect all the thoughts s/he has about the issue during the interview and thereby I will presumably not gather the whole picture. I can only recall for gathering the information the student remembers during the interview. However, I can rely on the students answers will be fairly reliable as they are drawing conclusions from exclusively their own experiences (Kihlström, 2007). Presumably, what mostly speaks against the reliability is as mentioned a role they play which also can be interpreted to the interviewee preferably answering with the sense she/he suspects the interviewer prefers (Kihlström, 2007). However, this is a perspective every interviewer encounters.

4.5 Collecting Data
The interviews are between 30-60 minutes long. I performed the interviews at the students’ school. Every interview was recorded and thereafter transcribed. The questions presented in 1.1 were used as a guideline but I let the following questions depend on the interviewee’s experience. However, most of the questions used did have some form of common ground as they are aimed towards answering the research question. The questions which are enclosed are those used in every interview but as it was an interview and the conversation flowed the questions were modified depending on the situation.

4.6 Processing Data
Once the interviews were transcribed I needed to arrange the answers in a logical manner. I did not want to use quotes from the students. Kihlström explains that if the answers are simply written down then there is no result presented (2010). I started off with writing down the different tasks the students have had concerning computer and Internet usage. The tasks can be viewed as my sampling frame. Punch explains that a sampling frame decides what is considered important content (2005). Thereafter I looked for similarities and differences between the interviewers revolving their thoughts and experiences on each task. However, with the data in hand I realised learning was not simply depended on what the students did but
also what the teachers did. Therefore I also arranged thoughts and experiences the students have had concerning the teacher’s usage of computers and Internet as well.

Next step was to apply the theories presented to these different thoughts and experiences. I needed to continuously rearrange the headings and content as I during the process came up with more logical ways of organising the analysis. At times the students’ answers were contradictive and then I chose to neglect that part of the interviews as I could not valuate which part was more authentic. Rearranging my material meant that I needed to delete the parts which were not essential to the research question. By strategically choosing which parts to use I am using deliberate sampling (Punch, 2005).

4.7 Ethical Aspects

Before getting in contact with students I contacted the appointed headmaster. I got a positive response to my research. The headmaster directed me to a teacher who is particularly known for using computers and the Internet in class. After in contact with the teacher I got to meet the whole class during the lesson to ask them who were interested in participating in a research which will be based on interviews highlighting the students’ perspectives on computer and Internet usage. I got to present the purpose of my research for five minutes. The first six students who volunteered are the ones I interviewed.

Before interviewing I spoke with each one of the participants individually to let them know that I would be the only one listening to the interview and that they would be anonymous as I would use fictional names in my analysis. Whilst analysing I realised that the students had told me other information such as which topics they used during their PowerPoint presentation which would reveal who the student was. Therefore I chose not to mention specific topics the student had had in any of their tasks. I also reassured them that the interview is something we conduct whilst they are not having a lesson, also meaning that they are free to change their minds, not answer some of the questions or not participate at all if they wish. I asked them to talk with their parents themselves and let them know about the interview. After the individual meetings I spoke with their teacher and she stated that she will make sure the appointed parents are informed. I found that better than me contacting them as she already has established a connection with the participants’ parents.
5. Results and Analysis

The computer is a cultural tool which inhabits qualities for contributing to learning. However, it is not guaranteed that the user uses all the provided qualities or if the user is able to integrate new information with existing. Information is only restricted into knowledge if it is able to fit in the individual’s schema (Dysthe, 1996). As each individual has different knowledge storage they will receive new knowledge in a unique way fitting their schema (Dysthe, 1996).

As mentioned, I will analyse the students’ experiences of how computer and Internet usage fits into different learning styles and dimensions. Furthermore, I will see if any of the obstacles of learning are prevalent in the experiences my participants have faced. I will put forward all the different perspectives presented during the interviews to show the complexity prevalent in a classroom situation and ultimately answer the research question: How do the students’ experience the usage of computers and Internet and how this affects their learning process?

5.1 Computer Usage amongst Students

Before attending the appointed high school the students went to schools where there was a computer room situated at the school which the teachers needed to book when needing access. The computers they used at school before high school were PCs. At the appointed high school they all got their own Mac which they can bring with them wherever they go.

Even though they have a Mac the programs they predominantly use in class can just as easily be used with a PC. I will in this chapter go through the different programs they use on their computers which are not connected with Internet. But I will also look at the students thoughts and experiences with Mac contra their thoughts and experiences with the PC even though it is the same programs used as mentioned.
5.1.1 Introducing Mac

The students have used computers at the schools they attended before sixth form and therefore learning new computer skills will logically add on to already existing knowledge. However, all the students were beforehand comfortable with PCs whereas they at their high school undertook a Mac. Clara is the only interviewee who preferred having computer rooms and she is also unique in the sense being the only one who apprehended Mac before high school.

When they started with Mac Kim found it unnecessary and was annoyed that they had to learn Mac. Jaja thought learning Mac was going to be difficult. It could be interpreted as being disturbing to them because it did not fit in to their schemas of computer usage. To be able to understand the Mac they needed to rearrange their knowledge and comprehension of computers which fits it into accommodative learning. Kim’s defence against learning Mac in the beginning was simply because it was new and therefore something he was not used to. However, both Kim and Jaja found that it was not as difficult to learn as they thought. Many of the programs they use on the Mac are familiar to them so instead of learning something new specific for Mac they also applied knowledge to existing schemas. In fact all the students with the exception of Clara would have needed to somewhat rearrange their schema. Jaja finds she has gotten a better usage of computers since she started sixth form. This indicates that she has somehow rethought what a computer is attended for.

Even though the students did not have previous knowledge on how to use Mac they all, except for Jaja and Kim, had positive attitudes undertaking a Mac. An interesting remark is that Jaja and Kim eventually found it positive and Clara who had previous knowledge of Mac came to prefer PCs. Saga felt that leaning about Mac was just going to be fun. It was something she bragged about as Mac is a nice computer and the other schools did not have a Mac. The positive aspects the interviewees have expresses about Mac are that the battery lasts longer, the computer is generally quicker and they do not need to download as many programs as there are plenty stored on the Mac already. Saga finds it more fun using the programs on Mac as there is more to choose from. Another positive aspect which is very beneficial when learning is that Mac seems to trigger the students’ motivation. Four of the interviewees explicitly expresses that they see how their improved computer skills will be beneficial to them in the future and specifically in their upcoming profession. Kwame and Saga explain that they encounter the Mac with curiosity. Kim pinpoints that it is attractive in the labour market having Mac skills which makes him happy with having improved his own skills. Another motivational factor is that they get to have their own laptop. Jaja thinks it is
more fun working on assignments now as they have their own computer. Furthermore, Adel find the Mac specifically beneficial to him as he has dyslexia and with a Mac he can use several programs which are designed with the purpose of making people with his diagnosis learn in a way which is easier for them.

The first week the students started sixth form all the year ones at the school got to be in the school auditorium and listen to an employee at Mac instructing them how to use their Macs. Four of the interviewers express that they were happy with the instructions they got whereas Clara differed by stating the opposite. Once again it can be a case of defence against learning. She does not want to say that she did not understand what is being taught so instead she states that the information was poorly delivered. Her teacher has helped her with little things which have been difficult along the road.

As mentioned, there were several positive comments from the interviewees circulating the instructions they got. Kwame and Saga think the instructions were very useful as they were clear. Kwame finds Mac to be complicated but simultaneously much better than a PC now when he knows how it functions. Coming to this understanding must entail some form of differentiating between different types of computers which suggests that he has created three schemas revolving computers instead of one as discussed earlier. Jaja is no good with user name and etcetera so she is glad she got help with that.

Adel stresses that it is important having the basic knowledge of computer usage as new things will keep on appearing. Basically, he is reasoning that it is good having a schema revolving computers which contains the basics and as new information comes along you simply add that to what you already know; assimilative learning. Whilst having n employee from Mac instructing them how to use their computers they practised imitation which is part of the learning dimension interaction. As mentioned, according to Illeris this is where learning takes part. Kim thinks that this visit was more than enough. He finds that the responsibility to learn more should be put on him as a student which shows that his way of thinking fits into the learning dimension strife.

After the instructions in the auditorium, there have not been any formal gatherings where the students have gotten more information about their Macs. Instead the students have found other ways of improving their Mac skills. Kim expresses that he wants to get as much knowledge as possible of his Mac during his time in sixth form. Kim does now apprehend Mac well enough to be able to instruct others. He in turn will contribute to more learning
through interacting. It took Adel about a week to learn how Mac functions. His teacher helped him as well as he needed to learn by doing meaning he learned by interacting. To be more specific he learned through imitation and activity. Overall, the students help each other during class to figure out new aspects on their Macs. As all them are going towards the same goal and helping each other they are participating which is a part of interacting. Saga explains that she figured out how to use her Mac herself except for the instructions they got the first week. Kwame finds it interesting to see which programs there are on his Mac so he looks through his computer from time to time which helps him learn more about the computer. These two examples are examples of convergent learning as they have figured out solutions to challenge on their own. Kwame does not find that he is better with computers since he started sixth form but he does think that his computer skills concerning Mac are better. Having an iPhone helped Jaja understanding the Mac as they are similar. This can be interpreted as skills on how to use an iPhone can draw connections between the schemas computers and phones, or more specifically Macs and iPhones. Jaja refers to herself as not being specifically technical. As this is how she views herself not being able to figure out solutions on her own might have ended up in defence against learning. But as she got help she did not need to contradict her character per se as she instead could neglect convergent learning and instead use interaction in form of imitation.

5.1.2 Word

Word enables students to write digitally. Usually when the interviewees get tasks involving writing they start off by using Word as that is the program they are familiar with. Whilst using word Kim experiments with the program and finds new effects he has not used before. Once again he practises convergent learning. This expands his schema involving computer usage simply by just acting on his curiosity. Kim states that writing on computers is quicker and neater. He is comparing computers with hand-writing and he finds more motivation for writing on the computer as it is easier and more rewarding due to visually looking better. He mentions that he does not like his own handwriting which might lure him off focus as too much energy would be put into trying to make it look nice. Clara, on the other hand, argues that since they have written everything on the computer her hand style has become worse. Clara prefers writing by hand as she finds it too tempting visiting Facebook instead of writing if she is on her computer.
Adel and Kwame find it helpful that the computer helps them understand grammatical faults and misspellings. The risk with writing by hand is that if there is a misspelling or grammatical mistakes you will most likely not notice it yourself and you will repeat the same mistakes which legitimises it and contributes to fault learning. Once you are used to spelling a word in a certain way it is more difficult to re-learn it as you need to apply accommodative learning. Adel and Kwame mean that as they do not need to focus as much on spelling when using word they can move on to the next level and concentrate on formulations. This enhances an improvement in their writing.

5.1.3 PowerPoint Presentation

The students were to produce a PowerPoint presentation talking about a subject they have literally picked out of a hat. The task includes finding information about the subject, then producing and conducting a PowerPoint presentation. Overall, whilst conducting the presentation the students are mediating knowledge which can be beneficial to the listener if the listener is somehow interacting. The students could choose themselves if they wanted to conduct their presentation in the classroom or in the large common room resembling a movie theatre. Either place their audience were their teacher and classmates. I am not necessarily distinguishing between the female and male students’ answers but in this case it is prevalent that all the boys chose to present in the common room whereas all the girls chose to be in the classroom which is interesting from a gender perspective.

This is so far Kim’s favourite task at sixth form. He explains that it did not turn out the way he expected; it turned out even better as he realised he could do more with his Mac than he expected. During this process he has added knowledge to what he already could do in PowerPoint which is a case of assimilative learning. Clara got a topic she was not particularly interested in but as she got started her interest grew. I think that it is due to her schema not being specifically elaborate around this topic. Her adding knowledge to a perception of something is part of assimilative learning as well.

Kim and Jaja re-use at times what they have done in a PowerPoint presentation if it contains information they need for another task. Whilst doing this they practise assimilative learning as they use information they already have to build on to and expand within a certain schema. They also interact with their own piece through activity. An already used PowerPoint can be seen as stored schema. Looking at old PowerPoint presentations to get inspiration is
not something Jaja did when she was preparing presentations by hand as she did not necessarily save all the papers. It is easier with the computer as everything is stored there. The computer can be viewed as a schema which keeps everything which has been created through activity and by re-viewing the schema can be strengthened. Jaja is used to doing PowerPoint presentations despite she did not make this PowerPoint particularly more advanced than her last. She remembers the pictures she used and when she thinks of the pictures she used it is easier for her to remember what she said as well. This can be interpreted as Jaja finding links within her mental schema which makes it easier to connect the different parts with each other.

Adel finds that the process they went through when doing their PowerPoint presentation made the knowledge easier to absorb. It is much easier processing it then just simply reading argues Adel. This can be because he is interacting as he is activated whilst creating his presentation. Clara hates conducting presentations but she found that the PowerPoint presentation was of great help to her. It is easier for her to remember pictures than remembering what is written in books as she associates the picture with the text she has written herself. In this case she is able to link different parts of a schema to remember it more easily. She also gets motivated when she is interacting through an activity as she likes being creative. When preparing, Saga started seeking information and asking people she knows what they know about her appointed topic. Saga states that when she gets to work on her own she gets more involved in what she is doing. It is more difficult just sitting quiet listening. Saga says that she learns by combining texts and images. Whilst processing her PowerPoint she thinks creatively and tries to put some comical aspects in it.

When Clara found out that they were doing a PowerPoint presentation she felt safe as it was something she is used to doing. Kwame, on the other hand, is not used to making advanced PowerPoint presentations but after repetitive instructions from his teacher he understood what to do. Kwame started off making a simple PowerPoint but as his teacher and classmates taught him how to add special effects he made his PowerPoint a bit more advanced. He learned by imitating. Kwame felt that this exercise helped him getting better at conducting a presentation as he got response afterwards with both positive comments and comments showing areas of improvement possibilities. Kim agrees to have gotten better at presenting. Kwame also thinks he got better at making PowerPoint presentations but when it comes to specific knowledge about his topic he says he has not gained anything. Jaja argues that having a PowerPoint presentations helps as the most important content is there and you do not have to stand attached to it like you do if you have a piece of paper in your hand. Adel
drew advantage of his notes on the PowerPoint whilst conducting the presentation. As soon as he saw his notes he knew what to say. Using notes as a complement can be viewed as their complete schema not being accessible at all times. Instead they need notes to trigger the remaining parts of their schema to flourish.

5.2 Internet Usage amongst Students

This chapter will cover Google documents, a program accessible online, web pages the students use in class and the usage of electronic books. I will look at how these different elements do or do not contribute to learning.

5.2.1 Google Documents

Google Documents is an online program which enables students to comment on each other’s work. But most importantly the students continuously get comments from their teacher as well. Common for all the students are that they solely share positive thoughts and experiences concerning Google Documents. Kim expresses that it is accurate and clear as a comment is placed next to the relevant text. Adel shares that it is easy to use. Saga states that it is convenient as they do not need to send their text back and forth.

Even though they find this to be a good program Kwame and Adel choose to always start writing their text in word and then copy and paste it into Google Documents. This means they prefer using basics they are familiar with which can be interpreted as they want to link one schema with another so that it becomes assimilative learning instead of accommodative. Google Documents also makes you interact with your own piece. Kim describes that he adds pictures whilst reading through what he has written because he is aware that his work will then seem more appealing for the reader. He is actually then contributing to his classmates learning from him as he is mediating his work. The reader will in turn engage in an experience reading Kim’s text. This kind of interacting with the text explains Kim that he only has the energy to do due to it being easy with the computer. If he would write by hand he would not have the patience to continuously re-write.

All the students have received comments from their teacher and some of them have commented themselves or received comments. At first I will go through how the students
experience their teacher’s comments. Adel explains that even at some occasions when he writes in Google Documents at home his teacher comments. If she does not comment straight away he knows that she will before the next lesson they have or during that lesson. Adel finds it to be really good that he gets this feedback as it helps him improve. Adel explains that it is easy as it is just to copy and paste comments. He can in other words add chunks of text which fit perfectly in what he has already written. The comments help Kwame a lot as he understands how he should improve his writing. The communication can be viewed as a human version of spelling and grammar check in Word meaning that there is a teacher viewing the text not only to correct but also to help improve the text aesthetically. His teacher is able to pinpoint which parts of her texts are well written as they are. This might strengthen the student’s self-image and might make the student more receptive for learning as this type of conformation does not go against his identity. Kwame pinpoints that a another benefit with Google Documents is that even if something would happen with his computer all his work will be safe in Google documents.

To get comments from classmates they need to share their work which Kim, Clara and Adel have done. The students learn in this case from participation. Adel explains that his English is not the best and therefore he is paired up with others who are struggling with English. They also get extra time with their teacher. Pairing the students up based on what they know might be beneficial as they have similar schemas but not exactly the same which means they can still improve each other’s writing. If paired up with someone who is not on the same level might be difficult for the underdog as the schemas are lesser developed and too advanced knowledge might make s/he feel as if it is impossible and then it can be a case of defence against learning. Whilst the students are writing they are using what they have built up in their schema within that specific topic they are writing about as well as they are using the techniques they are already familiar with. With this exercise the teacher and other classmates get to see their schema as it is written down and then each reader get to add new information from their own knowledge on to the text their reading. The writer in turn can then access knowledge which fit into their schema and improve the already existing schema which is a case of assimilative learning.
5.2.2 Surfing

When the students are supposed to surf the net in class they usually need to find out information about something. The students then start with using Google for seeking information. Kwame, Adel, Saga and Jaja prefer the Internet to books. It is a way for Kwame to get started as he finds the book containing of too many pages and thereby it is difficult to find what is considered content. Adel feels that as long as it is on the Internet he sees it as being easier. He is more receptive towards information on the Internet as he confronts it with a different attitude. Whilst reading a book he might be interacting in the terms of perception as he is not focused on what he is reading whereas when he reads on the Internet it becomes an activity.

After Google, Clara, Adel, Kwame and Saga very often visit Wikipedia. All of them with the exception of Kwame visit Wikipedia with a critical eye. However, even with a critical eye there is a risk for fault learning which they choose to neglect. Another common place which the students visit to seek information is NE\textsuperscript{10}. However, it is only Adel and Saga who can remember visiting other formal web pages and they have only visited them when they have been told to. Saga finds that she is critical to the different pages she uses, especially when she notices that information can contradict each other depending on the source. Saga finds the formal web pages to be a bit difficult as you need to click back and forth to find the content you need which makes her lose patience. If that happens she asks the classmate next to her instead. Jaja aims at using several sources and then she tries to make a text herself which has taken the content she needs from the places she has looked. She uses Internet when seeking information as it is more accessible than books even though she knows books are safer. Jaja puts in consideration what is relevant for her assignment whilst seeking information and then she distinguishes what is content and not.

The major distraction on the Internet is Facebook. All students share that they use Facebook during the lessons. However, they do not all agree weather for this being positive or negative. Kim explains that it makes him lose focus but Adel adds that he at times can handle it whereas Kwame does not see it as something negative at all. Jaja thinks that Facebook gets contagious during class as she gets more tempted using it if someone else does. However, she adds that they at times chat about what they are doing in class on Facebook. In that case it is actually contributing to participation which is part of the learning dimension interaction.

\textsuperscript{10} National Encyclopaedia
When Saga gets stuck whilst reading she does not look up the answer on the Internet. Instead she asks her classmate which indicates a social environment in their classroom. She is involving other students in participation instead of using convergent learning style and looks it up herself.

Adel and Clara explain that they would get more done whilst working if they did not have their computers as the temptation to visit other pages is immense. Jaja finds it to be a relief those lessons the teachers tell them to shut their computers as they will not need them. This is also due to the distractions. Clara pinpoints that her discipline with staying focused on the task and not side-tracking using Facebook depends on which teacher she has. This means that for her to be able to interact with what is being taught she needs to feel that it is an experience. In other words, the teacher needs to be somewhat entertaining. She finds one of her teachers interesting to listen to and therefore she wants to pay more attention during her lessons. Even though Facebook and other pages are major distractions during class Saga does not think that the school should shut down Internet as she finds that they are old enough to take responsibility for themselves. Kwame explains they had a substitute teacher who chose to sit at the back of the class to have control of the screens. Kwame finds this method to be good but annoying as not everyone who uses other pages misuses it which somewhat go in line with Saga’s argument that they should be able to take responsibility for themselves. Saga states that at times when you do not want to listen you want to hide behind the screen instead.

5.2.3 Electronic Books

The usage of Electronic Books means that the students were to visit a web page where they could access specific Electronic Books. They were not to get a physical book in the subjects concerning which were history and maths. Before the students attended sixth form they were promised that all their books were going to be electronic ones. Clara and Kwame are the interviewees who liked the electronic books. One of the reasons for Kwame to choose the appointed high school is that he was promised not to need physical book but gradually teachers stopped using the web page and he got more and more books. He liked the idea that he would not need to carry books. He pinpoints that his generation is born with computers and he finds that to be easier. He prefers reading an electronic book as when you see an actual book it looks too thick. It can be interpreted as him being more motivated reading an Electronic Book. Kwame finds it is unnecessary to have computers now when they do not
have electronic books. Clara liked when they had the electronic maths book as she enjoyed making diagrams and other things they were able to create themselves whilst having maths which would create motivation for her. Clara states that the carrying of books back and forth is difficult and annoying as she thought that she was only going to need her computer.

But not all the interviewees liked the electronic books. Kim detested having their math book on the computer. He found it so difficult that he protested, as did several of his classmates, and finally they got books instead. It was not simply because of the subjects Kim did not like the Electronic Books. Sometimes there were difficulties logging in. When you needed to look up the correct solution it took a while for the page to come up. Waiting can make the students lose concentration and thereby motivation. To scroll and find the right page is more difficult than having a book in front of you according to Kim. Another problem is that the battery on the computer can run out and then there is no book if you do not have the charger with you. Adel also explains that the language used in the electronic history book was difficult to understand even though it was Swedish which is agreed by Saga and Jaja. As Adel has dyslexia he has all his books installed on his computer so he can listen to them. He finds it easier to listen. I would argue that if he would be forced to read it could develop a resistance against learning as it is something he finds that he does not comprehend the content when he reads. He uses so much energy trying to read so the content disappears.

The understanding of reason for letting go of the Electronic Books is scattered amongst the students. Adel interpreted that the reason they let go of Electronic Books was due to the students’ side-tracking looking up other social pages such as Facebook. Kwame explains that it was because Internet did not work at the beginning and it was difficult to sign up. It took too much of the lesson. He says that the students liked the electronic books but not the teachers. Saga and Jaja state that the electronic history book was too advanced to her class and therefore it did not work. Saga as well as her classmates did not understand the content according to her. The Electronic Book for maths was suddenly switched off as it stopped working explains Saga. Jaja was positive towards Electronic Books at first but as it was difficult to focus on what they needed to do and it was malfunctioning they removed the Electronic Books. Even though she thinks that Electronic Books would be practically easier she finds that she prefers reading from a physical book as it is what she is used to. Especially when she thinks of maths as she needs to write whilst she is reading.
5.3 Informal Learning

In this chapter I will look at instances where the students have interacted in form of participation to learn more than what is expected from them through homework on their leisure time. This is an interesting aspect to learning as this is the part that usually is hidden and not graded even though it shapes a larger part of the student's life. Anything the student chooses to do is backed up with motivational elements. Clara considers herself to be a technique freak who is constantly interested in learning more about the computer and who actively seeks ways to do so on her leisure time. Kwame will always be curious and look up things from the Internet which he thinks he learns from. When subjected to the freedom to choose it is interesting to see that the activities are in most cases diversified.

Kim has done movies on the PC with his friends. This was before sixth form. When asked if they have done any videos in class he replies that they have not but he wishes they will do. As he has already done videos on his spare time a new video would simply build on to the knowledge he already has concerning computers. Kim has voluntarily made a film on his spare time which proves a willingness to create with the help of the computer. Saga has done a film in iMovie on her own initiative. She tried on her own which shows that she applied convergent learning as she has encountered problems she would have solved herself. The first films disappeared but eventually she got a hang of it.

On Adel’s leisure time he uses the computer to play games and he uses the social network Skype. This could improve his communication skills and strategically thinking. On Clara’s spare time she uses her computer for entertainment purposes. There is nothing which she does on her leisure time using her computer which she finds beneficial to school except her homework. However, she does mention that she reads the news but it does not seem as she sees that as being beneficial to school and learning as she did not mention it in relation to that. It might be that she casually reads the news and thereby interacts with the means of perception and not more which is why she has not particularly reflected on it.

Kwame thinks that he learns more when using his computer at home at his leisure time as he then visits a lot of other pages which he does not visit at school. For instance he reads the newspaper on his computer. He prefers the digital version as you do not need to turn pages and at times he leans back and listens to the audio version of the newspaper on the computer instead of reading. Kwame argues that it is easier for the brain just to listen. I would argue that Kwame is being interactive but only on the level of perception if reading he would
instead conduct an activity. However, if Kwame reflects on what he has listened to it can be an activity. Kwame does not think that he loses any knowledge by listening to the paper instead of reading it and he pinpoints that it is perfect for those who have dyslexia in his class.

Jaja uses glosor.eu on her leisure time. It is a web page suggested by her teachers and it is intended to practise glossaries. Jaja uses a car game where she needs to drive to the correct glossary. She thinks it is fun and she feels that she learns glossaries from it without putting too much effort into learning. Jaja uses this web page both for English and Spanish. In Spanish she finds it sometimes better writing by hand as there are many apostrophes to keep track on. However, to practise English it is enough using glosor.eu. She knows how to write the apostrophes on the computer in Spanish but she thinks it takes too long. Jaja thinks it is fun filling in the glossaries on her own. She also likes that she is competing with herself as she is being timed. At times the teachers have done glossary lists for the class and then the students can practise those glossaries during their spare time. When the teachers pick out the words the students will know that it is relevant content.

When Kwame discusses with friends and they are unsure of the answer they try to find the answer on the Internet to end the discussion. Kwame shares that he remembers the things he thinks is fun but the rest he forgets. If Saga has a discussion with friends and they do not know the answer they use the Internet to look it up. These leisure time habits entail a life-long learning as the students have found ways of implementing computers and Internet in their everyday life in a way in which most likely contributes to learning. It does not seem as if the appointed school necessarily enhance the students’ activities on their leisure time and the ironic part is that the students mentioned that they use Facebook at home but not nearly to the extent they said they used it during lessons.

5.4 Teachers’ and Visitors’ Usage

In this chapter I will look at how the teachers draw advantage of computers and Internet in their didactics. I will also look at how the visitors they have from the labour market coming once a week use computers and Internet. Ultimately, I will in both cases see how their usage is being interpreted by students. What is necessary to know before I start analysing is that the teachers have a digital common ground called pednet where they are supposed to post all the information which shall be passed on to students.
5.4.1. **PowerPoint**

When they have visitors from different professions in class they quite often use PowerPoint presentations. They have had visitors from fire fighters, customs, coastguards, the polis, military and the navy. My intention when asking the students if they can see the computer as beneficial for them in their future profession was to figure out if they were to imitate the visitors they have had in class. By doing that they would say something in line with getting inspired visiting classes in the future telling about their profession but they did not which shows that they were not seeing the visits as an opportunity to imitate. Kim prefers when the visitors do not use computers as some of them are too focused on the computer when using them instead of speaking directly to the students. He finds that their teachers are better at using their computers in a way which engages the students. When the visitors use their computers it slows down the lesson a bit as it is usually each student needing to look something up on their own computer and the visitor walking around helping them finding the right place. Contradictory to this, Clara likes when the visitors use PowerPoint presentations and especially when they have a short film to show in their PowerPoint presentations. Kwame shares that he at times drifts off during these lessons and when the visitor uses a PowerPoint it is easier to follow where they are. Jaja prefers when the visitors use PowerPoint presentations. PowerPoint presentations seem to be a big part of their teachers’ didactics. Adel pinpoints that basically what the teachers do is showing the students PowerPoint presentations and makes them available at pednet. At times he visits pednet and clicks through the PowerPoint presentations they had in class. Clara prefers when the teachers use PowerPoint presentations as she is being satisfied visually as well. It can be interpreted as Clara needs the visual aspect to feel that she is getting an experience from the lesson. She wishes that all the teachers used PowerPoint presentations especially in her language classes. She has a vision of learning how to check in at a hotel by using slides on a PowerPoint. Jaja and also Saga prefer when the teachers use PowerPoint presentations. Saga says it becomes clearer what they are supposed to do. She explains that some teachers just stand by the board and talk. Saga prefers when there is a text to associate with the speech as it becomes more fun, especially when they use special effects.

However, it is not always the PowerPoint presentations function perfectly. Kwame states that one out of two times the PowerPoint malfunctions in different ways when a teacher uses it. They are for instance not able to make it appear on the big screen or they cannot find their work. Whilst they are waiting for it to function the students start talking and get off
focus says Kwame. He means that these distractions last all through the lessons and at times the PowerPoint malfunctions in the middle of the presentation as well which he finds annoying. Even though a somewhat negative attitude towards teachers using PowerPoint presentations Kwame thinks that their math teacher’s usage of PowerPoint is welcoming. He uses special effects and writes things such as: welcome, please be seated. It is not just a usual PowerPoint it is a bit more.

Kwame says that one of their teachers makes them read together on the big screen and shut down their own computers. He finds that this works out well as he is able to be more concentrated on what they are doing. Otherwise, it is his laptop which functions as a distraction during lessons as he gets tempted visiting other pages. Kwame says that when the teacher asks the students to shut their computers some of them protest. He thinks that it is better not to use the time on the students who are rejecting as their education is their own responsibility. But sometimes the teachers do not take their part of their responsibility. Most teachers do not use their mail addresses as they are obliged to do says Saga.

Jaja finds it annoying when the teachers will not let them take notes during the lessons and says that they should have brought pen and paper as it is contradictory to the reinforcement of computers. Here the students seem to have embraced accommodative learning but not the teachers. Jaja has adjusted her studies to a school oriented on computers whereas all her teachers have not. This will make Jaja being annoyed at the teacher at the beginning of the lesson and this negative attitude will last throughout the lesson which in turn can enhance defence against learning. Jaja when being annoyed at the teacher might distance herself from the teacher and the content being provided.

5.4.2 The Blog
It is their teacher in Swedish and English who has a blog where she combines her two subjects. On the blog she posts the students homework and other relevant information. As she has her blog she does not use pednet to the same extent. The blog does not function as a social forum. The students can comment the posts but they usually do not and if they would it is for clarification and not for social reasons. The students are simply receivers of information. All the interviewees are positive towards the blog and most of them explained without me asking that they wish all teachers had a blog.
The blog differentiates what is important and what is not which gives it a safe haven for the students. The information that is put there does not need to be questioned mentioned Kim. When they see the assignment in print they will be able to read through it several times trying to access which is considered content in this assignment and what is less important. Kim and Adel find the system of the blog to be very helpful as they can feel safe not missing out on anything important for the course. Reading the assignment several times helps Kim understand what is expected of him.

Clara thinks the blog is great. It keeps track on her studies. When she is at home sick she can visit the blog and get all the information she needs. Clara blogs herself and therefore finds it fun that her teacher has a blog. She feels that their teacher put a lot of effort into them as students and thereby she feels more motivated to do her homework. She notices that her teacher really cares. The only downfall with the blog would be if Internet did not work for some reason. She wishes that all her teachers would have a blog. She means that the teachers have an obligation to put their homework at least on pednet but they do not all do that and then the students are to blame if they have not done their homework. She finds pednet being boring so she prefers the blog. As her teacher supplies them with links which can be useful to their homework they do not need to use time looking for the right pages on Internet either. It seems as if the usage of the blog manages to keep the students motivation going as they do not get any hindrance.

Kwame thinks that the blog functions well and he also wishes all teachers had blogs but when he suggests it to the teachers he gets a lot of protests. Hence, even though this is a research based on the students’ thoughts it is interesting to see that some teachers seem to practice resistance against learning. Using a blog would for some teachers mean transformative learning and they might also find that using a blog helps the students too much and are therefore against that type of format. Kwame is aware that the teachers are supposed to use pednet but he has never visited pednet himself. He says this is due to pednet malfunctioning. Furthermore, he is not sure of how it functions and he has not contacted anyone to help him even though he knows where he can turn. He finds the blog to be easier than pednet as you can see the date and other significant information. He says that he has done all his homework he has had with the teacher who uses a blog. But he does find the blog boring which is an opinion he shares with Saga. It is just there for their information. Despite that it is more appealing than pednet according to the students.
Even though positive towards the blog, Saga manages to pinpoint a less positive aspect. You get more contact with the blog but the downfall is that the teacher who has the blog does not use pednet and at times when Saga visits pednet she forgets to visit the blog as well. She agrees with the blog looking boring. Saga never leaves comments there as everything is clear she does not need to leave any comments or questions. When Saga is sick she can read through the blog and then she understands what needs to be done. Jaja also likes the way the blog works. She thinks it is good that you can access it from your mobile phone as well. Jaja usually understands what they are supposed to do when they are on the lessons. She uses the blog to remind herself of which pages they were supposed to read or something else which she might have forgotten.

5.5 Reflections

As mentioned, I will in the reflections answer the main questions first presented in 1.1. The answers to these questions give a broad description of what they use their computers for and if their computer and Internet usage contributes to learning from the students’ perspectives. In other words, this chapter sums up the results and analysis. I will tackle one question at a time. Some answers might be contradictive. This is because I am presenting all the participants’ views and they were not always unanimous.

- Which experiences of computer and Internet usage in the classroom do the students have?

The students encounter the programs Word, PowerPoint, Google Documents and Electronic Books. Whilst surfing they usually visit Facebook, NE, Wikipedia and use their teacher’s blog.

- Do the students feel they have enough previous knowledge in computer and Internet usage to tackle the tasks handed to them in their education?

Mac was new for all the students except one. All the interviewees with the exception of one found the instructions they got were enough to be able to tackle upcoming tasks. If not prepared there were other ways of learning Mac. Using Mac has contributed to the learning
styles assimilative, accommodative and convergent. The learning dimensions they encounter are strife in form of motivation, feeling and volition and interaction in form of imitation and participation.

- Which tasks including computer and Internet usage do the students feel have contributed to their learning process and why?

Tasks including word helped understanding which is a part of the learning dimension content. It also made the students more motivated which fits into the learning dimension strife. The PowerPoint contributed to assimilative learning and the learning dimension interaction through perception, mediation, activity and imitation. Google Documents has contributed to assimilative learning but it also covers participation and motivation. Electronic Books contribute to motivation and understanding. The Internet initiates activity and distinguishes content. On the students leisure time they get informal learning through movies, games, Skype and glosor.eu. Facebook can contribute to learning as well in form of participation. Computer and Internet usage during leisure time initiates lifelong learning. Teachers’ PowerPoint presentations help the students focus. The blog motivates them and helps them understanding content.

- Which tasks including computer and Internet usage do the student feel have not contributed to their learning process and why?

Tasks which revolve Internet are the ones that can be facing repetitive distractions due to temptations on the Internet. Even though Facebook can contribute to learning it is also an enormous distraction taking time and thereby preventing learning. The Internet can also initiate fault learning and make it difficult for the student to distinguish content. Electronic Books make it difficult understanding content and takes away motivation. Furthermore, the students practise in various levels defence against learning when encountering new tasks involving computers.
6. Conclusion

So how do the students’ experience the usage of computers and Internet and how does this affect their learning process? Overall I have realised that even though they have some common grounds the complexity amongst the students is prevalent. In all instances computer and Internet usage has contributed to learning but how and what type of learning is usually different depending on the student. This is something which needs to be put in consideration when thinking about pedagogy. Each student is reached in a slightly different way. This is why diversity is important and the willingness to adjust ones didactics to the appointing students is essential. Finding out how elaborate each student’s schema is within a new topic or tool might help the planning of the upcoming didactics being more effective when considering learning. There is no perfect method. Nonetheless, computers are a part of the learning process, but hence, computers are not the new saviour syndrome.
7. Works Cited

7.1 Books


7.2 Web Page


http://www.malmo.se/Medborgare/Forskola--utbildning/Gymnasieskola/Kommunala-gymnasieskolor/Pauli-gymnasium/Gymnasieutbildning.html 2012-07-31
Interview Questions

- Can you please share with me the different ways you use your computers in the classroom?
- Which tasks have you preferred where you used your computers?
- How does your teacher use the computer in the classroom?
- Do you use pednet?
- Do you and your peers share material with each other?
- Are any of the programs you use new for you since you started sixth form?
- Is there a difference for you writing by hand and on the computer?
- Do you reread your work when you need to process material to create your own text or presentation?
- Do you use your laptop on your spare time?
- Do you use your computer more now when you have a Mac?
- Has your view on computers changed since you started sixth form?
- Can you see any advantages with learning Mac?
- Do you read through old assignments you have on your computer to get inspiration to new ones?
- How skilled were you with computers before sixth form?
- Can you vision how you will need your computer in your future profession?
- How did you learn how to use your Mac?
- Are there any negative contra positive aspects with having a laptop?
- Did you use computers at school before sixth form?
- What were your attitudes towards your Mac when you first got it?
Detailed Description of Questionnaire Results

5% of the students do not think that they have enough computer skills to be able to manage the tasks which they are given by their teacher whereas the remaining always feel they are skilled enough or nearly skilled enough to handle the tasks. The students think that they get a good amount of computer and Internet usage in their studies. Only 10% disagree. Whilst side-tracking from what they are supposed to do in class they visit other web pages, predominantly Facebook, but they also check their mails, chat, play games or do some random surfing.

The following questions discussed each present four options for the participant. The answer considering if they are happy with the 1:1 Project is diversified as 5% are very unsatisfied, 15% are very happy and the rest are in different levels in between. When considering learning, 20% totally agree that the 1:1 Project contributes to learning, 10% do not agree at all and the rest are in between. When preparing for the future, 50% are within the range totally agree that 1:1 education has led to better skills or are one step below from that and 50% do not agree at all or are one step on top of that. 40% of the students totally agree that 1:1 education so far has led to more efficient working habits, 15% do not agree at all and the rest are in between. Considering co-operation 50% totally agree, or are one step below, that 1:1 education has led to an increase of it whereas 50% do not agree at all or are one step on top of that. 20% totally agree that 1:1 education has led to more work for the student whereas 5% do not agree at all. 35% acknowledges an increase of distractions whereas 5% do not agree at all. From a scale from one being very unsatisfied and four being very happy 5% are very unsatisfied with 1:1 education, 35% placed themselves in two, 45% in three and 15% are very happy.