Computer: A tool for assisting students having dyslexia

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Abstract

The aim of this study was to investigate how the computer as a tool is helping dyslectic students who have Swedish as a second language in learning. The following questions were formulated: How important is it to diagnose dyslectic students? How does the computer assistance motivates dyslectic students achieve their goals? How easy is it to include dyslectic students in the ordinary class with computer assistance? And in which way does the school and home environments affect dyslectic students who have Swedish as a second language?

The sample consisted of four dyslectic students, 13 to 15 year olds who have Swedish as a second language. And two Swedish and Swedish as second language teachers. They were selected by purposive non-probability sampling. They were all participating in the one to one programme. Data was collected using semi-structured interviews and analysed using content analysis. After transcribing the interviews’ six themes: diagnosis, computer as a tool, inclusion, motivation and environment were identified. The results were that computers are helpful tools for dyslectic students who have Swedish as a second language. Computer assistance makes these students more independent to find ways to support themselves. They do not need to face failure all the time, when they can use the computer to achieve success. It motivates the students to learn more. It was very clear that the students were more efficient in computers compared to the teacher’s. Maybe, both the teachers and the students should be given the same competence education. Motivation as the most important aspect in learning was very noticeable in all the six interviews.

Keywords

Dyslexia, Computer as a tool, Special Education, Reading Writing Difficulties, Content Analysis, One-One program, Motivation, Swedish as Second language, SVA.
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Introduction

"It is fair when everyone gets what they need, and not when everyone gets the same amount", (Andersson, et al., 2006, p. 9. My translation). According to the above statement, schools have a responsibility to meet the needs of all the students. In today’s ever changing global market to be an active member of the democratic society, we have to acquire reading and writing abilities, to be able to read the articles in the news papers, books, etc. (Conway and Amberson, 2011). Reading and writing are often “off-line” activities in school and “on-line” activities in everyday life, and the way we interpret the written language leads to important consequences in our lives (Myrberg, 2007). Problems with reading and writing are the most common disabilities in Sweden affecting more than hundred thousand individuals everyday in school and at work (Samuelsson, 2002). Dyslexia is a language-based learning disability (International Dyslexia Association, 2014-01-26). Students having dyslexia have difficulty in reading and writing and this often leads to difficulties in understanding what they have read. In the digitalised world of today all the information can be gathered by written text resulting in an increased demand of being a fluent reader and writer (Andersson, 2013).

These students can succeed in school and later in life if they are given the right kind of support at the right time. Students having dyslexia have difficulties in understanding when reading a lot of text. But if they could listen to the same information, the frustration of not being able to understand is often avoided (Andersson, 2013). To have reading and writing difficulties is embarrassing for the students, because they do not want to expose themselves to the rest of the class. Students avoid group work and submitting written work, as they are afraid of having many spelling mistakes. Dyslectic students can achieve their goals if they are equipped with strategies and programmes that can help them at their convenience to support their learning. And in becoming successful members of the democratic society (Lindstrand, 2001; Brodin and Lindstrand, 2004; Myrberg and Länge, 2006; Myrberg, 2007).

Many municipalities in Sweden have started one-one programs where every student is given a personal computer. Some of the programs downloaded on the computers include: Stave Rex, Spell Right, and Into Words. As a special education teacher I feel that it is very practical and easy to help the students who have dyslexia with the help of these programmes. They get individual support without being pointed out as having dyslexia (Cuban, 1993).

Before the one-one programme started, only those students who were diagnosed having dyslexia were given computers. Often the students did not use the computer, as they felt embarrassed writing on it while the others were writing on papers (Breivik and Hemmingsson, 2013; Andersson, 2013). Students used to make excuses, for example, I forgot to charge my laptop, it is in my locker, etc. But now when they have computers, like all the other students, these issues are not there. It is easier for the special education teacher to train them to use these programmes to assist them when doing their schoolwork along with all the other students in an included classroom (Andersson, 2013). The main aim of teaching is to make students self sufficient to be able to “manage their own learning, handle information, collaborate and solve problems”. That is to prepare them for a life in a computerised world (Jedeskog, 2007). As a special education teacher I meet many students who have special needs, and the classroom instruction has to be modified to meet their special needs. A special group of students who fascinate me the most are the students having dyslexia. They can be given support in an inclusive classroom environment to help them achieve their goals with the help of digital devices (Lindstrand and Brodin, 2006; Myrberg and Länge, 2006). As Myrberg (2007) points out, there is not enough scientific research to show if the computer is a helpful tool or not in supporting the students having dyslexia. My aim here is to find out if the computer helps the dyslectic students having Swedish as a second language or not.
2. Aim of the study

The study aims to investigate how the use of computer assists dyslectic students having Swedish as a second language in learning.

2.1. Research Questions

While undertaking such a task, this thesis will attempt to answer the following questions:

1. How important is it to diagnose dyslectic students?
2. How does the computer assistance motivate dyslectic students achieve their goals?
3. How easy is it to include dyslectic students in the ordinary class with computer assistance?
4. In which way does the school and home environments affect dyslectic students who have Swedish as a second language?

3. Background

Here I have dealt with the concepts and defined the following:

1. Reading and writing difficulties.
2. Dyslexia.
3. The policy documents.

3.1 Reading and Writing difficulties

Reading and writing difficulties is a comprehensive concept including the different problems related to reading and writing regardless of the reasons. Depending on the seriousness of the causes and how it is expressed, dyslexia is a specific subgroup of reading and writing difficulties (www.spsm.se, 2014-02-12). According to the ‘Svenska Dyslexiföreningen’ (2014-02-12):

“Children having reading and writing difficulties include those who have difficulty in reading and / or writing no matter what the cause. While people with dyslexia are a subgroup specifically defined in terms of the seriousness of the causes and manifestations. The term specific reading and writing is sometimes used with a similar meaning as dyslexia. Formerly it was common to use dyslexia interchangeably” (Svenska Dyslexiföreningen, 2014-02-12).

The ‘Svenska Dyslexiföreningen’ further believes that reading and writing difficulties could be due to poor eye sight, hearing problem, cultural reasons or not enough exposure to the language, speech disorders, poor education, emotional problems and dyslexia. Lundberg and Reichenberg (2008), mean that for some children it is difficult to ‘crack’ the alphabetical codes that leads to reading and writing difficulties like stuttering and slow reading. It can be genetic and these children have great difficulty in getting used to the written words. Reading is decoding and understanding what one is reading. Reading fluently is the key for learning and developing understanding in all the subjects at school (Myrberg, 2007; Samuelsson 2002; Vellutino et al., 2004; Snowling, 2006). Snowling (2006) has pointed out the differences between the students having poor comprehension and dyslexia. Students having dyslexia have phonological difficulties, decoding deficits, but they can read in context, while poor comprehenders have semantic deficits, and are poor at reading comprehension.
Jacobson (2006) published the model of some of the factors causing reading and writing difficulties and dyslexia in the Newsletter Dyslexia (Figure 1). Here he has shown the relationship between the two concepts of reading and writing difficulties and dyslexia. He further points out that reading and writing difficulties should be seen in social and educational context. This model can be used to define the different causes of reading and writing difficulties and also to show the consequences of this handicap.

Figure 1: Jacobson’s model of some of the factors of reading and writing difficulties and dyslexia (My translation).

3.2 Dyslexia

Dyslexia has been defined in different ways by many researchers. Defining dyslexia is a complex issue as there are many different views regarding the concept (Lundberg, 2003; Høien and Lundberg, 2000; Gustafson, 2009). After many compromises the World Federation of Neurology (1968) came forward with the following definition:

“It is a disorder manifested by difficulty in learning to read, despite conventional instruction, adequate intelligence and sociocultural opportunity. It is dependent upon fundamental cognitive disabilities which are frequently of constitutional origin”.

Høien and Lundberg (2000) have coined the following definition:

“Dyslexia is a persisting disturbance in the coding of written language, which has its cause in a deficit in the phonological system” (p. 9).
Strictly speaking this definition only says that people with major reading problems are dyslexic. Dyslexia is a specific kind of reading and writing problem, including students who have poor phonological abilities (Myrberg, 2003; Samuelsson, 2002; Jacobson, 2006; Vellutino et al., 2004; Snowling, 2006), and it is genetic in nature (Snowling, 2006; Myrberg, 2003). According to Andersson et al., (2006) these students have language based difficulties but it is easy for them to learn other things while Vellutino et al. (2004) points out that children having dyslexia have difficulties with long term verbal learning which leads to class room difficulties.

We can see that there are many definitions and as Gustafson (2009) suggests, when we are defining dyslexia it should be specific, clear, and meaningful and also cover all the groups of dyslectics. Snowling (2006) argues that there have always been controversies in defining dyslexia because there are no definitive conditions to distinguish between dyslexia and other reading difficulties that cause decoding difficulties. She thinks that it will be advantageous to understand the concept of dyslexia as a “spectrum of disorders”. To resolve this issue Snowling (2006) recommends that one can have degrees of dyslexia, like mild, moderate or severe. But here again the basis of division would be there. She suggests that we can start discarding the categories while diagnosing the cognitive disabilities (Snowling, 2006).

For my study I will be using the International Dyslexia Association’s (IDA) definition:

“Dyslexia is a language-based learning disability. Dyslexia refers to a cluster of symptoms, which result in people having difficulties with specific language skills, particularly reading. Students with dyslexia usually experience difficulties with other language skills such as spelling, writing, and pronouncing words” (International Dyslexia Association, 2014-02-05, www.interdys.org).

Very often reading and writing difficulties and dyslexia are used interchangeably because they are having the same disability. In this study I will be using the term dyslexia, because all the respondents have Swedish as a second language and have been diagnosed as dyslectic.

3.3 Policy Documents

I have looked at the following policy documents to study the recommendations for students in need of special support:

1. Salamanca Declaration (1994),
2. Lisbon Declaration (2007),
3. Swedish School law (SFS, 2010:800),

Salamanca declaration (1994) states that schools should accommodate all children regardless of their physical, intellectual, social, emotional, linguistic or other conditions. For all students, child centred pedagogy is important and beneficial. Appropriate technology should be used to increase success in the school curriculum to aid communication, mobility and learning. According to the Lisbon Declaration (2007), the young people expressed their views that “support materials, such as computers, digital cameras, microphones, etc. are of great importance”. They also wanted to have inclusive education. Inclusive education is very effective as one faces problems and learns to solve them? Further the education should prepare young people to live in the real world.

The Swedish National School System is based on democratic foundations. The Education Act (SFS, 2010:800) prescribes that the aim of education in the school is to acquire and develop knowledge and values and promote lifelong desire to learn and develop in all pupils. And to fulfil this aim “teaching should be adapted to each pupil’s circumstances and needs. It should promote the pupils’ further learning and acquisition of knowledge based on pupils’ backgrounds, earlier experience, language and knowledge” (Skolverket, 2011, p. 10). The different circumstances and needs of pupils should be considered. There are also different ways of fulfilling these goals. It is the schools responsibility to see that those who have difficulties in reaching the goals get help. Every student has the right to develop,
grow and experience the satisfaction that comes from making progress and overcoming difficulties. It is clearly stated in the Curriculum for the compulsory school (Skolverket, 2011) that the school environment should be supportive and the students get proper tuitions through the use of proper teaching materials such as library, computers and other useful aids to develop their learning skills. Special support should be given in the group that the students belong to, unless otherwise provided by this Act or regulation (SL Chapter 3. 7 §).

When we go through the policy documents it is very clear that adequate technical support should be given to the students with special needs in an inclusive environment.

4. Previous Research And Literature Review

The literature review has been divided into 3 parts:

2. Disabilities and Computer Assistance,
3. Dyslexia.

4.1 Computer Assistance

Pupils should be given opportunities to achieve their goals on their own terms, and adjustment of learning and teaching materials to fit every individual should be done. The knowledge of devices available in increasing participation should be there, that is. “The learning environment must be accessible to everyone” (National Agency for Special Needs Education and Schools, 2014-04-21). The following studies are about how computer or the technology is used to help improve students learning in the classroom.

Cuban (1993) investigated why computer/ technology was introduced but less used in the American schools. His argument was that it is important to prepare the students for the changing jobs and job-market. The computer motivates, individualises, and is non-judgmental. It allows the learners at risk due to disability or environmental reasons to be in charge of their own learning. It is not because of poor finances, teacher resistance, or unprepared teachers that the computer is less used. It is because of cultural reasons as teacher student relationship dominates the concept of proper schooling.

Jedeskog (2007) has summarised the evaluation reports of the four campaigns regarding government initiatives to promote the use of computer/ ICT in the Swedish compulsory and upper secondary schools from 1984 to 2004. The aim of the campaign was to prepare the students for a life with computers, as computer and ICT know-how are seen as ” a students fourth basic skill, after reading, writing and arithmetic”. The evaluators interviewed or administered questionnaires to the teachers, students, principals, politicians and school administrators and the data was qualitatively analysed and the three main concepts that came forward are time, technology and school culture. Jedeskog (2007) has concluded in the article that ICT encourages and helps in learning and the Internet is the easiest way to communicate with very many. Jedeskog (2007), further states that access to computers/ ICT mean changes in the school system, for example the teacher’s role and the student’s way of working. She points out that the teacher’s involvement is important for the effective use and survival of innovations. Teacher’s involvement is increasing in the use of ICT. New technologies help learning to spread beyond the physical boundaries of the school.
Fleischer (2013) has done an interview study of teachers and students in the compulsory and secondary school who participated in the one-one programmes that is one student one computer. He concludes that students become more motivated to do school work and IT supports information searching on the Internet. However, they also get very stressed and have difficulties in concentrating. It is not very clear if the knowledge has become deeper after one to one as the students have the question/answer strategy. The students talk about inconsistent pedagogy. They are encouraged to take notes on the computer, but when the teachers feel that the students are not attentive, they are asked to close the computers. He thinks that computer is important in school but we must use them in a very conscious way.

4.2 Disabilities and Computer Assistance

Bolic et.al. (2013) investigated the use of computer in educational activities by students having ADHD. They compared this group with students having physical disabilities and also with the general population. They used cross sectional design with group comparison. 102 students in the middle and high school between 12-18 years of age having ADHD diagnose comprised the sample of the study. 940 students from the general population were selected as a reference group. The results show that less than half of the students with ADHD had computers available in the classroom, they used the computer less frequently compared to the students with physical disabilities and the normal students. They were less satisfied with the computer use in school. The students with ADHD desired to use the computer more often and for more activities in the school in comparison to the physically handicapped students.

Breivik and Hemmingsson (2013) investigated the experience of adolescents having Asperger’s syndrome when writing with hand and when using a computerized Assistive Technology Device (ATD). They used a descriptive multi-case mixed method. They interviewed five adolescents, their parents and teachers. Data was analysed using qualitative content analysis. The results show that starting and finishing a written work was so demanding that it repelled them from doing it. In the beginning the use of ATD made them feel different. When using ATD the performance improved, leading to improvement in self-esteem and self-confidence and developing a positive attitude towards writing. The size and easiness to use an ATD independently helped adolescents to use it more. Teacher, classmates and other adults are also important in encouraging the use of ATD.

Conway and Amberson (2011) investigated how the laptops and other mobile equipment’s could be used to facilitate and support learning in students with dyslexia or other reading and writing difficulties in an included environment. 31 Irish schools participated in this project that started in 2000 and continued till 2005. The project studied how mobile ICT could be used in the hectic school environment. 840 students participated, 180 of these had been diagnosed having dyslexia. Interview, school case studies, classroom observation and surveys were used to collect data. Even teachers filled a reflection sheet and audio taped discussion of issues raised in their reflections was done. The research is based on the Grounded Theory of Glaser and Strauss and data was analysed using the interpretive method. The results are divided into three groups, deployment models, teachers and student agency and how technology improved literacy pedagogy. In the deployment model laptop is fixed, floating and fostered. The project provided information regarding support that works to facilitate wide spread integration of laptops in the classroom, encouraging students engagement, improving home involvement, and supporting teachers confidence and skills to help students to use laptops in the traditional classroom. It also exposed the difficulties like network issues, developing knowledge proficiencies and time management skills which the school faced as they started integrating these technologies in the classrooms.

The group that was focused was students having dyslexia. The results highlight ICT’s ability for educational reform and development to help students to develop abilities in accessing and using information, and enhancing learning opportunities for students with literacy difficulties.
Beacham and Alty (2006), also investigated the effect of computer-based media on the learning effects of students having dyslexia. They used dual coding theory and the theories of dyslexia in the study. 30 university students participated in the study between 18-36 years of age, who had been diagnosed having dyslexia in the last two years. The majority of the participants were taking courses that were practical and creative in nature and required less reading and writing. The results show that different combinations of media used to present e-learning materials to dyslexic students lead to improved understanding. Dyslexic students have difficulties in learning if the material is presented too quickly or different types of media are used without any reason.

Kast, Baschera and Gross (2011) compared the spelling behaviour of German school children eight to twelve year olds with and without dyslexia on two versions of spelling software. The data was analysed using PGM, curve analysis of log-file data. 28 children having dyslexia participated in the first study while 37 children with dyslexia and 25 children without dyslexia in the second study. The computer-based training was for 20 minutes, five days a week and for 12 weeks. During training the children worked at their own speed. They conclude that both children with and without dyslexia gain from computer based training and improve their memory functions regarding spelling skills. Children with low attention performance gain from structured computer-based learning.

Macaruso and Rodman (2009) investigated the benefits of computer-assisted instruction (CAI) for middle school students who were in the special classes. The students had a special curriculum with extra reading and CAI programme that is Lexia strategies for older students. The sample consisted of 47 grade six students who were attending a remedial reading programme. Their teachers recommended them as their Development Reading Assessment scores were low. The special class teacher divided them in 3 groups. The teacher randomly selected two classes to be treatment classes and the third as a control class. Class session was 80 minutes. CAI session was two-three times a week for 20-30 minutes and the students worked on Lexia. These students were compared with the control group that was having the same teacher and curriculum but no CAI. The students in the treatment group showed improvement in reading and decoding skills in comparison to the control group. Apart from decoding, they also showed improvement in reading comprehension but less improvement in spellings.

4.3. Dyslexia

Nelson (2000) investigated 10-13 year olds, to see how students having the dyslexia diagnose use and assign meaning to their diagnose. 20 children and their parents and 25 teachers participated in the interview study. Informal and semi-structured interviews were done with these respondents. The study shows that it is very complex to describe how students use their dyslexia diagnoses. They feel that they are not ‘good enough’, and use the diagnosis to explain their poor performance in school. Some avoid diagnose, they do not want the school to see them as problem students. However, the parents feel it gives them the responsibility to see to the child’s benefits and demand extra resource from the schools. On the other hand, the teachers feel that diagnose is of little importance as long as the pupils are hard working, motivated and take responsibility. The parents and teachers differ in the interpretative framework.

Heimdahl Mattson and Roll Pettersson (2007) investigated students having reading and writing difficulties and the extra support in segregated or inclusive classroom. They have done an interview study on 12 students at upper level compulsory school and upper secondary school. The results show that the students did not get any extra support before they got their diagnose as that was the basic requirement. Students and their parents had to struggle to get extra support for reading and writing difficulties. The support was given in small segregated groups and they had a mixed attitude towards it. They conclude that the students were eager to get their diagnose as dyslexic to get educational support with reading and writing difficulties.
In a longitudinal study Heimdahl Mattson, Fischbein, and Roll Pettersson (2010) investigated the development of students who had reading and writing difficulties or dyslexia in the Swedish compulsory school. Semi-structured interviews with predefined open-ended questions were conducted on 12 students between seven-thirteen years who were getting extra support to improve their reading. Some of these students had reading and writing difficulties but had not been diagnosed as having dyslexia. Seven mothers of students having reading and writing difficulties/dyslexia also participated. Word chain test and letter chain test were used for assessing decoding ability. The investigation shows that extra support was organised in small heterogenous groups only for those who had dyslexia, where the students were segregated from their friends. Results show that decoding ability tends to improve for most of the students after some time. Early intervention, understanding and competent teachers, stimulating ways of learning were related to positive experience. The parents stated that there was very little cooperation between the school and home, and they had to persuade the school to get this extra support for their children. Schools lack competent teachers to support students with reading and writing difficulties/dyslexia.

Ingesson (2007) interviewed 75 youngsters between 14-25 years of age, having dyslexia. Most of them revealed that the first six years of school was distressful and a failure, many experienced bullying but they had friends. Later the problems were reduced when they were diagnosed (around 12 years of age) and could accept the reasons for having difficulties in reading. They had poor academic self-esteem and most of them had opted for professional colleges as they had decided not to go for further studies.

Hilden (2013) has done an interview study of teachers and students in a higher secondary school and university on the different kinds of help and adaptations, the students having dyslexia are offered. The results show that technology and adaptations are important, together with the teacher’s way of approaching the students having dyslexia.

Lindstrand and Brodin (2006) investigated if ICT can be seen as an integrating link for children with motor disabilities. They interviewed the teachers and principals, observed in the classrooms, and analysed questionnaires to parents, and personal description by five students. The results show that it is difficult to see how the computers help in inclusion, the reason being that teachers do not have educational know how in this area.

According to Myrberg (2003) and Myrberg and Länge (2006), computer is a useful tool in helping the students having reading writing problems. There are many computer programmes that have been developed to help students having reading and writing difficulties. The teachers in the interview say that it is reasonable that students having dyslexia get a computer with all the programmes that can correct the spellings, and during tests the questions are read to them so that they have similar opportunities as the others (Myrberg and Länge, 2006). They further described positive effects of computer for dyslectic students. They say for example that the computer provides opportunities to students having reading difficulties to present their work. It helps them to communicate with the teachers and fellow students. Computer assistance is used to give positive feedback in educational context and these students can do proficiency training on it, the teachers argued. They also noted that computer programmes are not always simple, it can be complicated for students having reading and writing difficulties. Computers can serve as a resource to compensate the deficiencies of students having reading and writing difficulties and can be used as an educational resource to strengthen abilities. Computer support for students having dyslexia is very common today (Myrberg, 2007). According to Høien and Lundberg (2000) the ability to create individualized programs helps to organize the workout of the students as they gradually progresses. But Myrberg (2007) points out that there is lack of research and scientific evaluation, to show if the extent and nature of computer support for dyslectic students is helpful or not.
5. Method

5.1 Sample

The number of subjects depends on the purpose of the study and the time and resources available (Kvale, 2007; Bryman, 2012). I have done purposive sampling. In purposive sampling the researcher has the goals of the research in mind, which means that the respondents are selected in a strategic way. It is a part of non-probability sampling. In this method some members of the population have greater chances to be selected than the others depending on the ease of availability (Bryman, 2012). As Cohen, Manion and Morrison (2005) emphasize, non-probability sampling is done when we want “to represent a particular group”. The students and teachers chosen for this study are based on non-probability, purposive sampling, as all of them are participating in one - one programme, that is one computer to every student in grades 7-9.

The sample consisted of four students from grades 7-9 in a municipality school, which is a grade one-nine school. It has two parallel groups (Swedish and Bilingual). In one group, all the subjects are taught in Swedish while in the other, bilingual group both Swedish and English languages are used as the medium of instruction/tuition in class. All of them are part of the “one - one” project. As earlier mentioned, they have been given a computer from the school with some programmes to support them improve on their reading and writing difficulties. All of them have been diagnosed dyslexia and have Swedish as second language. I have also chosen two teachers who are teaching Swedish and Swedish as a second language to these students. Teacher A started teaching in this school in January. This is her first term as a teacher. She teaches Swedish and Swedish as a second language to grades six-nine students. Teacher B has been teaching Swedish and Swedish as a second language in this school for the last 34 years to grades 7-9 students. Both the teachers A and B are qualified Swedish and Swedish as second language teachers.

The sample consists of four students, three girls and one boy who have been diagnosed with dyslexia. The speech pathologist (Logoped) has diagnosed them, after the school recommended them to be tested for reading and writing difficulties. I had contacted two boys and two girls to interview them. But one boy was not interested in the study and opted out, so I interviewed three girls and one boy. All four of them have Swedish as a second language. I have chosen two teachers who are teaching Swedish and Swedish as a second language to these students. The study is done in one school because all the students here are included in the “one - one” programme and are included in the ordinary class and follow the same curriculum as their classmates. All of them are first or second-generation immigrants, they were either born here or came here at early ages. None of them have Swedish or English as their mother tongue. Most of them have mother tongue education at least 60 minutes a week. It will be challenging to investigate how the computer is assisting them in achieving their goals.

5.2 Choice of Method

The aim of this study was to investigate how the computer is assisting dyslectic students having Swedish as a second language in learning. The method that I have used to collect data for this study is qualitative semi-structured interview. When the researcher knows what to investigate, then semi-structured interview is better (Cohen, Manion and Morrison, 2005; Kvale, 2007; Bryman, 2012). In an interview situation it is two or more people talking, but the conversation has a structure and a purpose, which is decided by the interviewer (Bryman, 2012; Kvale, 2007). According to Kvale (2007), “qualitative research interviews are a construction site for knowledge”. He compares the interviewer with a miner who unearths the hidden knowledge of experience in the interviewee to collect facts and tested knowledge for his or her research purpose. With the help of semi-structured interviews I will be able to know both students and teachers perceptions about how the computer is a useful tool for
assisting dyslectic students having Swedish as a second language. In semi-structured interview the researcher has an interview guide with specific themes, which he/she follows, to have a natural flow as well as to be sure that all the themes are covered. The order of the questions might be different for all the participants to make the interviews flexible. Follow up questions are asked from the interviewees. The questions should be short, simple, and open ended (Kvale, 2007; Bryman, 2012).

5.3 Data Collection

As I have done semi-structured qualitative interview, I had prepared an interview guide for teachers and students (Attachments 2 and 3) where there are themes to be covered in a sequence. The three most important things for a good quality interview are the good answers from the subject, the relevance of the answers, and the clarifications given by the subject (Kvale 2007). To conduct good quality interviews with the students and the teachers, I had taken the following steps:

1. I had informed the respondents about my investigation and the subject area of the interview.
2. I had booked time, which suited the respondents and me.
3. I had chosen a comfortable room, which was private and peaceful.
4. I had my computer for recording the interviews.

After the interviews I made notes about the meeting, the respondent and the settings. There are advantages of recording the semi-structured interviews and then transcribing them. It is not easy to write everything down when somebody is talking, but then it is easy to forget if one has not noted them down. I could give more attention to what the respondents were saying and inquire more from the respondent by asking them follow up questions as I was recording the interview. I could examine the respondents’ answers many times as they were recorded. Somebody else can also listen to the audio recording to see if the transcriptions were done fairly. But semi-structured interviews also have disadvantages. They are time consuming and if the computer does not work then the interviews have to be repeated as Bryman (2012) argues.

Apart from the above conditions the interviewer should be knowledgeable, a good listener, flexible, non-judgmental, structured, sensitive, open, steering, interpreting (Kvale, 2007). I had read many books and articles and had a good understanding of the subject to be investigated. I was an attentive listener, showed interest, respect and understanding in the interviewee’s answers. I had established good contact with the respondents so that they could feel free, because it is very important to get the best possible response from them. According to Kvale, (2007) the quality of the result and reporting depends on the quality of the interview. As I do not know the respondents, it was easy to ask leading questions, and follow up questions to help them describe in detail during the interview. My interview guide was in Swedish, and two of the students and both the teachers answered in Swedish. This means that I have to translate their responses into English.

5.4 Data Analysis

After recording the interviews I did the transcription myself, and I began transcribing them as soon as I was done with the first interview. It was better to do them immediately as I remembered most at that moment. I have done all the transcription word by word to fulfil the aim of the analysis, e.g. “bastranskription” (Linell, 1994). I have done “bastranskription” as I do not need to analyse the data on linguistic or interactional level. I have noted longer silence and sentences where the respondents had given stress. According to Bryman (2012) “people rarely speak in fully formed sentences, they often repeat and may have verbal ‘tics’ in the form of a common word or phrase that is often repeated”. And when transcribing the interviews the researcher “wants to edit out some of these digressions for the sake of length and ease of understanding” (Bryman 2012, p. 485). When spoken language is to be presented as text, it depends on the researcher in which way he or she wants it (Linell, 1994). If the text is presented in incomplete sentences, repetition of spoken words and longer
silence, it might reflect on the respondent’s ability to express himself/herself in a negative way. To facilitate reading, on the other hand the text can be processed and presented in a written language format (Bryman 2012). I have tried to transcribe as the spoken language with a few repetitions, silence, slip of the tongue, etc. I chose the path in-between the spoken and the written language. To get the flow in reading I have also made a few adjustments in the text as Linell (1994) recommends.

In qualitative research the vast amount of data collected, is a problem. There are many ways of analysing the collected data. In qualitative research the data analysis begins during the interview or observation as the researcher starts to identify concepts and themes. Data analysis is actually ‘data reduction’ that makes sense to the researcher (Bryman, 2012). After transcription the interviews can be analysed in different ways depending upon the “craftsmanship of the interviewer, knowledge of the topic researched, expertise in analysing the language used in the views expressed” (Kvale, 2007). I read the collected data a few times to get familiar with the text. I have done primary data analysis. After transcribing the interviews, I have performed content analysis of the data collected that is coding the meaning. In the content analysis the text is coded in certain subjects and themes. And when we talk about themes then it is that a more interpretive approach is taken (Bryman, 2012).

“Content analysis is an approach to the analysis of documents and texts that seeks to quantify content in terms of predetermined categories and in a systematic and replicable manner (Bryman 2012, p. 290).

Content analysis is a very transparent method as sampling and coding themes can be decided, which makes it easier to repeat the study. It helps us to get information about the social groups which otherwise is not easy to get. We can get the answers to our questions. It is very flexible because it can be applied to many different kinds of documents. It is a theoretical approach as one tries to analyse what is measureable and not what is theoretically important (Bryman, 2012).

5.5 Reliability and Validity

To access the quality of social research, the following criteria (Bryman, 2012) are used:
1. Reliability,
2. Replication,
3. Validity.

Reliability and validity are the criteria used in quantitative research. However, in qualitative research, the criteria of reliability and validity have to be adapted (Bryman, 2012).

In qualitative research, trustworthiness is proposed as a criterion to judge how good a qualitative research is. There are different aspects of trustworthiness. They are as follows:
1. Dependability,
2. Credibility,
3. Transferability,
4. Conformability.

Dependability means whether the results are consistent or not when the study is repeated. Credibility is how believable the findings of this study are. Transferability is if we can apply the findings to other context. Conformability means has the researcher allowed his or her values to dominate to a greater extent (Bryman, 2012). According to Kvale (2007) reliability means ‘consistency and trustworthiness’ of research findings and if the findings are reproducible later by other researchers. Not only the findings but also transcription and analysis of interviews is included in reliability, if the different transcribers and analyzers will do the same transcription and analysis of the interview data. And ‘validity depends on the quality of the researcher’s craftsmanship throughout an investigation, i.e. that continuous checking, questioning and theoretical interpretation of the findings, is done. He means that validation should be done during the entire research process. There is internal validity as I have described the aims of this research project and followed it. According to Cohen, Manion & Morrison, (2005) there is no external validity, as we cannot generalise the results due to the uniqueness of the respondents.
5.6 Ethical Principles

Scientific Council for Humanities and Social Science research have recommended four main ethical requirements that should be fulfilled (Vetenskapsrådet, 2011). They are:

1. Information requirement,
2. Consent requirement,
3. Confidentiality requirement,
4. Use requirement.

In accordance with the above rules I informed the respondents about their role in the survey research and that their participation was voluntary. They had the right to withdraw or interrupt me at any time without any negative consequences. I did not use any force or influence to compel them to continue with this research project, and never should they regard it as their moral obligation to finish the interviews.

According to the recommendations of the Scientific Council For Humanities and Social Science research (Vetenskapsrådet, 2011), I got the consent of the respondents (students and teachers). In the study as the students were below 15 years, it was important to send a letter of consent (Attachment 1) to their parents informing them about the purpose of my study. When the students and their parents had consented, I interviewed the students individually to know their viewpoints in details as to how the computer as a tool is helping them in achieving the goals set by the school. I requested if the two teachers who teach Swedish and Swedish as a second language to these students, were interested in participating in this study. I interviewed them individually after their consent. I informed the respondents that all the information regarding them would only be used in this research project. All personal information that can be used to identify the respondents was destroyed. Whatever the respondents told me during the interview were treated as confidential and nobody was informed about it. At no place in the study have I used the name of the school or the students to avoid the risk of identification. The teachers are mentioned as teacher A and B and the students as 1, 2, 3 and 4. The data will be destroyed after the research project is done.

6. Results

After transcribing the interviews I have identified some themes, which were taken up by all the respondents. These themes are

1. Diagnosis,
2. Computer as a tool,
3. Inclusion,
4. Achieving the goals,
5. Motivation,

I have taken the viewpoints of the students first and then the teachers, the students are mentioned as Student 1, 2, 3, and 4 while the teachers as teacher A and B so that no body can recognize the respondents.

6.1 Diagnosis

Three of the four students felt that it was a relief to be diagnosed. They felt that now their fellow students and other teachers will acknowledge the fact that they indeed have difficulties in reading and writing. One of the student said, “I do not need to be stressed that the teacher will ask me to read aloud like the other classmates. I know now that I can tell the teacher in advance that I will not read aloud in front of the class”. Another one said “I do not need to be embarrassed that I will make a
**6.2 Computer as a tool**

All the four students felt that the computer is a very important tool in assisting them. Two of the students were given computers in the sixth grade. They had difficulties remembering how to use the different programmes. The computers were kept in the school so they never had the opportunity to train at home. But now when everyone is a part of the one- one program, they have their personal computers (MacBook Air). The computers are very fast and they have them all the time in the school and at home, it is much easier for them to use the different programmes. The special teacher has downloaded the different programmes like ‘Stava Rex, Spell Right, Talsyntes and Quick Time Player’ on their computers and helps students having dyslexia, as to how to use them. They were very thankful that the teachers downloaded many audio books on their computers in the beginning. Now the special teacher has opened their own accounts in “inläsningstjänst” and they can download audio books themselves, which is very helpful. They can borrow the same book from the library and download the audio book from the “inläsningstjänst”. They can listen as well as follow the text in the book. By
doing so they avoid the stress of reading themselves and not being able to understand anything. They can do the homework and the classwork on the computer. Three of them use the spelling correction programmes very often. The students expressed themselves as below:

Student 1: “It’s easier with a computer as it corrects the spellings when I write, otherwise there were many spelling mistakes”.
Student 2: “It is easy to work with the computer, work done is much better, and often it is easier to do the work also”.
Student 3: “It is much easier to work on the computer, nobody cares to see what I am doing on my computer, and I can easily help myself”.
Student 4: “Computer is a very good tool which helps me a lot”.

Teacher A feels that the computer helps some students but not all. When they work on the computer the work done is better. They are free to email their homework. They get extra time to do the class work. Teacher B also feels that the work done is better, as many students having dyslexia have very poor handwriting, make many spelling mistakes and often are not motivated to write anything. When they work on the computer they can correct the spellings themselves and this gives them confidence. It is easy to read their text with lesser mistakes and the work is well structured.

6.3 Inclusion

All the students want to have extra support in the main classroom, as they feel that they miss a lot when they have to go and sit with the special teacher. The special teacher has downloaded some programmes that corrects the spellings and reads the text for them. Two of these students were given computers in the sixth grade after they got their dyslexia diagnosis. Both of them felt that it was embarrassing to answer to everybody why only they were provided with computers. As a result they avoided using the computer because they did not want anyone to see them as different.

Student 1: “I had to explain to everyone why I had a computer. I felt singled out by the group. No one cares when everyone has a computer. All the teachers know that I have dyslexia, they treat me like everyone else but special in a positive way, they always ask me if I need help”.
Student 2: “I got individual help from my mentor and other teachers and sometimes worked on the computer when I needed it, and I could manage myself”.
Student 3: “I kind of feel special in a positive way because I get more help”.
Student 4: “Nobody knows that I have reading and writing problems. I will never tell anybody, I don’t want to talk about it”.

All the four students feel that the teachers treat them like the other students. The teachers ask them if they need help. Everybody respects them and nobody teases them because of their diagnose. Both teachers also feel that the students are very understanding, and nobody teases anybody. For some students it is very open and OK to have dyslexia while some do not want anybody to know about it. Nobody knows about it in grades 7-9 if the students would not tell themselves. And if they do not want to tell they can still use the programmes without being singled out. Both Teachers A and B have seen that the students avoid using their computers if they are the only ones. Teacher A gave an example of a student who is the only one in sixth grade who has a computer in his class. He avoids using the computer and never brings it with him, he wants to do like the others and does not want to be singled out. He does not like to use the programmes for help, it is embarrassing he always argues. Teacher B also gave many similar examples of students who avoided the computer and extra support, because they wanted to be a part of the group.

Both teachers confirm that grades four-six students never learn to use the different programmes because they simply have no interest. While in the higher grades where everybody has a computer these issues are not there. This is not a generalized pattern, she said, because some of the students like
and some do not like to use the computer. Unfortunately, many of the students do not know how to use the computer programmes.

Teacher A feels that it is good if the students having dyslexia can go on a course and learn about the different programmes and that there is nothing wrong in having dyslexia. She is of the opinion that it will be good if everybody could be given a lecture about having dyslexia or other disabilities to make them aware of the problems. She gives those students who have dyslexia or have difficulty in reading and writing extra help. She reads aloud the text for everybody. She often sends the homework through the mail. The students can use the programme ‘Into Words’ to read it for them. She also uses audio books. Teacher B also helps the students by keeping an eye on those that have difficulties understanding her. She reminds them to ask for help if they need and gives them extra time. She points out that it is easier to work with the computer today and to have students included as compared to 10 years back.

6.4 Achieving the goals

All the four students feel that it is easier to perform better with the help of the computer and they can achieve better grades with the help and support that they get from the teachers and the special teacher. Two of the students feel that the audio books that they downloaded helps them to listen and understand the text in a much lesser time compared to them reading and trying to understand. One of them feels that the audio books are read at a very slow pace and becomes boring at times. It only becomes interesting when she can adjust the speed herself. All four of them feel that they can achieve higher grades in both Swedish and English languages with the help of the computer. Because in the languages it is much more to read and write compared to the other subjects. This is how the students expressed themselves:

Student 1: “I achieve better grades. It feels, I can do equally well as everyone else. It will be easier if I get the computer when we have tests, otherwise I have to erase all the time because I spell wrong, it is easier for the teachers to understand my work and I get better grades”.

Student 2: “It is easier to work with the computer, I write very fast and clear with the computer”.

Student 3: “The computer helps me to search for information and with it I reach my goals”.

Student 4: “I can easily help myself to achieve better grades”.

Teacher A feels that she treats all the students equally. She tries to provide them the same conditions and opportunities. She reads for all the students. They can all get audio books, or the homework as a document, and someone could read for them and they could answer without difficulties. She feels that it is not because of dyslexia that they have difficulties in some or most subjects, it could be because they do not understand the text because most of them have three-four languages.

Teacher B feels that dyslectic students’ work becomes clearer when they use their computers. These students often have poor handwriting, make many spelling mistakes which they can correct themselves on the computer. They can submit work in different ways. This gives them opportunities to produce text, which is better structured with lesser mistakes and gives them the possibility to achieve higher grades.

6.5 Motivation

All four students feel much more motivated to work on the computer as the hurdles of reading and writing are drastically reduced when using this tool. They do not need to struggle to read to understand, which took most of their precious time. When reading themselves they got exhausted and felt failures, which lead to loss of interest in doing the work. Now when they can listen to the text once or twice or as many times as they want, it makes it easier and they feel they have control over the
situation. It goes faster and the result is much better and thus motivates them to try more. The students expressed themselves as follows:

**Student 1:** “I went on a reading and writing course in the municipality. I learnt to use different programs. Now I am very motivated to use the computer to reach higher goals”.

**Student 2:** “The diagnosis is not important to me. I struggle to do my best”.

**Student 3:** “As I can concentrate more on the computer, I am very motivated to perform better”.

**Student 4:** “When things become difficult I know I can get help from the computer, and that motivates me, to keep trying, because I can choose different ways to reach my goals”.

Teacher A thinks that the students use the diagnose dyslexia to explain why it is not going well for them. If they try a little more, and have a little more motivation their situation will improve. The school sent one student on a course in the municipality to learn more about how to use the computer to do her schoolwork. She is more motivated and her learning has improved. She uses the computer more than before, and she feels that it is better to have a computer. I think they use the diagnosis as an excuse, to explain that they have not been able to do the task. Much depends on motivation, success will always follow those who are interested.

**Teacher A:** “They take advantage of their diagnosis. If they try a little more, are motivated, and try to learn how to use the tools, like computer etc., they can reach higher goals”.

**Teacher B:** “The motivation and the will to learn are more important than the computer. If they accept that they have problems and want to be better then nothing is impossible”.

Teacher B experiences that students have no problem in talking, but they are not interested in reading and writing. They have no ambition or desire, is it their diagnose dyslexia or something else, she cannot say. They need to accept that they have problems and try to work to improve their situations otherwise it is going to follow them throughout life. She feels that they think that the problems will solve by themselves, “It is going to work out”. It will be all right by itself, but how? She gave examples of some students who had severe reading and writing problems, but they were motivated. Whatever they listened in class they remembered, and now after secondary school they have good jobs.

### 6.6 Environment

All the four students talked about home environment. They have parents who moved from other countries so they do not speak Swedish or English language at home. All of them use their mother tongue to communicate with their parents at home. The students expressed their views as follows:

**Student 1:** “I speak Swedish only with friends, as my mother cannot speak Swedish”.

**Student 2:** “I have lived here for six years. Sometimes when teachers help me they use difficult words and I cannot understand, I think when I hear several times it becomes much easier. Mom cannot speak Swedish or English”.

**Student 3:** “I speak better Swedish than mom and dad. I have lived here for four years now”.

**Student 4:** “I came here when I was 10 years old, I speak Arabic with mom and Swedish with my siblings and friends”.

Both Teachers point out that the students have poor language, because of their environment and the friends they go around with. There is no input from outside, they do not want to read, and they do not watch Swedish television either, which results in slow language development, the computer is there but not the will power to use it to practice reading or writing. They often get along very well with their everyday language. They have poor vocabulary, as they learn the language from their friends. Teacher B feels that ‘multilingualism’ is also a problem, as the students are not good in any language, they are
semi-lingual (halvspråkig). It is difficult when most of the students are multilingual, who were not born here and came here when they were eight or ten years old. They learn a language, which does not have a rich vocabulary. Both the teachers feel if these students would get support in a proper way, like digital device (computer) plus special teacher plus extra Swedish to compensate for their disadvantaged home and school environment, then they would definitely be able to reach the same level as the other students. The teachers expressed themselves as follows:

Teacher A: “They blame their mom and dad for poor language, they do not get any support at home”.
Teacher B: “They have poor language because of the place where they live. They go around with those who are like them, there is no input from outside”.

The teachers feel that home and school environment also plays an important role in language development. Unhealthy/unfriendly environment deny the students the best opportunities to be exposed to new words and interact with people speaking proper Swedish.

7. Discussion

7.1 Discussion of the Methodology

I have done purposive non-probability sampling. There is unfortunately a risk of bias in this method because it does not represent the whole population. For this reason I cannot generalise the results of this study as suggested by Cohen, Manion and Morrison (2005). The respondents are all participating in one-one programs and have been diagnosed dyslexia. The students and the teachers are from the same school that made it easy to get the target population, in the short time that was available. In the beginning of the interview I informed them that I knew about their diagnose. The students talked in detail about the computer as a tool, how it helps them and what other kind of help they would like to get to reach their aims. It seems as if they knew what I wanted to hear. The teachers were also very cooperative and answered all the questions in detail. They knew that I have no contact with anybody in the school and would not inform them either. It would have been easier to compare if I had chosen students and teachers from two or three schools participating in the one-one programmes.

I had open-ended questions in the interviews, which helped the respondents to reveal their unique way of looking at the situation or the world as Cohen, Manion and Morrison (2005) argue. In this method the teachers and students had the freedom to reveal answers from their own unique viewpoints, while on the other side they can all have so many different viewpoints that would make it difficult to generalise. Some talk much while the others answer in a very short phrase, thinking that only their views are more important.

After recording, I transcribed the interviews myself, I could recognize many themes and got a clear idea about similarities and differences between the different respondents. I felt that it would have been better if I had also done observation of these students in class room settings to see if they were using the computer and if it was really helping them or not, and the teachers were giving extra support to the students. The student interviews went very smoothly, but the interview with teacher B was interrupted once. Conducting interviews in school is always like this and I could see that the teacher was stressed. Her condition unfortunately reduced my chances of getting in-depth answers from her. As I have transcribed all the interviews myself, the reliability is there because all the interviews have been given the same treatment.

The fact that it is only me who listened and transcribed all the interviews, and I had themes in the interview guide, it was easy for me to identify the themes. At the same time it feels that one is biased from the start due to the fact that one already knows what the respondents are talking about. It would have been better if somebody else had listened and transcribed and tried to find the themes in the
interviews.
In the semi structured interviews reliability is reduced due to changing the wordings, context, recording and emphasis (Cohen, Manion and Morrison, 2005). I feel that since it is only me who has done all the interviews there is no big difference between the interviews of the different respondents. In qualitative research trustworthiness is proposed as a criteria.

7.2 Discussion of the Results

The aim of this study was to investigate how the computer helps dyslectic students having Swedish as a second language in learning. To achieve this aim I had formulated the following research questions:

1. How important is it to diagnose dyslectic students?
2. How does the computer assistance motivates dyslectic students achieve their goals?
3. How easy is it to include the dyslectic students in the ordinary class with computer assistance?
4. In which way does the school and home environment affects the dyslectic students who have Swedish as a second language?

To answer these questions I did semi-structured interviews and received information from the respondents. I have divided the discussion into four dilemmas:

1. Diagnosis and Computer,
2. Inclusion and Computer,
3. Motivation and Computer,
4. Learning and Computer.

These are dilemmas because ‘it is easier to express good intentions than what is done in the schools everyday’ (Nilholm and Göransson, 2013). Regarding each dilemma the question is:

1. Should we diagnose or not?
2. After diagnosing is adequate help given to these students, or more must be done?
3. Are they really included after they are given the computer or do they have to manage themselves?
4. Are they less motivated because they have difficulties or is the school not able to provide them with a motivating learning environment?
5. Is the computer the solution to all difficulties?

7.2.1 Diagnosis and Computer

I have used only dyslexia in this paper because all the students have Swedish as a second language and have been diagnosed with dyslexia, but reading and writing difficulty is very similar to it and is often used interchangeably in many studies (Svenska Dyslexiförening, 2014-02-12). Now I feel it had been better if I had also used both the terms interchangeably, but at some point I must limit myself to fulfil the requirements of this thesis.

The students in the study agreed to the fact that getting the diagnosis dyslexia was a relief as suggested by International Dyslexia Association (2014-01-26), Andersson (2013), Nelson (2000) and Ingesson (2007). They were not directly responsible for having difficulties in reading and writing and making many spelling mistakes, they had inherited it as Jacobson (2006), Snowling (2006) and Myrberg (2003) argue. After they had been diagnosed they had the right to get extra support from the teachers as well as the school in an included classroom as recommended by the policy documents (Salamanca Declaration, 1994; Lisbon Declaration, 2007; Skolverket, 2011).

Ingesson (2007) recommended early diagnosis, and not have the “wait and see policy” (Myrberg, 2003, Andersson et al, 2007) and the schools often give that extra support only after the students have been diagnosed (Heimdahl Mattson and Roll Pettersson, 2007). Many students do not want to mention that they have dyslexia, they see it as a kind of label of abnormality as argued by Nelson (2000) and Andersson (2013). The teachers also feel that diagnosis helps them to support the students in a proper way because extra support can only be organized after it is confirmed that they have reading and writing difficulties, a handicap that will not be cured easily because they have inherited it as Jacobson
(2006) and Nelson (2000) argue. Should we wait for the diagnosis, to organize extra support for these students? The moment it is discovered by the teachers that a student has difficulty in reading and writing, extra support must be organized. May be the students can get some training programmes (Lexia) to practice at home. The belief is that “practice makes a man perfect” so most of these students who are on the margin can improve their skills if they practice more at home. The computer gives support at individual level, does not get tired, and can be used at the convenience of the students. The teachers feel that diagnosis also has a negative side. Many students stop trying and blame everything on their diagnosis as Nelson (2000) suggests. They are lazy and find ways to avoid doing schoolwork. A question arises why can we not help all the students having difficulties instead of labelling them dyslexia, ADHD, or something else? As Nelson (2000) points out, labelling is done many times to get extra economical support. Why can there not be some extra budget in the name of support? The computer can be used to help them train at their own pace.

7.2.2 Inclusion and Computer

The students clearly stated that they did not want to do anything different from their class-mates. They were forced by the school to get extra support in segregated small groups and they felt left out as Heimdahl Mattson and Rol Pëttersson (2007) point out. One-one helps in inclusion (Andersson, 2013), and helps in adapting for every student (Skolverket, 2011). Advantages of computer in inclusion are many but the difficulties when using the technology are also there (Conway and Amberson, 2011; Fleischer, 2013)? Only giving a computer is not a solution if the teachers do not give them proper guidance as to how to use the device to support themselves (Lundgren and Ohlis, 2013; Lindstrand and Brodin, 2006; Myrberg 2003; Myrberg and Lång, 2006). And many times the teachers unfortunately, lack computer knowledge to guide the students. The teachers feel that it is very demanding to have knowledge of all the different programmes. Grades 7-9 teachers for example meet 100 students and 10 of them need different programmes, so it is practically impossible for her/him to keep himself/herself updated with all the developing new programmes if they are not given training (www.spsm.se, 2014-03-12).

7.2.3 Motivation and Computer

The students feel that computer is a wonderful digital device, which motivates them on their terms and conditions as Cuban (1993), Jedeskog (2007) and Hilden (2013) also argue. It motivates them to do school work, but it is important that one knows how to use it. It stresses them when they are supposed to train themselves in using computer according to Fleischer (2013). I feel that because they have difficulties, it is not right to demand that they do things on their own, they need proper guidance to maintain the motivation that the computer provides. The real motivation is given by the teachers at individual level along with the computer, as suggested by Myrberg and Lång (2006), Föhrer and Magnusson (2003) and www.spsm.se (2014-03-12).

7.2.4 Learning and Computer

Computer is a helpful tool and it helps students in improving their learning (Fleischer, 2013; Macaruso and Rodman, 2009; Breivik and Hemmingsson, 2013). But is it only the students with dyslexia who gain or all the students. Therefore why not give every student a computer and boost their learning as Kast, Baschera and Gross (2011) also suggest. But the students having dyslexia have difficulties if too many digital devices are used as Beacham and Alty (2006) argue. Teachers could therefore be trained to identify and have favourable conditions in school to help them learn. If tested methods were used to train the students at an early age, we would perhaps not need so many different programmes as Myrberg (2003) points out. Teachers are very important in improving learning situations for students by having the right approach and trusting in the student’s abilities (www.spsm.se, 2014-03-12; Hilden, 2013; Jedeskog, 2007).
8. Conclusion

In summarising this research project regarding the use of computer as a helpful tool for the students having dyslexia, the following conclusions are derived:

1. It improves the self-confidence of students.
2. It makes students independent to find ways to support themselves.
3. Students do not need to face failure all the time, feel embarrassed and avoid reading and writing, when they can use the computer to achieve success and feel happy and motivated to learn more.

Jedeskog (2007) writes "One may like or dislike the technology, but one cannot avoid its impact". The teachers as well as the students accepted this. Further it was very clear that the students are more efficient in computers compared to the teachers. Therefore, both the teachers and the students should be given the same competence education. If the teachers forget the students can help them and vice versa. Motivation as the most important aspect in learning was very noticeable in all the six interviews, and the teachers’ frustration for not being able to revive the will power in the students was clearly noticed.

9. Study's Implications for Special Education Practice

This study clearly indicates that extra support provided with the help of technology, in an included classroom is the best for the students having Swedish as a second language and dyslexia. In this case, it was the computer. Not only the students, but also the Swedish teachers felt the same. It makes their work very effective and gives them opportunities to help these students without segregating them. The students become independent and motivated to learn. Students achieve their goals and can become successful members of the democratic society. Technological development was also seen as a hurdle. If the students and the teachers could be provided with regular training in the new programmes, then it would be easier to use the technology to its fullest advantage.

10. Further Research

If I would be given an opportunity to do further research, I would investigate if dyslexia and ADHD were the reasons why some students have concentration difficulties during lessons. When they are given computers with appropriate programmes does it benefit them or not? My wish is to help hundreds of students and teachers to understand the role and the importance of the computer.
11. Reference


Beacham, N. A. & Alty, J. L. (2006) An investigation into the effects that digital media can have on the learning outcomes of individuals who have dyslexia. Computer and Education 47.


Missivbrev

Hej!


Jag tänkte intervjua era barn för att veta om datorn är ett verktyg för de och hjälper de i deras skolvirke. Deras deltagande är frivilligt men jag skulle vara mycket tacksam om ni låter mig intervjua er barn för mitt arbete. Ni har möjlighet att frånsäga deltagande av era barn om ni ändrar er.


Om ni har några frågor kan ni gärna kontakta mig på
Telefon 076 4008716 eller email nisha.sharan@edu.botkyrka.se

Tack i förhand.
Med Vänliga Hälsningar,

Nisha Sharan

Jag godkänner att mitt barn ________________________________ deltar i intervju.

Jag godkänner inte att mitt barn ________________________________ deltar i intervju.

Underskrift:_________________________________________ Datum:__________________

12. Attachments

Attachment 1
**Attachment 2**

**Intervju guide: Elev**

**Bakgrundsfrågor**
1. Vad heter du?
2. Hur gammal är du?
3. I vilken årskurs går du?
4. Vad heter din mentor?

**Diagnos**
5. Vad innebär det när du fick din diagnos?
6. Fick du stöd innan eller efter diagnosen?
7. Finns det fördelar eller nackdelar med diagnosen?
8. Var det bättre före eller blev det bättre efter diagnos?

**Dator Kunskap**
9. Har länge har du använt datorn?
10. Tycker du att det är lätt att jobba med datorn?
11. Vet du att det finns olika program på datorn som kan hjälpa dig?
12. Hjälper lärarna dig när datorn krånglar?

**Datorstöd**
13. Vad gör skolan för att underlätta för dig?
14. Använder du datorn i skolarbetet i skolan och hemma?
15. Tycker du att datorn är ett viktigt hjälpmedel/verktyg/redskap för dig?

**Inkludering**
16. Hur såg det ut när du bara hade datorn?
17. Vad kände du när det bara var du som hade en data?
18. Hur känns det för dig när alla har data?
19. Hur bemöter lärarna dig? Förstår de att du har det kämpig när det gäller läs och skriv uppgifter?
20. Behandlar lärarna dig på något speciellt sätt?

**Kunskapsinhämtning**
21. Hur används datorn I skolan?
22. Får du inläst material?
23. Tycker du att datorn hjälper dig att nå kunskaps mål?
24. Är du mer motiverad när du jobbar i skolan med datorn eller klarar du dig utan den?

**Koncentration**
25. Är det lättare att koncentrera och göra uppgift med datorns hjälp?
26. Presterar du bättre när du använder datorn?
27. Får du göra prov och inlämningar på datorn?
Intervju frågor: Lärare

Bakgrundsfrågor
1. Vad heter du?
2. Hur gammal är du?
3. Vilken utbildning har du?
4. Hur länge har du arbetat?
5. I vilket ämne undervisar du?
6. Trivs du som lärare?
7. När började du arbeta på den här skolan?

Dator Kunskap
8. Har länge har du använt datorn i undervisning?
9. Tycker du att det är lätt att jobba med datorn?
10. Vet du att det finns olika program på datorn som kan hjälpa elever med dyslexi?
11. Hjälper du elever med dyslexi när dem fastnar med datorn?

Diagnos
12. Hur diagnerar ni elever med dyslexi på den här skolan?
13. Finns det fördelar eller nackdelar med diagnoser?
14. Hur hjälper ni barn med dyslexi?

Datorstöd
15. Vet du hur datorn används i skolarbetet av elever som har dyslexi?
16. Upplever du att elever blir utpekade i klassrum?

Inkludering
17. Hur är stämning i klassen runt elever med dyslexi?
18. Var det bättre när bara elever med dyslexi hade datorn?
19. Vilken förhållningssätt har du när det gäller elever med dyslexi?
20. Behandlar ni elever med dyslexi på något speciellt sätt?

Kunskapsinhämtning
21. Får elever med dyslexi använda någon hjälp medel?
22. Hjälper dator elever med dyslexi att nå kunskaps mål?
23. Är det svårt för elever med dyslexi i alla ämnen?

Koncentration
24. Tycker du att det är lättare att koncentrera och göra uppgift med datorns hjälp för elever med dyslexi?
25. Blir uppgifterna bättre gjorda när elever med dyslexi använder datorn?
26. Får elever med dyslexi göra prov och inlämning på datorn?