Using IT in the English classroom
Its impact on Swedish students' performance and motivation.

Degree Project in English, advanced level

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Abstract

Information Technology (IT) has been integrated in many foreign-language classrooms for some decades now. However, one of the many questions related to IT at school is whether it is beneficial for students and, if yes, in what way.

This study compares two different teaching approaches in the English classroom in a Swedish secondary school. A digital approach and a traditional approach were tested during some teaching sessions, where two groups of students were compared to gauge the possible influence of IT on performance. In addition, questionnaires were administered to the students in order to measure their opinion of IT use in general and whether they find it motivating in class.

The results suggest that a digital approach can boost performance and create more positive attitudes among the students than the more traditional approach.

**Keywords:** IT, ICT, technology, computers, digitalization, motivation, EFL (English as a Foreign Language), education, Sweden, high school, SDT (self-determination theory), performance, pedagogy.
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1 Introduction

In the year 2014 it can be said that Information Technology (IT, now often expanded to Information and Communication Technology or ICT) is taken for granted in the classroom. School, as a part of society, has slowly and gradually incorporated new technologies. In the last two decades we have witnessed the development and consolidation of the Internet as the channel used for most of our communication, while computers and portable devices, such as tablets and mobile phones, have become ever more accessible. Twenty years ago I was the only child in my class whose family had a computer at home, while today we have reached a point where the strange thing would be to know of a family who does not own a computer. The current situation in Sweden is that almost all schools are giving either a computer or a tablet device to their students, implementing the so called 1:1 (one-computer-per-student) program in the classroom.

While the implementation process can be complicated by the local conditions in schools, teachers' scepticism about IT and education, as well as other factors, there are studies (Passey et al., 2003; Samuel & Bakar, 2006; Puantedura, 2013; Petersen & Bunting, 2012; OLPC, 2010; Voogt, 2008; Vigmo, 2010; Ushioda et al., 2013; UR, 2013; Skolverket, 2013; Skolverket, 2008; Scott, 2013; Quast, 2011; Löfving, 2012; Kenneth et al., 2009; EU, 2013; EU, 2007; Diaz, 2012; Davies, 2001; Cutrim Schmid, 2008; Chadima, 2012; Bennett, 2012) that confirm that, by using IT in class, motivation and performance can be enhanced, not least in the context of English language learning and teaching.

This study aims to investigate further if IT can indeed help Swedish students of English to improve their motivation and performance. Two different groups were taught in English, one with a digital approach, and one in a more traditional manner. Their performance will be linked to the teaching approach, and their motivation will be measured through surveys.

1.1 Aim and research questions

This study aims to investigate whether the use of IT in schools is beneficial for students, specifically in English class. To assess if performance is affected by the manner of teaching, and in particular the inclusion of IT elements in class, three different grade 6 classes at a Swedish secondary school were subjected to different teaching styles and materials in their English class, and then asked to complete a survey regarding motivation. The research questions asked are:

- Can students performance be improved in the English classroom with the help of IT?
• Are students more motivated when they use IT in the English classroom?

This study has been carried out with the intention to add to the existing research about various effects of IT use on students. The results are expected to be of interest to teachers who use or want to use IT in the classroom, and especially to English teachers in Sweden.

2 Background

2.1 The digitalization of society

Digital media have come to shape a substantial part of our lives, and we have adopted and accepted new ways of processing and interacting with information. In fact, changes are not only growing in number and frequency, but also in quality. There are factors associated with the new technologies that imply the redefinition, modification, augmentation and substitution of old habits, tools and procedures (Puenteñura, 2013). For example, the concept of literacy is being redefined in this new media society and now tends to go beyond our previous understanding of simply being able to read and write.

There is also a debate about what kind of knowledge is essential in education. There has been a change from an industrial to an information society in which citizens need to be able to manage huge amounts of information that can be accessed and processed with the help of IT (Voogt, 2008). Since we have instant and ubiquitous access to a significant share of all published content we are witnessing a growing debate in the Swedish media regarding knowledge vs. competences (Westerberg, 2013). The change towards an information society implies that countries have to adapt their curricula, due to the need of students to develop different competences than the ones addressed in the traditional curricula (Voogt, 2008).

The relatively poor performance by Swedish students in the latest PISA international report (OECD, 2013) has fuelled the debate even more. Those who prioritize skills before knowledge tend to highlight the importance of competences, which are argued to be essential for the future work life of students (Vigmo, 2010). There is a debate in Swedish society, which can be extended to the international arena, as to whether we may be focusing too much on the students' skills and neglecting other areas such as reading ability and the culture of effort. Enkvist claims, for example, that "a good quality education has more to do with a focus on literacy and effort, and not so much on the new technologies and the autonomy of the students" (Enkvist, 2009, p.1, my translation).

Regardless what area of competence is emphasized, IT skills are becoming more and more important. Hylén warns that there are no jobs anymore where computer skills are not required by employers and that we can hardly get by in society without such skills (UR, 2013). In fact, Voogt
(2008) claims that many students who are about to start their primary education will eventually get kinds of jobs that do not even exist yet and which probably involve even greater demands for IT skills.

It has been argued that it is no longer possible to distinguish between traditional media and so-called new media. Oxstrad (2009) claims that, from the first decade of the 21st century, what he calls "media literacy" has contributed to merge digital literacy and the more traditional audio-visual literacy, and that new communication platforms, multimedia and mobile communication technology have been "erasing the difference between digital and electronic media" (p. 6).

A few decades ago, the debate was more centred on issues such as the new mass media that were emerging and how these mass media should be considered by the main audience. For example, Umberto Eco (1994) reported of intellectuals from the mid-60s to the late '80s alarmed by the emergence of a mass or pop culture, people he called "the apocalyptics", i.e. cultural elites who feared the destruction of their world by mass communication and popular entertainment. Today, traditional mass media such as TV, film, radio and newspapers are not dependent on the same physical tools as before. We do not need a TV device, or go to the cinema, or buy a FM radio device, or buy a paper newspaper to access that same content. We may just use a computer or mobile device such a smartphone or tablet device.

2.2 The implications of digitalization for schools, students and teachers

This debate has an influence on what is taught in schools. How can we prepare students for today's information society in an optimal way? The typical knowledge and skills in traditional areas such as reading, writing and arithmetic (the three Rs) are considered to be no longer sufficient, and it has been suggested that they ought to be complemented with four other skills, known as the four Cs: 1) critical thinking and problem-solving skills, 2) communication skills, 3) collaboration skills, and 4) creativity and innovation (Quast, 2011).

It seems that there is no way back in this educational model, as the key competences that students should master have already been redefined and regulated in many European curricula (OECD, 2005). The European Union, for example, has categorized and described eight key intellectual competences (EU, 2007): communication in the mother tongue, communication in foreign languages, mathematical competence and basic competences in science and technology, digital competence, learning to learn, social and civic competence, sense of initiative and entrepreneurship, and cultural awareness and expression. The European Parliament considers these eight key competences to be all equally important, because all of them can contribute to a successful life in a knowledge society. According to the Swedish curriculum (Skolverket, 2011b), school is responsible for ensuring that each student can use modern technology as a tool in the...
search for knowledge, communication, creativity and learning. The Swedish curriculum was updated for all schools levels in 2011 and is highly influenced by the recommendations issued by the European Parliament regarding key competences for lifelong learning (EU, 2007).

Recent statistics of IT use in Europe show that the implementation of technology in schools has increased significantly in the last years. The conclusion in one European study (EU, 2013) is that there is an easier access to and a higher use of IT in European schools, and that several obstacles remain nevertheless. European teachers still maintain that the biggest obstacle to IT use is insufficient IT equipment. IT is often used by teachers to prepare lessons, but its application in the classroom for learning remains the exception. Teacher training in IT is rarely compulsory, and most teachers devote their own time to professional development in this respect. European teachers generally believe that there is a need for IT to be fully exploited in teaching and learning (EU, 2013).

Regarding the question whether IT can enhance students' "performance, quality of work and achievement", Passey et al. (2003) report that there are indications of a positive impact on student performance where IT is integrated in subject teaching. In their study, IT enabled students to make improvements to the quality of their work in terms of spelling, grammar and general appearance. Students that were interviewed showed without exception that the quality of their work had improved with IT generally because of the associated improvements in the areas of spelling, grammar, editing and appearance of work. This had a positive impact on their grades as well. Other students indicated that IT enabled them to deal with coursework more effectively, to redraft, to be more creative and to work faster and more neatly. As a result of recording and sharing coursework marks electronically, students always tried to improve on their previous grades. Many teachers reported too that IT enabled them to have higher expectations of the students and for students to have higher expectations of themselves.

In this same study, Passey et al. (2003) report on positive effects of IT on behavior and attendance. IT made students more committed to the learning task, allowed them to feel more in control and able to produce more professional-looking output. Furthermore, students were more focused and less distracted in lessons. The use of the Internet and email encouraged more positive activities, longer engagement with school work, deeper and wider discussions with a broader group of friends, and a sharing of emotions through chatting.

Regarding the distraction factor, Pettersson (2012) points out that computers and portable devices can indeed be a distraction in class, just as any classmate sitting next to any student can be a distraction too. He claims that the fact that many teachers lack the necessary IT competence, and do not teach with IT the right way, can contribute to students becoming distracted by computers in the classrooms. He states that in such cases computers just become expensive typewriters in the hand of
the students, since the real problem is not whether to use IT in schools but how to use it (Pettersson, 2012).

2.3 Digitalization in Sweden and in Swedish schools

The Swedish National Agency for Education has released a report (Skolverket, 2013) about IT use in Swedish schools. One of the findings presented is that IT devices and their use are more widespread now compared to the last time this was measured (Skolverket, 2008). However, a higher number of computers and portable devices does not necessarily mean that IT is more efficiently used in class. In addition, the use of IT was almost as restricted in 2013 in certain subjects as it was in 2008. Swedish and Social Studies top the list of subjects where IT is more used, while English is the third most popular one. Next come Science and Maths (Skolverket, 2013). Figure 1 provides an overview of the extent to which computers are used for different purposes in Swedish schools.

As mentioned above, access to IT in schools has greatly improved. In fact, the rate of students per computer has almost halved, and there is a growing tendency towards a 1:1 ratio, as well as towards using more tablet PCs in class.

The 2013 report by Skolverket also includes information regarding how students perceive their own IT competence. The impression gained is that students in general have a high opinion of
their digital skills. Those areas where students reported having the highest competence were: finding information on the Internet, writing assignments, writing presentations and working with multimedia (pictures, sounds, music and videos) (Skolverket, 2013, p. 59).

In view of such results, a discussion of the term digital natives may be in order. According to Bennett (2012), this term was popularized by Prensky to denote young people who were highly literate and engaged in the area of technology, and Prensky claimed that it was due to young people's immersion in digital technologies from birth that they had learnt in a manner different from that of older generations. But Bennett (2012) points out that the term digital natives (its counterpart being digital immigrants) is misapplied when used to generalize about an entire generation, as only a small part of the population can actually fit Prensky's characterization. There is a significant diversity in IT skills, knowledge and interests among young people, as well as an important digital gap, according to Bennett (2012). It has been observed, too, that a significant number of children "cannot really use computers" (Scott, 2013). According to him:

The prevailing wisdom is that all under eighteens are technical wizards, and this is simply not true. They can use some software, particularly web-apps. How can a generation with access to so much technology, not know how to use it? […] It didn't used to be like this. Using an operative system used to be hard work (Scott, 2013, para. 28).

Scott argues that there has been such an enormous advance in technologies and in making interfaces intuitive and user-friendly, that it is no longer necessary for IT users to deal with such things as installing and updating drivers in Windows or to dedicate a considerable amount of time to configuring systems. As a consequence, Scott doubts that most youngsters can be considered digital literates: "Today, let’s assume that 95% of us have a computer in our homes, then I would guess that around 5% of owners are technically literate" (para. 38).

Skolverket's report (2013) sheds light, too, on those conditions that have not changed or that have actually worsened. For example, teachers demand better professional training regarding the effective use of IT as a pedagogical tool in the classroom, as well as means and tools to prevent cyberbullying. There are online resources like PIM (Practical ICT and Media competence for teachers; see http://pim.skolverket.se), which is a teacher training initiative from Skolverket that has helped teachers with an interactive resource website since 2008. PIM recognizes 5 different levels of IT-competence, of which level 3 is the recommended minimum level for a teacher. However, the fact that PIM has announced the closure of its service on July 1st, 2014, seems to confirm teachers' fears that current IT education and support for teachers are insufficient. Even while PIM was still operative, 73% of all teachers expressed that they lack sufficient access to pedagogical IT support (Skolverket, 2013). In fact, Samuel and Bakar (2006) had previously acknowledged that there was considerable room for improvement regarding IT skills among teachers, and especially senior teachers.
An important step for teachers to develop their IT skills would be the existence of an IT plan in every single school in Sweden. However, the number of compulsory schools with an IT plan has actually dropped if we compare the latest figures to those from 2008. In 2008, 62% of the schools had an IT plan, but only 51% in 2012 (Skolverket, 2013, p. 53). Among compulsory schools that do have an IT plan, it is, according to the school law, a standard procedure for this plan to include a description of how IT is planned to be implemented in the students’ education and in what way it can constitute a pedagogical tool (Skolverket, 2013, p. 54).

2.4 IT and pedagogy

Although IT use per se is not associated with any particular type of pedagogy or teaching approach, its characteristics have led different authors to argue that IT use in schools can benefit a certain type of teaching, usually the type that is prevalent in schools today and that has to do with the type of society we live in today. Voogt (2008) describes a number of pedagogical changes that he has observed in the shift from what the calls an industrial society to a modern information society:

Table 1 - Overview of pedagogy in an industrial vs. a modern information society according to Voogt (2008, p. 2)

<table>
<thead>
<tr>
<th>ASPECT</th>
<th>LESS (pedagogy in an industrial society)</th>
<th>MORE (pedagogy in the modern information society)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTIVE</td>
<td>• Activities prescribed by teacher&lt;br&gt;• Whole class instruction&lt;br&gt;• Little variation in activities&lt;br&gt;• Pace determined by program</td>
<td>• Activities determined by learners&lt;br&gt;• Small groups&lt;br&gt;• Many different activities&lt;br&gt;• Pace determined by learners</td>
</tr>
<tr>
<td>COLLABORATIVE</td>
<td>• Individual&lt;br&gt;• Homogeneous groups&lt;br&gt;• Everyone for him/herself</td>
<td>• Working in teams&lt;br&gt;• Heterogeneous groups&lt;br&gt;• Supporting each other</td>
</tr>
<tr>
<td>CREATIVE</td>
<td>• Reproductive learning&lt;br&gt;• Apply known solutions to problems</td>
<td>• Productive learning&lt;br&gt;• Find new solutions to problems</td>
</tr>
<tr>
<td>INTEGRATIVE</td>
<td>• No link between theory and practice&lt;br&gt;• Separate subjects&lt;br&gt;• Discipline-based&lt;br&gt;• Individual teachers</td>
<td>• Integrating theory and practice&lt;br&gt;• Relations between subjects&lt;br&gt;• Thematic&lt;br&gt;• Teams of teachers</td>
</tr>
<tr>
<td>EVALUATIVE</td>
<td>• Teacher - directed&lt;br&gt;• Summative</td>
<td>• Student - directed&lt;br&gt;• Diagnostic</td>
</tr>
</tbody>
</table>
Voogt (2008) states that IT implementation in the classroom often does not fit into the teaching culture that still exists today and that teachers often feel that IT use may undermine the general sense of efficacy in class. Regarding the educational software that is used in schools, Voogt considers it a problem that it often comes in the form of individual programs that do not integrate well with existing textbooks (Voogt, 2008).

Petersen and Bunting (2012) studied a group of teachers with different ways of using IT and found that there is a connection between teachers who stimulate teamwork and those who use IT more often in their teaching. They, too, compare "traditional pedagogy" vs. "emerging pedagogy" (Petersen & Bunting, 2012, p. 1; cf. Table 1 by Voogt (2008) above). The former is connected to behaviourism and the idea that the teacher has the role of an expert who transfers knowledge to passive students who reproduce that knowledge. Knowledge is looked upon more as a product than as a process. Behaviourism has influenced education ever since Skinner spread the belief that wrong answers should get negative responses, whereas right ones should get rewarded. This is essentially a carrot and stick approach, meant to induce certain behavior in individuals. Knowledge is, according to this approach, something absolute that can be transferred and that reflects universal truths about reality (Petersen & Bunting, 2012).

By contrast, "emerging pedagogy", according to Petersen and Bunting (2012), shows similarities to constructivism, where the individual learns primarily via establishing relationships with peers, and the teacher is considered as more of a knowledge organizer than a knowledge transmitter. To obtain knowledge, according to the constructivist view, is a mental activity that requires individuals to code and to structure the information that is received. Students are responsible for organizing their work; they work in groups and try to find solutions to tasks and assignments based on problems. Vygotsky and the socio-cultural perspective are a crucial influence here, where the teacher supports and motivates students and provides the necessary tools for them to solve the tasks at hand (Petersen & Bunting, 2012).

The first attempts to apply IT in education, not least in language training, go back to the 1960's, when a new approach emerged: CALL (Computer-Assisted Language Learning), which introduced technology in the classroom. As described by Chadima (2012), computers started to be used as an aid, to reinforce the material that needed to be learnt with the help of interactive activities. Behaviourist favorites such as drills and repetitive practice constituted the base of this method. Students were encouraged to do and repeat a number of exercises with a focus primarily on grammar. Computers were considered perfect tools since they did not get bored presenting the same material again and again on an individualized basis, they could provide immediate non-judgmental feedback, and they let students work at their own pace (Chadima, 2012).
Davies (2001) remarks that early CALL lacked imagination and skills on the part of the programmers. Later, CALL widened its scope, embracing the communicative approach and new technologies. Then came multimedia CALL, with more advanced computers, human voice recordings, images, sounds, pictures and video presentations. Interactive videodiscs were introduced, with voice recording and simulated dialogues with native speakers. Davies’ article dates back to 2001, when the Internet was still quite young. The Web had not yet reached "the interactivity and speed of access offered by CD-ROMs or DVDs" (Davies, 2001, p. 3). In the year 2014, only 13 years after these words were written, the general feeling is that a fast internet has existed for ages, but it has not really been so until quite recently.

2.5 Motivation

It has been argued that motivation is a pivotal component in learning (see e.g. Deci & Ryan, 2000; Löfving, 2012). Deci and Ryan (2000) have analyzed different types of motivation and distinguish between intrinsic and extrinsic motivation in all of us. Intrinsic motivation refers to doing something because it is inherently interesting or enjoyable, and extrinsic motivation to doing something because it leads to a separate outcome. They have formulated the Self Determination Theory (SDT), which analyzes these two types of motivation, and conclude that an intrinsic or internal motivation is desirable since it is optimal, self-determined, balanced and sustainable over time. They claim that being motivated or not is a psychological factor and that there are three innate psychological needs in all humans: competence, autonomy and relatedness, which can facilitate self-motivation (Ryan & Deci, 2000).

Löfving (2012) observes that the carrot and stick approach is only beneficial to extrinsic motivation and should be used only when we are looking for short-term results. Regarding how to achieve a sustainable autonomous intrinsic motivation, Stone, Deci and Ryan (2009) point out that changing the learning climate to support autonomy, competence and relatedness makes individuals internalize existing rules and act in a creative, self-determined and proactive way. Those individuals that become intrinsically motivated can thus work on the basis of pleasure, passion and interest.

However, Taylor (2013) is doubtful whether motivation is a relevant factor in language learning. A study published in 2009 claims that, among all the factors that can contribute to educational achievement, the most important were peer influence, home environment, teacher-student relationships, and estimation of own performance. Motivation ranked 51st out of all 138 contributing factors. Students are naturally motivated and they can show a remarkable understanding of classroom achievement, according to Taylor (2013), who claims that students have a voice that deserves to be listened to, valued and taken into account. Teacher motivation and teacher attitude towards the students are extremely important and can even be more relevant than student motivation. Taylor (2013) mentions that there is a risk, too, that negative perceptions of a
teacher may lead to negative perceptions of the subject, e.g. English. The student seems to create the association that if he or she fails the subject and does not like the teacher then that subject will be not liked in the future.

Stockwell reports on different motivational benefits of IT, among which there is the “novelty effect” (2013, para. 4). This effect was already detected in the first CALL environments. Other authors describe the same effect, although under a different name. For instance, the "technology pull" phenomenon is reported to appear when instead of using the technology to reach the goals of the subject, the technology becomes a goal in itself (Petersen & Bunting, 2012, p. 1). Other motivational factors of IT described by Stockwell (2013) are that IT use in class lets the students remain anonymous, that the students do not need to care about interacting and may have a more individualized instruction, with more control on learning speed, and get rapid and non-judgemental feedback predominantly via drill-based activities. Most of these factors had already been described by authors that studied the first CALL environments, although there is the important difference that the Internet did not exist in the early stages of CALL, and it was only in the final stages of CALL that the World Wide Web started to become popular.

2.5.1 Authentic learning materials

Henry (2013) describes the importance that authenticity has in the English classroom, and the positive impact that it has on motivation. Authentic learning materials, i.e. authentic texts or audiovisual content designed for native speakers, are argued to have a positive effect motivating individuals. In those cases where a big authenticity gap in teaching materials is found, the consequence becomes low motivation in the student. Henry (2013) outlines the enormous possibilities that games may have in the English classroom, due to the fact that games have a high authenticity factor.

Regarding the use of social networks such as Facebook in the classroom, this can be considered as authentic learning material without a doubt. There are risks, however, in trying to "colonize" young people's social worlds (Henry, 2013, loc. 3391). It is possible that students see the use of social networks in class as something that may intrude on their personal lives, and there is a risk that this is met with resistance. Because of this, it is important to maintain identity boundaries between students' lives inside and outside school, according to Henry (2013). But there are other authors, like Diaz (2012), who, while recognizing that there is an ongoing debate as to whether the use of social networks in class should be avoided for the sake of privacy, see an enormous potential in using these network as a tool for education. According to her, they should not be seen as a

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1 location number (Kindle e-book)
"quick-fix" solution to capture the attention of students for a brief time span. It is not about playing around in Facebook now and then, but about coordinating pedagogical ideas with new tools and cooperating in a more efficient way. Diaz (2012) claims that social networks in the classroom are here to stay and that schools should be saving the energy that they dedicate to trying to block and refusing to use these valuable tools to reflect upon how to integrate them in school in a natural way.

2.6 The 1:1 approach

The one-to-one or 1:1 approach entails providing each student with a laptop computer. The first 1:1 program was the One Laptop Per Child (OLPC) initiative, which aimed to give a low-cost computer ($100) to disadvantaged schoolchildren in developing countries, as a means for them to teach themselves and each other. It can be said that the project failed in many ways, and its main weakness was that it did not anticipate social and institutional problems. Nevertheless, the OLPC project experience has reported positive effects on students, such as decreased absenteeism and more active participation. Another drawback was underestimating educational software, which was lacking or difficult to use. A more comprehensive and promising approach would have involved training teachers, creating software and digital content, delivering maintenance and support, and sustaining a long-term commitment. The OLPC project represented a praiseworthy initiative in developing innovative technology, but failed in understanding how to deploy it successfully in the context of a new educational environment (Kenneth, Dedrick, & Sharma, 2009).

More 1:1 projects have been implemented in different countries around the world, and today it is common for schools to give a computer or portable device to each student, as their chosen IT strategy. In recent years, mobile devices have been spreading more and more due to reduced costs, higher performance, better battery capacity and reduced size and weight (Tallvid, Lundin, & Lindström, 2012). The authors, who have studied 1:1 projects in secondary schools in Sweden, observed, however, that schools seem to struggle with implementing IT in everyday practices.

The OLPC organization stated in their report for the years 2009-2010 (OLPC, 2010) that different improvements had been documented regarding the implementation of 1:1 projects in different countries. Students who had used their laptops showed an improvement in reading comprehension, vocabulary, spelling, pronunciation and overall learning. Furthermore, the results included improved self-esteem and motivation, higher attendance and better learning outcomes. Repetition rates decreased and a better attitude among the students could be observed. However, students with their own laptop were also more critical about their education, their school and their own academic performance. Students from 2 out of 3 schools achieved a substantially higher performance than students without such an intervention after 6 months in an OLPC program (OLPC, 2010).
2.7 IT and English language teaching and learning

The CALL methodology described above (Davies, 2001; Chadima, 2012) was an important precedent that showed that language learning can benefit from IT, especially to train certain areas that require the internalization of rules, such as grammar. Thanks to advances in the latest technologies, virtual learning environments are now being successfully utilized to develop English language skills among students. According to Samuel and Bakar (2006), English lessons with multimedia elements can be a powerful motivation booster and provide bored students with exciting new ways to learn. IT tools can assist students in acquiring English language competence enhancing the quality of their learning experience and do not suffer from the time and space limitations found in traditional teaching. Integrating IT tools in teaching can lead to students increasing their learning competencies as well as their opportunities for communication. Key findings from the so-called ImpaCT2 study show that the use of IT tools in teaching and learning has positive effects on motivation, performance, communication and process skills and that IT tools let students learn more autonomously. Apart from motivating pupils and raising their self-esteem and confidence, IT can enhance pupil interaction, verbalization and involvement in collaborative learning, both in the English class and in general terms (Samuel & Bakar, 2006).

Cutrim Schmid (2008) describes the pedagogical benefits of adopting a multimedia-oriented approach in the classroom, although she identifies potential problems too. She defines multimedia as "the use of computers to present text, graphics, video, animation and sound in an integrated way" (p. 1). Teachers usually see multimedia as a vehicle to improve foreign language learning, and especially in the area of vocabulary acquisition, where the interaction between sounds, words and images is considered conducive to memorisation (Cutrim Schmid, 2008).

But there are risks, too, in using multimedia material, as, under certain circumstances, such materials might even hinder learning and have deleterious effects on the learner. According to Cutrim Schmid, something that plays an important role in how students code new information is the students' prior knowledge of the subject matter in question. In her study, the use of multimedia resources was mostly considered to facilitate the understanding of new input by learners. But a number of students felt overwhelmed by the amount of information they needed to acquire in a short period of time, they felt "bombarded" in a way, or experienced difficulties to "digest" stimuli. Furthermore, some students reported having had the feeling of being "spoon-fed" by the teacher (Cutrim Schmid, 2008, p. 11). In such cases, using IT in the classroom runs the risk of becoming counter-productive if students feel that it negatively affects their imagination. Some students may have difficulties processing different representations and to construct their own mental representations when exposed to the subject material. When information is presented in multiple modalities, this is only seen as advantageous by those learners who are able to actively process such
information. Teachers should thus be careful to balance the number and kinds of representations provided to the students and avoid cognitive overload. They should also encourage students to engage actively with multimedia resources so that they can process the information more effectively (Cutrim Schmid, 2008).

3 Method

As the main focus of this study has been to determine the effects of the use of IT on students, and specifically on students studying English as foreign language, two groups of twelve-year-old Swedish students in grade 6 were selected to work with two different teaching methods: the first group (Group 1) worked and was taught with a more digital approach, based on IT\(^2\), whereas the second group (Group 2) worked and was taught in a more traditional style, with no IT support. Group 1 consisted of one class, whereas Group 2 consisted of two classes. Both groups also completed two similar vocabulary tests, based on the preceding lessons, as means to measure the effects that IT in the classroom had on performance. In addition, both groups filled out a survey that intended to study if working with IT makes the student more motivated. On the one hand a number of questions (see fig. 3 to 12) aimed to find out if the daily IT use of these students in the English classroom makes them more motivated (the school in question was a 1:1 one). On the other hand, the last questions (see fig. 13 and 14) aimed to find out if the different teaching sessions performed with the two groups (digital vs traditional approach) had especially inspired and motivated one of the groups, i.e the group with the intensive IT use.

There was no particular reason why it was Group 1 that was chosen for the digital approach (or why it was Group 2 that was subjected to the more traditional approach). Group 1 comprised one class and Group 2 two classes due to practical reasons. Since I had to teach three grade 6 classes during my practice period, preparing three different lessons to be taught in a day for three different groups would have been complicated time-wise. More details are given below (see subsection 3.2) about the students, the classes and the lessons.

3.1 Initial considerations, preparation and ethical aspects

Denscombe describes the "observer effect" or "Hawthorne effect" (2010, loc. 1496), which has to do with the risk that an experiment can heighten people's sensitivity to being observed. If participants in an experiment become aware that they are the focus of attention for research, there is

\(^2\) For a discussion of what can be considered IT, see section 4.3
a risk that they will act differently, become self-conscious and change their behaviour, with potentially decreased validity of the experiment or observation as a consequence. In order to avoid this, I only informed the students in the two groups that I would be conducting a study, without going into details regarding its nature. The students’ guardians were informed via a letter (cf. Appendix 1) that explained the field of research and that the study would adhere to the core principles of research ethics as described by the Swedish Research Council (Vetenskapsrådet, 2002). In practice, it was clarified that participation was voluntary and anonymous, that the data obtained would be treated as confidential, and that in case the guardians did not consent to a student participating in the study they could contact the teacher to have that student exempted.

3.2 Description of the groups and lessons

3.2.1 Group 1 - digital approach

Group 1 comprised 21 students and corresponded to one of the three grade 6 classes that took part in this study. Group 1 was taught with a digital approach, i.e. IT was used during the two lessons of the experiment. Each lesson lasted 40 minutes, and each was dedicated to one textbook unit. One lesson was based on a unit about Robin Hood and the other one on a unit about Braveheart.

No book was handed to the students at the start of either lesson. Instead they were told that they would be using their computers during the second part of the lesson, but that, until then, they should not open or use their computers. They were asked what they knew about the two protagonist rebels from the textbook unit we would be working with, i.e. Robin Hood and Braveheart, respectively. The textbook lesson was called "Fighters", and the objective was to learn new words and to practice and reproduce this new learned vocabulary in another book called "workbook". However, both books were avoided with this group, since the goal was that the students would not use papers books but digital media instead. The students contributed with their comments about what they knew about these characters. A YouTube trailer about Robin Hood/ Braveheart was played to the class with the help of a projector and speakers, as an introduction to this new lesson called "Fighters".

Next a scanned page from the students' regular textbook was projected on the screen. The picture showed the text and a word list in the margin with the Swedish translations. The textbook was Good Stuff A by the Swedish publisher Liber. At the same time, a recording was played, twice, from the CD that accompanies the textbook mentioned, with a native speaker reading the text. Then the students were allowed to read the text again by themselves for a few minutes and were told to try to remember as many words as possible, since they would soon be working with these words.
Immediately afterwards, they were allowed to open their computers and they were given the address of a website hosted by the publisher Liber called Glosmaskin, (‘vocabulary machine’). The website features online interactive quizzes where the students can choose one of the textbook lessons in order to practice new words in a game-like format.

Regarding the way these two digital-approach lessons were taught (the lesson based on the Robin Hood unit and the lesson based on the Braveheart unit), the aim was to make them as interesting as possible. An emphasis was put on being neutral and on not showing any preference for any of the teaching approaches.

3.2.2 Group 2 - traditional approach

Group 2 comprised 45 students belonging to two of the three grade 6 classes that took part in this study (23 + 22 students). Group 2 was taught with a traditional approach, i.e. no computers or other IT were used during the two lessons. In connection with this approach, too, each lesson lasted 40 minutes, and each was dedicated to one unit.

The students did not use their computers at all in this approach. In each of the two lessons they were asked what they knew about the Robin Hood and Braveheart, respectively, and contributed with comments. Next, the regular textbook was used and the students read the corresponding text from the book, which once again included a word list with the Swedish translations. Instead of playing a recording of the text, I read the text to the students, twice. Then the students were allowed to read the text again by themselves for a few minutes and told to try to remember as many words as possible, since they would soon be working with these words. Immediately afterwards they were told to open their exercise books and complete the vocabulary exercises corresponding to the text at hand. As in the lessons with Group 1, I tried not to convey any personal preferences regarding teaching approaches.

3.3 Vocabulary tests to measure performance in relation to IT use

The students were given a vocabulary test on the day following each of the two units: one test for the Robin Hood unit (cf. Appendix 2) and another test for the Braveheart unit (cf. Appendix 3). The vocabulary tests were identical for the two groups, and the students had not been informed about them beforehand. The students had 10 minutes to complete the tests, which featured nouns and verbs that had appeared in the textbook and that the students had been working with during the previous lessons. The Robin Hood test comprised 28 words in Swedish for which the students had to give the corresponding words in English. The other vocabulary test, relating to the Braveheart
unit, featured 17 words to be translated into English. Each correct answer scored 1 point. However, if the word was slightly misspelled, the student got half a point.

3.4 Survey to measure motivation and other factors

A questionnaire was administered the day following the vocabulary tests in order to find out about the students' attitude to the use of IT in school in general and about their opinions regarding the lessons with the different teaching approaches (Appendix 4). The students filled out the questionnaire in class.

Since most students in grade 6 have not attained a high level of English proficiency yet, there was a risk that they might not understand certain words and thus fail to grasp one or more questions in the survey. Therefore, a basic translation into Swedish of all the questions in the survey was provided to the students (Appendix 5). In the introduction, they were reminded that participation was voluntary and anonymous and that they could interrupt their participation at any time. The survey questions were of the multiple-choice type, but many were also open-ended in the sense that the students could add their own comments.
4 Results and discussion

4.1 Vocabulary test results - IT and performance

Regarding Group 1, 11 students out of 21 completed the Robin Hood vocabulary test and 17 out of 21 completed the Braveheart one. Concerning Group 2, which comprised two classes and whose results are presented as the average of them, 34 out of 45 possible students completed the Robin Hood test, and 31 out of 45 completed the Braveheart one (cf. Table 2).

Table 2 - Number of students that took each of the vocabulary tests

<table>
<thead>
<tr>
<th></th>
<th>Number of students in classroom</th>
<th>Number of students that took the Robin Hood test</th>
<th>Number of students that took the Braveheart test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 (digital approach)</td>
<td>21</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Group 2 (traditional approach)</td>
<td>45</td>
<td>34</td>
<td>31</td>
</tr>
</tbody>
</table>

Figure 2 - Average vocabulary test scores

The results of the vocabulary tests (cf. Fig. 2) show that, in both tests, Group 1, where IT was implemented, achieved higher scores compared to the scores obtained by Group 2, where a more traditional teaching approach was used.
4.2 Survey results - IT and motivation.

The results regarding the two groups that participated in the survey will be presented in the form of bar charts. Where the answer alternatives were “yes”, “no” and “I don’t know”, the colour green has been chosen to represent “yes” answers, red for “no” answers and orange for “I don’t know”. The reason why only combined results for both groups are shown in some charts is that in such cases the question asked had to do with IT in the students’ everyday school context. When the results for Group 1 and Group 2 are shown, the question posed applied to the specific lessons that were part of this study, i.e. the digital approach lessons with Group 1 and the traditional approach lessons with Group 2.

Fig. 3 shows the results for the first question, which was whether students like using IT during English lessons. The answer “yes” had the overall highest scores, and not a single student answered “no”. However, 25% of all students who participated in the survey chose not to answer the question at all.

What do students mean when they say that they like using IT? That it is fun? That it is useful for them to improve their English? Maybe the question was asked too broadly. In any case, the students' answers can be interpreted in the way that they enjoy working with IT. As will be seen below (Figure 5), only 1% of the students thought that working with the computer is boring.

Different researchers (Stockwell, 2013; Petersen & Bunting, 2012) have studied the aspects that students find most appealing when they work with IT. A common reason that respondents give for liking IT is that the new devices are exciting to use, that they are some kind of toy. Stockwell
(2013, para. 4) refers to this reason for liking IT as the “novelty effect” and Petersen and Bunting (2012, p.1) as the “technology pull”. This factor might be behind the high approval rates for IT in English class in the present study as well.

![Combined results graph showing reasons for liking IT](image)

Figure 4 - “Working with computers is positive because...”

Fig. 4 shows the reasons students chose as to why working with computers is positive for them. The option because it is fun was the one with the highest approval rate, followed by the ones having to do with the usefulness and multitasking capabilities of IT. Next in the order comes the alternative that refers to games. Note that multiple answers were possible.

The fact that 0% of the students chose the reason because I can communicate with more people is worthy of consideration, because that aspect of IT is one of the most commonly claimed advantages, not only regarding communication between students, but also between them and their teachers and between parents and teachers, although this effect may have gone unnoticed by the informants. Passey et al. (2003), for example, highlight the positive side of IT communication, since it makes possible more positive activities, longer engagement with schoolwork, deeper and broader discussions with a wider group of friends, and a chance to share emotions through chatting.

The because it is fun option can be linked to the previous chart (Fig. 3), in connection with which different reasons were suggested why students may have claimed that they liked using IT in the English classroom. However, there are additional factors that can be used to explain why 53% of the students ticked the “fun” option, like the multimedia aspects mentioned by Cutrim Schmid (2008) or Samuel and Bakar (2006), who claim that multimedia elements can be a powerful
motivation booster and provide bored students with exciting new ways to learn.

The *because it is useful* option and the one called *because you can get more things done*, which got approval rates of 31% and 21%, respectively, by the students, could possibly be joined together, which would make them the second-most popular option. The Skolverket report (2013) described what the main uses of computers are among Swedish students, and the list of the eight most common tasks used in school (searching for information, writing assignments, presentations, playing games, working with multimedia, training a new language, counting and reading) gives us an idea of the multitasking capabilities of computers and how useful they can be in educational environments.

21% of the students in the present study agreed that *playing games* is a positive aspect of working with computers. The percentage seems low if we compare it to the last Skolverket report (2013, p. 69), where 38% of students had chosen that option. Based on my observations of the three classes during my stay at their school, I think there is another reason why 21% seems low too, namely that a common type of interruption during lessons was due to students playing computer games on the sly. A possible interpretation of this low percentage is that the verb *work* was used in the question, i.e. using games to improve English while *working*, and the students may have assumed that *working* and *playing* were not complementary activities.

![Figure 5 - "I do not like using the computer during English lessons because..."](image)

On being asked about drawbacks with computers in English class, most students ticked the options related to *physical* disadvantages of computers (the need to charge it regularly and it being *heavy*), since they need to charge it at home and bring it to school on a daily basis. It should be
noted that the computer model the students borrow from school is a Macbook Air, which is one of the lightest models available at the moment. Nevertheless, it is understandable that they see negative aspects of having to carry it every day from home to school and vice versa.

12% of the students stated that they found the use of computers distracting. Pettersson (2012), among others, expresses that IT can indeed be a distraction in class, although only when the teacher lacks the necessary IT competence. To what extent that has been a problem in the respondents’ educational experiences must remain an open question, however.

In response to the question regarding what the students like to use their computer for in the English classroom, the second most popular option proved to be as a communication tool (see Figure 6). In Fig. 4 above we have seen that 0% of students had acknowledged that they could communicate with more people when using IT. Here in this question we see that many students claim to like the computer as a communication tool. A possible interpretation of these apparently contradictory data is that students may not think that they communicate with more people thanks to the computer, but that they do use it to communicate with the ones they would communicate with anyway, and so they like the computer as a tool for that purpose. Puentedura (2013, p. 6) considers this IT use as a "tool substitution". IT here is not letting the student do something that was completely impossible to do before, like calling friends (there was the landline phone for example). IT is not being used in Puentedura's transformation level, since IT is not allowing the creation of new and previously inconceivable tasks, but it is indeed acting as a tool substitute, in the enhancement level that Puentedura (2013, p. 6) describes, where IT acts as a direct tool substitute.
and can be considered to serve as a direct tool substitute with functional improvement
(*augmentation* level) or as a direct tool substitute with no functional change (*substitution* level).

The most frequently chosen option was *I like to use the computer for video and audio*. There
is, indeed, a huge potential for different multimedia uses in the English classroom. Swedish students
frequently watch films and TV shows in English without subtitles (Tholin, 2012). Video and audio
are used in the classroom to improve the students’ English skills. All kinds of digital multimedia
material can now be easily projected on the classroom screen, e.g. connected to the teacher's laptop.
These materials are usually streamed from the Internet, and the need for the disc format (CD, DVD,
etc.) is today almost gone. Not so long ago, almost the only option was the analog format and
support, usually in the form of a TV and VHS player, or a cassette tape and stereo, or a big screen
projection in the assembly hall with a classic projector. Since a growing number of language
classrooms dispose now of a computer or portable device such as a tablet (e.g. the IPad) per student
(1:1 programs), and the tendency is that every classroom gets its own projector or smartboard
(Skolverket, 2013, p. 25), the possibilities of having access to multimedia material on a daily basis,
and to work with multimedia individually, or in small groups, have multiplied. One of the latest
tendencies is that students make their own video films and edit them in their own computers.

21% of the students answered that they like using their laptop in connection with
presentations. Skolverket reports (2013) that preparing computer-aided presentations is one of the
areas where students reported having the highest competence, together with finding information on
the Internet, writing assignments and working with multimedia. Since the students had a Mac
computer, the presentation software that they usually used was Keynote. However, they also had
Microsoft Office provided and installed by the school, including the popular PowerPoint program,
which they used too.

As to the computer being used to access information, this was the 4th most popular option
among the students, although Skolverket's report (2013) points out that it is the most common
activity that students perform with computers. Googling for information may be what they do most,
but the present study suggests that that is not their favorite IT task. Browsing, searching and finding
the wanted information can be a hard job, with search results in the form of thousands of millions
web pages. Students do not seem to have much choice here but to learn how to use Google or other
search engines in an optimal way. Going to the library and finding the desired information in books
and magazines is certainly possible but time consuming and less effective.

Only 17% of students chose *I like using the computer to play games*. As has been argued
above in connection with Fig. 4, it is rather hard to believe that playing games can be one of the less
popular computer-based activities, but maybe students were affected by the school context in which
the study was conducted and answered to some extent as they thought they would be expected to.
Fig. 7 shows the students’ responses to the question whether they like that the teacher uses IT, in the particular context of their English lessons. In both groups combined, 51% answered "yes", 20% answered "I don't know", and only 2% answered "no" (though the number of those who did not answer the question at all was rather high: 28%).

IT has been reported to be able to assist students in acquiring English language competency and to enhance the quality of their learning experience, as well as their opportunities for communication. As mentioned in the background section above, the ImpaCT2 study (Samuel & Bakar, 2006) has shown IT use in English teaching and learning to have positive effects on motivation, communication and processing skills and to make it possible for students to learn more autonomously. ImpaCT2 documents that teachers in schools where pupils used IT in English achieved better results and were more positively motivated, with the result that their self-esteem grew as well as their confidence. IT can, according to this study, enhance pupil interaction, verbalization and involvement in collaborative learning, in the English class and in the broader school context (Samuel & Bakar, 2006).
Figure 8 - "If the teacher is a non-native English speaker and we have to listen to a text from the textbook, I prefer to listen to the audio from the CD".

About the students preferring to listen to the CD audio (native speaker) instead of the teacher's voice, in case that the teacher is not a native speaker (cf. Fig. 8), most students answered (37%) that they did prefer the audio CD with the native speaker narrator. Henry (2013) emphasizes the authenticity factor and the fact that the audiovisual materials that are used in class should be as authentic as possible. Authenticity is reported to have a positive impact on motivation, and in those cases where a big authenticity gap in teaching materials is found the consequence often is low motivation in the student (Henry, 2013, loc. 3234). Henry (2013) refers specifically to videogames as having enormous possibilities in the English classroom, due to their high authenticity factor.

The following comments from students, regarding the question of why they prefer listening to the original CD rather than listening to the non-native teacher, illustrate that the use of authentic materials in class can be positive:

- Student 1: "Because it is easier to understand"
- Student 2: "Because you remember better and it explains better"
- Student 3: "It is easier"

Among the students that did not mind listening to the non-native teacher, or that actually preferred it, the following comments can be illustrative too of how important being a native English teacher can be in the eyes of the students:

- Student 4: "It does not matter who is talking as long as I can understand"
- Student 5: "I learn more if I listen to the teacher"
- Student 6: "It does not really matter as long as we can understand the teacher"
Figure 9 - "I would like the teacher to use social networks (e.g. Facebook) in the English lesson"

Regarding the students opinion of using social networks in English class, most students answered that they liked the idea (28%), but the number of students who were reluctant was almost as high (26%), followed by those who were not sure (20%). 27% of the students did not answer the question. Social networks are a relatively new phenomenon, although these students were born with them. They can be considered authentic materials and they are an effective and widespread tool for communication between peers, with possible benefits in class, and especially in language class, according to authors such as Diaz (2012), who defends the use of these social networks in class as a valuable tool with great potential for education. The high number of students that seem reluctant, or not so sure, about using social networks in class confirms, on the other side, the opinion of authors like Henry (2013), who argues that there are risks in trying to colonize young people's social worlds and that students may see it as an intrusion in their personal lives, and meet that intrusion with resistance (Henry, 2013, loc. 3391). He declares too that it is important to maintain identity boundaries in and out of school.

The following comments from students, regarding the question of whether social networks belong in the English classroom, illustrate that their use can be positive:

- Student 1: "It is easier to make questions that way"
- Student 2: "Because it is the easiest way to talk with others on the internet"
- Student 3: "Because it is cool"
Among the students that did not like the idea of using social networks in school, the following comments can be illustrative too of how important social networks in the English classroom are for students:

- Student 4: "It is no good"
- Student 5: "Facebook is private"
- Student 6: "Because it is distracting"

Fig. 10 shows the students' answers to the question of whether they are more motivated or not when using computers in the classroom. The combined results show that most students (53%) believe that their motivation has improved since their school gave them a laptop computer for them to use both in school and at home.
Figure 11 - "My performance has improved since the school gave me a computer for my own use"

About the students perception whether their *performance* has improved with the use of computers in the classroom (cf. Fig. 11), a great majority of students believe that their performance is better now that they have a personal laptop available for school activities. Students have the perception that IT can help them achieve better results. The results of the vocabulary test performed with the two groups in this study, where a digital vs. a traditional approach was tested, indeed shows that the introduction of IT elements in class can have positive effects on the performance of students and their overall results. Nevertheless, the students were unaware of the vocabulary test results, and the question posed referred exclusively to their performance in general in school since they got a computer for their own use.
About the students’ perception if their attendance has improved since they started using a computer in class, most students (37%) answered "yes". This can be interpreted as evidence that students feel more motivated to come to class more often and play truant less since they enjoy using their computers in class (cf. Fig 6 and Fig. 7). The answers to this question confirm the findings of authors such as Passey et al. (2003), who report on the positive effects of IT in school attendance, behavior and engagement in general.
Fig. 13 and Fig. 14 show the students´ answers to the questions "I like working with the workbook in class" and "I like working with the interactive homepage", respectively. These two questions were intended to ask about the specific context of the digital or the analogue sessions, and the following introductory sentence in the survey text meant to clarify that:

"We have worked with the yellow exercise book (Good Stuff A, Liber) and online interactive exercises. Now answer the following questions" (See Appendix 4 - Questionnaire).

Nevertheless, there is a chance that the students may have answered these two questions having in mind a general context of their English subject with their habitual teacher, since the questions were formulated in the present tense ("I like working with...") instead of the past ("I liked working with..."). Consequently, both possible interpretations have been considered here.

Fig. 13 compares the answers of both groups to the questions "I like working with the workbook in class". The fact that 28% of Group 1 students did not answer this question may be due to the fact that this group of students did indeed only use IT during the teaching lessons that were part of this study (they were being asked about a book here, though), and a number of students seem to either have ignored the question or to have answered considering the general context of them using the text books in English class with their habitual teacher. Considering the latter, 48% of Group 1 claimed that they do like working with the workbook in class in general. Group 2 shows an almost identical rate (47%) regarding this same question, although they are supposed to be referring here to the specific analogue sessions rather than to the general context. However, both groups stated to enjoy working with the workbook and both show a significant rate of approval. Group 2 seemed to dislike using the book more than Group 1 (29% vs 19%). A possible reason for this is that they had
an intensive use of the book and they did not see any IT during those days. They were used to having their laptops around, although they did not usually access the publisher’s interactive webpage.

Fig. 14 compares the answers of both groups to the question "I like working with interactive homepage". Group 1 and Group 2 show an identical rate of positive responses (38%). They both claim to enjoy working with the publisher’s website, which includes interactive content to work with. Nevertheless, the answers of both groups should again be interpreted separately. Group 1 was the one with intensive IT use during the teaching lessons that were part of this study. The question posed specifically alludes to these lessons. The fact that 38% of Group 1 said that they liked working with the homepage (vs 10% that did not like it and 19% that did not know) is indicative of the relative success that working with this IT tool meant for the class. The fact that they worked with this IT tool shows that they liked it and were motivated by it. However, 33% of Group 1 respondents did not answer this question. Since this question alludes to the teaching sessions with IT that Group 1 had, a higher number of Group 1 respondents were expected to have answered the question, but this was not the case. This is remarkable, and the present study cannot provide an answer to this high rate of students that decided to not answer this question.

Group 2 did not participate in the digital sessions, where the use of the publisher’s website constituted an important part, and thus their answers need to be limited to the context of their habitual teacher. However the positive response to this question is unexpectedly high. 38% answered that they like the website, while 18% answered that they do not like it and 16% that they did not know. 28% ignored the question. It is possible that the contact that both groups had in school may have influenced Group 2’s answers in a positive way, since they may have accessed and tested this homepage out of curiosity because of the constant contact that Group 1 and Group 2 had in corridors and in the whole school. In any case, Group 2’s answers show a positive response to the use of this IT tool, independently of how long access they may have had to it.

The following comments from students illustrate their positive attitude towards using the textbook in English class:

- Student 1: "Because I write on the book"
- Student 2: "I like it because it is fun to work with"
- Student 3: "It is good to write by hand"

Among the students that do not like using the textbook, the following comments can be illustrative too:

- Student 4: "It is boring"
• Student 5: "It is boring and I do not understand"

29% of Group 2 (digital group) answered that they did not like working with the workbook in class, as against 19% of Group 1 (analogue/traditional group). A possible reason that a higher number of Group 2 participants stated that they dislike working with the workbook may be that they had been working only with the textbook during some days in a row, since they were the analogue group (vs. the other digital one). Nevertheless both groups answered quite positively to the question, since 48% of Group 1 and 47% of Group 2 answered that they like working with the workbook in class.

![Figure 14 - "I like working with the interactive homepage"

About the students' opinion of working with the interactive homepage in class, most of them (38%) answered that they like working with the interactive website from the publisher. Here are some of their comments:

• Student 1: "It is a good page to work with"
• Student 2: "It is fun"
• Student 3: "You test yourself about how much you know"
• Student 4: "You improve your vocabulary"
• Student 5: "You learn quite quickly with it, then it becomes easy"

The first CALL introduced the behaviourist approach as a valid and useful methodology in language class. Through repetition students could reinforce the material that had to be learned, and
a later CALL introduced more interactive elements, which were also possible thanks to the development of new and more advanced technologies in IT (Davies, 2001, p. 2). Some basic and fundamental characteristics of CALL remain, although they have been improved and made much more fun to work with, such as the ones described by Chadima (2012), i.e. to be able to work individually, to provide immediate feedback and to let the students work at their own pace.

The fact that students used this online tool and benefitted from it, as well as enjoyed working with it, shows that the behaviourist approach is still valid and can be beneficial in the language class, in particular in the area of vocabulary training. Long gone are those days of almost only behaviouristic exercises in class, where the so-called repetition-based drill made students repeat chunks of isolated words and grammar structures in language labs over and over, but the fact that this online interactive tool, which encourages students to write the missing word in English while captivates them with game, quiz-like elements and aesthetics, combines IT elements with the right methodology, shows that it can motivate and boost the students' performance in the English class.

4.3 What really is IT? A discussion of the tools used in class

An important point to discuss is whether certain elements such as movies can be considered IT. Group 1 students watched, as a part of the lessons included in this study, movie trailers from the Robin Hood and Braveheart movies. Although most films nowadays are watched in a digital format, and in this case it was done via a computer and a projector screen, movies have been used in education for decades. Films have not always been streamed through computers, digital discs or media players. They have been played through tapes and analogic projectors, and used as an aid and support in classrooms. They were not found in every classroom, and from time to time the students could watch films played in projections rooms. In the 80s and 90s VCRs were gradually introduced in schools. Gradually many classrooms were equipped with TV screens hooked to these analogic video players. However, nowadays the higher affordability of IT equipment has facilitated a more widespread use of films in classrooms, to the point that teachers, at least in Sweden right now, have access to countless film clips, to millions of free materials available from the net (e.g. from YouTube). Even when the term IT or ICT had not started to be used, schools incorporated multimedia elements in class, and especially in the language class. In Sweden, the "expanded concept of text" (in Swedish, "det vidgade textbegreppet") was first used in 1994 in educational contexts referring to the convenience of integrating images, movies and sounds, in order to go beyond a mere use of text in oral and written contexts ("Det vidgade textbegreppet", 2010). This expanded concept of text can integrate different elements with audio, visual and/or aesthetic components such as myths, songs, drama, poetry, comedy, photographs, graphs, paintings, dance,
rhythm, etc. Some of the benefits that this expanded concept of text can bring are to support a variety of forms that promote learning. The Swedish curriculum (Skolverket, 2011b) emphasizes the different aspects of learning, and sees knowledge as "a complex concept that can be expressed in a variety of forms - as facts, understanding, skills, familiarity an accumulated experience - all of which presuppose and interact with each other" and highlights that "the work of school must therefore focus on providing scope for expressing these different forms of knowledge, as well as creating a learning process where these forms are balanced to form a meaningful whole" (p. 12).

Something that may not have been clarified well enough are those aspects that this study assumes and associates to the "traditional" or "analogue" lessons that were taught to Group 2. The validity of the assumption that a "traditional" or "analogue" lesson is (or has traditionally be) linked to a lack of visual or multimedia aids is something that could certainly be questioned.

A number of questions can be asked regarding the convenience of applying the label "IT" to watching movies in class. What elements can be considered IT in class? Is using the CD audio IT? Is playing a YouTube movie trailer IT? Is projecting a scanned image of the textbook page IT? It is certainly difficult to define how much or how many of these elements should be used in the classroom in order for the lesson to be considered based on IT, or characterized by it. The students in Group 1, the one with IT, had a combination of all these elements, and besides each student used a computer during the sessions linked to this study. Would it have been justified to call Group 1 based on IT if the students had not use their computers during the lessons? Possibly not, and in that case the label "multimedia" might have been more appropriate.

Puentedura (2013) describes different uses of new technologies that substitute old ones. Sometimes we use computers to do exactly the same thing that we were doing before. This is what Puentedura calls the "substitution" level. This is a level that does not change outcomes for the students. He describes too an "augmentation" level, where new technologies help us accomplish tasks a little bit easier, a little bit faster, a little bit more efficiently, technologies that offer us enhancements that we didn’t have before. These two levels, i.e. the substitution and the augmentation levels, enhance and offer improvements, but do not bring anything substantially new to the educational model. Those CALL language labs that were common to see in schools some decades ago, with classrooms full of cassette recorders and students repeating words in order to e.g. improve pronunciation, can be placed in this enhancement level that Puentedura describes. The cassette recorder substitutes the teacher speaking, and brings advantages such as better sound, access to authentic language, a chance to rewind the tape and repeat, etc. The drill repetition of things over and over again was effective, but not particularly motivating for the student, of at least for most students. Thus, the substitution of TVs, and VCRs with VHS tapes by bigger screens, with digital projectors that stream digital content from the Internet, would be on this enhancement level.
A new technology has substituted an old one and augmented the benefits that students can get from it.

Puentédura’s next two levels of IT are considered to be *transformative*, and they bring a real game change to the educational arena, and are the "modification" and "redefinition" levels. The new technologies open new possibilities and bring significant changes to the tasks that are made possible by the new technologies. An example of this next step that IT offers us are such tasks where IT allows a significant task redesign and a creation of new and previously inconceivable tasks (Puentédura, 2013). The task where the students from Group 1 engaged in the activities from the interactive homepage from the publisher were in this category, since the students not only trained with the vocabulary that they were supposed to learn from the lesson but also interacted between them as peers, and discussed actively about who had won more points (=more right words) and which word was the right word in a particular case that could let them get more points in the word game. This interaction was mediated by the technology in a way that it could not have been done if the technology had not been there. And this turned out to show better results in performance too, since Group 1 achieved better results in the vocabulary test than Group 2.

5 Summary and conclusion

The purpose of this study was to explore the impact of using IT in the English classroom. Two groups of Swedish secondary school students were studied and compared. A vocabulary test and a survey were used in order to answer the following research questions:

1. Can students’ performance be improved in the English classroom with the help of IT?
2. Are students more motivated when they use IT in the English classroom?

The group of students that used IT during the experiment scored an average of 60% right answers in the first vocabulary test, whereas the group of students without IT support scored only 34%. Regarding the second vocabulary test, the group with IT scored 50% of right answers and the group without IT scored 39%.

The scale of this study was rather small and not too representative. The group with IT had 21 students, where 11 students took the first test and 17 the second test. The group without IT had 45 students, where 34 took the first test 31 the second one. Although the results from this first part of the study cannot be considered conclusive, due to the small scale of the study, they show,
nevertheless, that IT could be of help in the classroom in order to achieve better results. The results of these tests show that IT could help students reach better results, as it has been claimed in previous studies (Passey et al., 2003, OLPC, 2010). The results of this first part of the study may not be considered reliable, even though future research could, after improvements and a higher numbers of informants, lead to interesting and more valuable results. There was a limited amount of time available for this study, and the number of students was rather small. It would not have been possible to take more time from the students’ ordinary schedule to spend on this study.

Furthermore, the results of the survey, which asked the students questions regarding IT use and motivation, tend to confirm that IT implementation in school, in the language class and in the English class in particular, can enhance the students’ motivation, because IT lets them enjoy more and work better, because IT is positive for a number of reasons (it is fun, it is useful, you can get more things done, you can play games and you can communicate more), because IT lets them increase the number of tools they can use in the classroom (audio and video, feedback between peers and with the teacher, presentation, and access to information), because IT facilitates access to authentic multimedia material (which is even more appreciated if the teacher is not a native English speaker) and because IT brings them access to social networks such as Facebook (which is mostly welcome by the students).

Even though the study indicates a positive response to IT use in the English classroom, there are improvements that could have been made, like making sure that the students had answered the last two questions (Fig. 13 and 14) with no margin for interpretation regarding the particular or general context of the questions. Nevertheless, the results of the tests and the survey are of interest and open a door for further investigations and research. Several interesting questions remain to be considered, like further research in the area of portable devices such as mobiles phones and tablets, teachers IT education and an in-depth study of educational theories such as constructivism in relationship with IT in the classroom.

Finally, IT use in school, the language class and the English class is here to stay and is definitely not a temporary fashion that could disappear. Future studies are needed to confirm the findings here, and a similar study with more informants would be a good way to explore the enormous possibilities that working with IT can bring.
Reference list


xxxxxxx, den 16 december 2013

Hej!

Jag är en student från lärarutbildningen på Mälardalens högskola som nu är inne på min sista termin och då även i full gång med att skriva mitt examensarbete. Mitt valda ämne är IT och engelskundervisning.

Syftet med detta arbete är att undersöka vilken roll IT har när det gäller motivation hos eleverna. Jag vill ta reda på om motivationen ökar eller minskar i framförallt engelskundervisningen och på vilket sätt.

Jag har fördjupat mig i forskning och litteratur kring det aktuella ämnet, men har också för avsikt att göra observationer, intervjuer och dela ut enkätformulär till era barn.

Jag kommer att ta hänsyn till Vetenskapsrådets forskningsetiska principer. Detta innebär bl.a. att deltagandet i min studie är frivilligt och om ni som vårdnadshavare har invändningar mot era barns deltagande så är det bara att säga till. Notera att även om ni inte har några invändningar kan era barn själva när som helst avbryta deltagandet i intervjuerna eller enkätorna.

All insamlad information kommer att behandlas konfidentiellt och resultatet kommer endast att användas till forskningsändamål. Enkätsvaren är anonyma och kommer endast att användas för examensarbetet.

Om ni har synpunkter eller frågor, eller om ni inte vill att era barn deltar i undersökningen, kontakta mig gärna på e-post: cgr09002@student.mdh.se. Det går också bra att kontakta min handledare på högskolan, Thorsten Schröter, på thorsten.schroter@mdh.se.

Med vänliga hälsningar,

Cristóbal González-Aller
Appendix 2 - Vocabulary test A - Robin Hood

Robin Hood
INSTRUKTIONER: ÖVERSÅTT TILL ENGELSKA

<table>
<thead>
<tr>
<th>ord</th>
<th>översättning</th>
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<td>annorlunda</td>
<td>strang</td>
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<td>berömd</td>
<td>famous, fam</td>
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<td>bli</td>
<td>become</td>
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<td>by</td>
<td>village</td>
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<td>bäge</td>
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<td>bägskytt</td>
<td>care</td>
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<td>bära</td>
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<td>de fattiga</td>
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<td>därför att</td>
<td>because</td>
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<td>ek</td>
<td></td>
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<tr>
<td>fiende</td>
<td>enjine, enjine</td>
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<tr>
<td>fler och fler</td>
<td>more and more</td>
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<td>fredläs</td>
<td></td>
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<tr>
<td>förgöelse</td>
<td>prison</td>
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<td>föddes</td>
<td>was born</td>
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<td>gömma, gömma sig</td>
<td>hide</td>
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<td>mjölnare</td>
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<td>munk</td>
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<td>pil</td>
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<td>riddare</td>
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<td>riktig</td>
<td>real</td>
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<td>skatt</td>
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<td>skog</td>
<td>forest</td>
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<td>skräckinjagande</td>
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<td>skögg</td>
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<td>stå sig inop med</td>
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<td>spion</td>
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<td>svärd</td>
<td>sword</td>
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## ÖVERSÄTT TILL ENGELSKA

<table>
<thead>
<tr>
<th>besegra</th>
<th>Their</th>
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<tbody>
<tr>
<td>deras</td>
<td><strong>Freedom</strong></td>
</tr>
<tr>
<td>frihet</td>
<td></td>
</tr>
<tr>
<td>frihet (different word)</td>
<td></td>
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<tr>
<td>få</td>
<td><strong>Get</strong></td>
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<tr>
<td>grym</td>
<td><strong>Cruel</strong></td>
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<tr>
<td>jätte</td>
<td><strong>Giant</strong></td>
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<tr>
<td>mod</td>
<td><strong>Courage</strong></td>
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<tr>
<td>måla</td>
<td><strong>Paint</strong></td>
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<tr>
<td>sanning</td>
<td><strong>Truth</strong></td>
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<tr>
<td>skrämma</td>
<td><strong>Scare</strong></td>
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<tr>
<td>strid</td>
<td><strong>Fight</strong></td>
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<tr>
<td>till salu</td>
<td><strong>Sale</strong></td>
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<tr>
<td>tro på</td>
<td><strong>Trust</strong></td>
</tr>
<tr>
<td>vila</td>
<td><strong>Rest</strong></td>
</tr>
<tr>
<td>vinna</td>
<td><strong>Victory</strong></td>
</tr>
<tr>
<td>vägra</td>
<td><strong>Refuse</strong></td>
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</tbody>
</table>
Appendix 4 - Questionnaire

QUESTIONNAIRE

You, your computer and IT in the English classroom

CLASS:  6a  6b  6c  (please draw a circle around your class)

INSTRUCTIONS:

• This is a voluntary and anonymous survey regarding students, computers and IT (Information Technology) in the English classroom. While your participation would be very much appreciated, you do not need to answer this survey if you don’t want to, and you can also choose to ignore specific questions or to stop your participation at any time.

• Please answer the following questions by drawing a circle around the your answer or answers. Where it says “multiple options allowed”, you can circle more than one answer if you want to. Where it says “Other (add your own answer here)”, you can give answers that are not included in the list of options.

1. I like using the computer and IT during English lessons.
   - Yes.
   - No.
   - I don’t know.

2. I consider the following aspects of working with computers and IT to be positive in the English lesson:

   (Multiple options allowed)
   - It is fun.
   - It is useful.
   - I can get more things done.
   - I can play games.
   - I can communicate with more people.
   - I work better in the classroom.
   - Other (add your own answer here):

3. I consider the following aspects of working with computers and IT to be negative:

   (Multiple options allowed)
   - It is boring.
   - The computer is heavy.
   - I need to charge it every day.
   - It is distracting.
4. **What is it you like best when it comes to working with computers and IT in the English lessons?**

(Multiple options allowed)

- I like using the computer as a communication tool.
- I like using the computer as a presentation tool.
- I like using the computer as a tool to access information.
- I like using the computer to watch video and listen to audio.
- I like using the computer to play games.
- Nothing.
- Other (add your own answer here):

5. **I like that the teacher uses the computer and IT during the English lessons.**

- Yes.
- No.
- I don’t know.

6. **If the teacher is a non-native English speaker and we have to listen to a text from the textbook, I prefer to listen to the audio from the CD.**

- Yes.
- No.
- I don’t know.

6.1 **Please motivate your answer to the previous question.**

7. **I would like the teacher to use social networks (e.g. Facebook) in the English lesson.**

- Yes.
- No.
- I don’t know.
8. Since the school gave me a computer for my own use both at home and at school my motivation has improved during the English lessons.

➢ I agree.
➢ I disagree.
➢ I don’t know.

9. Since I have my own computer in school my performance has improved during the English lessons.

➢ I agree.
➢ I disagree.
➢ I don’t know.

10. Since I have my own computer in school my attendance at the English lessons has improved.

➢ I agree.
➢ I disagree.
➢ I don’t know.

We have worked with both the yellow exercise book (Good Stuff A, Liber) and online interactive exercises. Now answer the following questions:

11. About working with the yellow exercise book:

➢ I like working with the yellow book.
➢ I love working with the yellow book.
➢ I don’t like working with the yellow book.
➢ I hate working with the yellow book.
➢ I don’t know.

11.1. Please motivate your answer to the previous question.
12. About working with the interactive vocabulary exercises from Liber's homepage ("Glosmakin"): 

- I like working with interactive homepage.
- I love working with the interactive homepage.
- I don't like working with the interactive homepage.
- I hate working with the interactive homepage.
- I don't know.

12.1. Please motivate your answer to the previous question.

- I like this for this is good

13. After the test you did regarding some textbooks units (e.g. Robin Hood, Braveheart), how good do you think your result was?

- A.
- B.
- C.
- D.
- E.
- F.

14. I think that I can score higher by practicing vocabulary with the yellow workbook rather than by practicing vocabulary with the online interactive exercises from Liber's homepage.

- I agree.
- I disagree.
- I don't know.

14.1. Please motivate your answer to the previous question.

15. Do you have any further comments to any of the questions above? Please write your answer here:

I Love English it's my favorite
It's fun and favorite
### INSTRUKTIONER PÅ SVENSKA

1. Jag tycker om att använda datorn...
2. Något som jag gillar med att använda datorn är att...
3. Något som jag inte gillar med att använda datorn är att...
4. Det som gillar mest med att använda datorn är...
5. Jag gillar att läraren använder datorn därför att...
6. Jag föredrar att lyssna på texten från CD:n än att läraren läser den...
7. Jag vill att läraren ska använda Facebook...
8. Jag är mer motiverad i engelska sedan skolan gav mig en datorn...
9. Jag presterar bättre sedan skolan gav mig en datorn...
10. Jag skolkar mindre sedan skolan gav mig en datorn...
11. Om att arbeta med den gula boken...
12. Om att träna vokabulär (ord listor) med hemsidan (goo.gl/blablabla)
13. Jag tror att det betyg som jag har fått i vokabulärprovet är...
14. Jag får bättre betyg när jag tränar vokabulär med den gula boken än med hemsidan
15. Här får du skriva ytterligare kommentarer om du vill

(Multiple options allowed) = MAN KAN VÄLJA FLERA SVAR

Other (add your own answer here) = LÄGG TILL EGNA SVAR