Teachers’ Use of E-readers in Kenyan Classrooms

Lärarens användande av e-boksläsare i kenyanska klassrum

Mia Söllwander
Abstract

The essay investigates how the e-reader changes the conditions for teaching in a development setting. By applying the theory designs for learning different aspects of the teaching practice are analyzed. Suzy Peacock Memorial Secondary School in Eldoret, Kenya was used for the collection of data. The results and the discussion show that while the teachers benefitted to a great extent from the e-readers while planning their work they did not use them to a great extent together with their students. Neither did the e-readers change how the teachers communicated knowledge nor their idea of what they wanted students to learn. In order for the e-readers to be implemented in the teaching and for the teachers to use the e-readers together with their students more, it is argued that teachers would benefit to a great extent from teacher training.

Keywords: Designs for Learning, e-books e-readers, ICT, Kenya
Table of contents

Abstract .................................................................................................................................................. 2

Acknowledgements .............................................................................................................................. 4

Abbreviations ....................................................................................................................................... 5

Introduction ......................................................................................................................................... 6

Background .......................................................................................................................................... 7

Previous research .................................................................................................................................. 11

Theoretical framework .......................................................................................................................... 13

Methods ............................................................................................................................................... 17

Results .................................................................................................................................................. 19

Discussion ............................................................................................................................................ 25

Conclusion ............................................................................................................................................ 32

Appendix 1 ........................................................................................................................................... 34

References ............................................................................................................................................ 35
Acknowledgements

First of all I would like to thank my supervisor Elisabeth Söderquist, who has throughout the process been quick in answering all my questions though email, which has been very important since the project was conducted on a different continent. I would also like to thank Björn Lundgren who has been invaluable for completing the project by allowing me to complete defend my essay online. I would also like to thank my examiner Ola Fransson and my respondent Mian Wang for providing me with critical advice for improving the thesis. I would also like to thank Worldreader and especially Sarah Jaffe, director of education and program design for providing me with the contacts needed to launch the project and for providing me with support and input throughout the project. Finally, I would like to thank the Swedish International Development Agency (SIDA) for granting me funding for the project. The scholarship not only gave me the opportunity to write this essay, it also gave me the opportunity to practise a professional role in a developing country, which has been a life-changing experience.
Abbreviations

CRF – Christian Relief Fund

EFA – Education For All

ICT – Information and communication technology

ICT4D – Information and communication for development

NGO – Non-Governmental Organisation

SIDA – Swedish International Development Agency

USAID – United States Agency for International Development

UNESCO - United Nations Educational, Scientific and Cultural Organization
Introduction

This study will focus on information and communication technology (ICT) and education and, more specifically, how teachers use e-readers in their pedagogical practice in a development context. The study was initiated by the researcher as a way to explore ICT and how digital solutions could benefit developing countries in different ways. To realise this, Worldreader, an organisation working to promote digital reading throughout Africa using e-readers was contacted and helped facilitate contacts in the field.

The purpose of the study has been to find out how the e-readers change and could change the conditions for teaching. To realise the purpose, the following questions will be discussed: In what ways do the teachers use the e-readers? In what ways do e-readers affect the way teachers teach? What are the hindrances and possibilities for greater integration of the e-readers in the classroom?

The study was carried out at Suzy Peacock Memorial Secondary School in Eldoret, Kenya. Some of the findings at this school might not, for several reasons be applicable at other schools while some of the issues will probably be present at most schools. Being aware of this, the context of the school and environment where it is situated will be described. In order to understand the purpose of the study, it is also important to comprehend the context in which NGOs (Non-governmental organizations) like Worldreader operate. Next there will be a review of research conducted about e-readers in education, and research conducted concerning ICT projects in relation to education.

The study will be based on a theoretical framework, designs for learning, which perceives learning as something socially constructed (Leijon and Lindstrand, 2012, p. 172). The theory will be beneficial for this study above all because the theory states that different types of tools and their design carry different conditions for communication and hence learning (Selander and Rostvall, 2008, p. 22). By using the concepts and analysing the different entities of the design process, it will be possible to see what effects the e-reader has on the conditions for teaching and how the teachers choose to engage students in different activities for learning.

First, there will be a brief description of the background of the work of Worldreader and the context of Kenya and Suzy Peacock. Secondly, the previous research, theoretical framework and method section will frame the study. After that, the results will be presented and discussed. Finally, there will be a conclusion to sum up everything that has been said in the study.
Background

ICT and 21\textsuperscript{st} century skills

The development of ICT skills among students is considered vital by UNESCO in order to reach the major goal of Education for All (EFA). UNESCO further believe that ICT can “improve student achievement, extend access to schooling, increase efficiency and reduce costs, prepare students for lifelong learning, and train them for a globally competitive workforce (UNESCO, 2014a). Therefore, UNESCO are supporting developing countries by providing guidelines of how to develop national ICT policies.

ICT skills are related to so called 21\textsuperscript{st} century skills. 21\textsuperscript{st} century skills are ways in which students learn to “generate, store, transmit, retrieve and process information” effectively (Anderson, 2010, p. 10). Further, information and knowledge are described as “the new forms of wealth” and “the driving force for development” (Anderson, 2010, p. 10). For students to be attractive on the job market in the future, they need to learn these skills and learn how to find, select and evaluate information they find, most commonly, on the Internet (Anderson, 2010, p. 14). In addition, in a society that is changing at an increasing rate it is important to be able to gain new knowledge throughout one’s life.

The key to be able to teach 21\textsuperscript{st} century skills is access to information (Zell, 2013). The advantage of doing this on a digital platform is that information can easily be updated, takes up less space and more information can be searched for if Internet access is provided. E-readers in contrast to some other common tools like computers and mobile phones are fairly easy to operate, and teachers find that they are a better option than for example mobile phones, because the main purpose of the e-reader is to store digital books. In countries around Africa, e-readers are less intimidating for teachers and policymakers who are about to implement digital tools in their system because they are more in line with the existing view of educational delivery (Trucano, 2011).

Worldreader

Related to access of information is that in many developing countries paper books are scarce due to the costs involved for schools to purchase them. Worldreader, a US, Europe and Africa based NGO try to solve this problem by “unlock[ing] the potential of millions of people through the use of digital books in places where access to reading materials is very limited”
To reach this goal, Worldreader deploy several different models of implementation. The iREAD program in Ghana, a large scale program where Worldreader collaborate with USAID and local ministries of education and measure and evaluate the outcomes. Another model is the BLUE (Building Literacy Using E-books) Box, which is a small-scale e-reader program in schools or libraries. These are in most cases sponsored by organizations that operate their own schools or libraries like in the case with Suzy Peacock (Worldreader, 2015a). In the BLUE Box programs it is up to the individual partners to decide on the number of e-readers they want to purchase and how they should be implemented and used by the students (Worldreader, 2015b).

The most important factor why Worldreader became the main choice for this study was because their focus was on students’ learning rather than the electronic device itself. In the iREAD program Worldreader have developed a model where they are working together with the teachers to provide them with new ways of teaching literacy (Worldreader, 2014, p. 13). In contrast to other NGOs working in the same field, Worldreader do not develop the hardware themselves but use already existing hardware in the form of Kindles. Worldreader are also working on providing content for the e-readers and is constantly working with local African publishers in addition to American and European publishers to provide more material for the e-readers, which is beneficial for the students’ learning (Worldreader, 2015a).

Worldreader cooperate with organisations and companies such as UNESCO, UNHCR and Microsoft to broaden their research and facilitate technological development of the program. Investigating how people read on cell-phones and e-readers, UNESCO, using data from the Worldreader projects concluded in their report “Reading in the Mobile Era” that “People seem to read more often when they use mobile devices to access text” (UNESCO, 2014b, p. 67). The implementation of these technologies in the school environment is not only positive for literacy teaching, but also to develop ICT skills among students (UNESCO, 2014a).

The field, education in Kenya and Suzy Peacock Secondary School

The field in this case is education in Kenya and more specifically Suzy Peacock Secondary School in Eldoret. Kenya aims to have globally competitive education by 2030. In 2003, free primary education was introduced and increased the enrolment significantly. The Ministry of Education manages the formal education system while the Kenyan Institute of Education, appointed by the government, is in charge of educational research, curriculum development as
well as curriculum support material such as course books. The Kenya National Examination Council is responsible for student assessment. Hence, the Kenyan education system is centralized with few possibilities for individual schools and even regions to adapt the curriculum and the material to their specific needs (UNESCO, 2010).

Students usually start Secondary School at the age of 14 and stay for four years. However, age can vary as students can start primary school between the ages of 4-8 years old depending on many factors. Entry into secondary and university education is through selection on the basis of performance in in the national examinations. These exams are highly competitive and as some of the teachers at Suzy Peacock highlighted in the interviews, education is what will determine their students’ futures. With high unemployment rates and with an ambition to compete on the global arena, education is the key to a brighter future.

Suzy Peacock is a Secondary School and is situated about 10 km outside of the city of Eldoret. It is private school funded by the Christian Relief Fund (CRF) and operates as a boarding school for the majority of the students. Initially in 2013, the school had four teachers and about 100 students, but has since then grown to have 16 teaching staff and about 400 students at present. Classes vary from 30 to 50 students in each with the younger students divided by sex.

Suzy Peacock have taken part in the Worldreader project since 2013 and was initiated by the school’s sponsoring organization CRF. Taking part in the Worldreader program, Suzy Peacock, aims to “give each student access to all the textbooks, literature, and reference material via the Internet as they need to excel.” They further “hope to equip them with not only the knowledge contained in the e-readers, but to also develop a comfort level in approaching new technology as they further their education” (Worldreader, 2015c). Their motivation for using e-readers in the classroom corresponds well with the purpose of this study. However, this statement is only partly true. Internet is non-existent at the school and e-readers are rarely used in the classrooms.

E-readers and Kindles
The e-readers are primarily designed for the purpose of reading e-books and periodicals. There are many different brands of e-readers where Kindle is one. Kindle is the brand used in the Worldreader projects and one of the largest ones on the market. An e-reader with a 3G or Wi-Fi is similar to a tablet computer such as the iPad. Depending on the brand, everything that is based on digital text can be done with the e-reader meaning that except from reading
books it is also possible to for example send and receive emails, brows the web and load the Kindle with personal documents. A tablet computer is generally faster when it comes to online communication; however, e-readers have advantages such as longer battery life and better readability.
Previous research

ICT in developing countries has been praised by several scholars to be a tool for reducing high unemployment rates and poverty reduction to just name a few things (Keengwe and Malapile, 2014, p. 704). However, technology will only have a positive effect on these different areas of society, including when it comes to education, if people are willing and have the capacity of putting it to positive use (Toyama, 2011, p. 77). This further means that in order for it to have a positive effect on education, teachers need to first of all have a positive attitude towards ICT and, secondly, be trained to have the ability to implement it into their teaching, which requires more than technical skills (Nyagowa, 2014, p. 236). The training should also include giving teachers the confidence of using digital tools together with their students by for example showing them how the tool can be an important asset to their teaching (Gudmundsdottir, 2010, p. 183).

Research has shown that implementation of different kinds of ICT tools can facilitate a pedagogical shift from the teaching having a mainly instructive approach to an approach with enhanced communication between the teacher and the students, if used correctly (Wims and Lawler, 2007, p. 7). In a report published by UNESCO, Anderson stresses that ICT transforms the teacher until no longer being the “all-knowing authority.” This is because of the information the students get access to with the ICT tool, which transform the teacher becoming a guide for the students leading them through their learning process (Anderson, 2010, p. 6).

One of the largest obstacles from the teachers’ point of view though is that they lack relevant competence in the field of ICT. Research has shown that there is an extensive need to implement ICT skills into teacher education in developing countries (Trucano, 2012). Shraim states that teachers might not have been exposed to communicative approaches and therefore training is essential (Shraim, 2014, p. 25). On a national level, Kenya as a country has a vision of becoming a newly industrialized country by 2030. In order to realize this, there will be some implications within education such as learning French and German but above all ICT skills. Therefore, the Ministry of Education wants to make ICT a compulsory subject at all levels (Bunyi, 2013, p. 686). Further, Kenya developed a National ICT Masterplan in 2014. In terms of education, the Masterplan highlights the need of ICT as part of the teacher training collage programs (ICTAuthority, 2014).

When it comes to teachers’ use of ICT tools, there is also a motivational factor about what
specifically motivates the teachers to use ICT in the classroom. It has been concluded that a positive attitude towards the usage of ICT in the classroom is the single most important factor when it comes to effective ICT implementation (Acker et al., 2013, p. 499). Further, the attitude could be influenced by factors such as if the teachers feel that the tool gave them a heavier workload and if they feel that it had a positive effect on their teaching (Acker et al., 2013, p. 506-507).

The research available does mostly concern ICT tools in general. E-readers are different from ICT tools like computers and iPads. The qualities of e-readers are limited in comparison. However, it is argued that the use of an e-reader makes the students more focused than when using, for example, laptops or iPads since students are not able to check emails or browse the web to the same extent on the e-reader (Barron, 2011, p. 135). Other affordances brought up in research concerning e-reader highlight the text-to-speech and dictionary functions, and the idea of unlimited access to books as the most important features (Zipke, 2012, p. 432). These affordances are all seen as positive and can contribute to students’ learning (Zipke, 2012, p. 432). It has also been concluded that the affordances of e-readers are especially suited for improving reading comprehension and students’ language in general (Shraim, 2014, Wright et al., 2013). Further, this is also concluded in the iREAD study conducted by Worldreader (Worldreader, 2014).

However, these studies also conclude that though the teachers see the benefits of the e-reader they did not see how it could innovatively be implemented into everyday classroom use and used together with the students. Hence the issue of teacher training is once again highlighted as essential for implementation of ICT tools in general and in these cases the e-reader in particular (Zipke, 2012, Shraim, 2014, Wright et al., 2013).
Theoretical framework

Designs for learning

The study is based on the Designs for learning. Designs for learning is a catchall theory containing several different concepts, which will be used to distinguish and analyse different elements of the pedagogical practise. A definition of each term and its relevance to this project’s aim will be presented in this chapter. Designs for learning has its origins in social constructive theories and social semiotics, and treats knowledge as something socially constructed (Leijon and Lindstrand, 2012, p. 172). It describes knowledge as the capacity to take interest in the world; and learning as something that increases one’s capacity to take part in the world in a meaningful way (Selander, 2008, p. 34). Further, learning is perceived as a social process where one learns in relation to something viewed as meaningful (Selander and Rostvall, 2008, p. 14). This means that it steps away from the type of learning where cramming of content is needed to pass tests.

In addition, the theory states that different types of tools and their design carry different conditions for communication and hence learning (Selander and Rostvall, 2008, p. 22). Therefore, it is fair to suggest that an ICT-tool such as the e-readers has the ability to change the conditions for social interaction and hence teaching. In this study, the researcher aims to understand how the conditions for teaching change with the introduction of the e-reader and to further seek solutions for the lack of integration of e-readers in the classroom at Suzy Peacock. The lack of integration will range from technical to pedagogical aspects. It can be difficult for individuals as well as institutions to give up previously accepted ideas about teaching, learning and knowledge in favour for other forms of knowledge (Selander and Rostvall, 2008, p. 15), which could to some extent explain the lack of integration of E-readers at Suzy Peacock Secondary School.

Below the concepts and the relevance that they have in this particular study will be discussed. The following concepts are recurrent tools of analysis in research using designs for learning as a theoretical framework. In order to get a clear image of the prerequisites the e-reader has at the school, the concepts will be used in the analysis and discussion of the data collected.
Context

Within the theory of designs of learning this concept carries an understanding that knowledge is not anything invariable, but something that is created within the frame of a social setting and within the frame of what kind of resources are available (Leijon and Lindstrand, 2012, p. 177). Hence, this concept helps to define the context where knowledge is created which in this case is Suzy Peacock. Further, social interaction within the frame of the institution carries certain conditions for social interaction including everything from classroom furniture to class rules to school norms (Kjällander, 2011, p. 14). In this way, the essay will paint a picture of the specific conditions for interactions carried out at Suzy Peacock, where it will among other things include the aforementioned conditions. It can further facilitate to understand the conditions for learning and how the teachers are forced to mediate knowledge.

Communication of knowledge

Kjällander states that, “Communication is important for forming and transforming peoples’ perceptions and thinking” (Kjällander, 2011, p. 55). Thus, it can be said that communication is one among other conditions for learning. The focus in this study will be mainly on the teacher and what kind of conditions teachers create for learning. The consequence of a digital tool could be that the students’ attention is directed away from the teacher and in turn the students’ interest is instead directed towards their pairs and the screen (Jewitt, 2008, p. 251). The concept of communication in this thesis will mainly consider how the teacher mediates knowledge to the students; in what ways the teacher creates opportunities for learning through communication with peers, with student and the e-reader, and between the teacher and the student.

Representation

Representation focuses on the meaning that, in this case, the teacher wishes to realize (Leijon and Lindstrand, 2012, p. 177). The concept of representation will highlight what the teachers want the students to learn. The context is also important here as it helps to highlight why the teachers aim to mediate the chosen meaning. For example, if the teachers’ aim is to mediate knowledge in order to make the students pass a specific test designed by a higher authority or if it is to complete a specific task.
Orchestration

Orchestration can be viewed as the process in which the teacher chooses and arranges the material and tools s/he wishes the students to use in their learning (Kjällander, 2011, p. 60). The choice of material and tools that the teacher chooses to use have consequences for the students’ possibility to make meaning of information and have direct consequences on how the content of the subject is constructed (Jewitt, 2008, p. 245). Orchestration will in this study help to highlight how the teacher designs, plans and chooses the content for the students, and what kind of role the e-reader plays in the teachers’ selection of material in preparation for the lesson. It can also highlight in which ways teachers choose to encourage the use of the e-reader during the lesson.

Affordances

The concept describes the potential of a specific resource and what effect it can have on the process of learning and meaning making of information (Kjällander, 2011, p. 65). With this concept the essay aims to investigate the potential of the e-readers in the context described in the study. The technical aspects of the e-readers will be highlighted as well as how teachers make use of the affordances to communicate knowledge to students. The quality of experience with a digital tool has an impact on humans (Snyder et al., 2010, p. 43). Further, learning in a digital environment is affected by ”the quality of technology, quality of didactics and user interface” because it is related to the human exchange taking place via technology (Snyder et al., 2010, p. 50). Hence, these three qualities constitute the experience of the e-reader. The affordances will also be compared to other material available, such as notepads, the blackboard and, above all, the textbooks the students are using.

Designs for learning and designs in learning

Within the theory designs for learning a distinction is made between the concepts designs for learning and designs in learning. The concept designs for learning highlights the conditions for learning (Leijon and Lindstrand, 2012, p. 182). The concept will be used to look at what conditions the e-reader creates for the teachers in the design process and further highlight what affordances they value in the design process. Designs in learning has a focus on the students and their representation of information and creation of knowledge (Leijon and Lindstrand, 2012, p. 182). The concepts also highlights the teacher’s approach to this process.
(Leijon and Lindstrand, 2012, p. 183). Since this study will have a focus on the teachers the latter definition of the concept is going to be used to a greater extent.
Methods

Classroom observations

Classroom observations were used for two reasons. Firstly, they helped the researcher to paint the picture of the overall situation in the classroom. Secondly, it helped me to form questions for the interviews. Thirdly, they served to provide an opportunity to observe the communication in the classroom and the role of the teacher.

21 observations were made in total during a period of two weeks with 12 different teachers. An empty schedule was printed where the teachers could choose which of their classes they wanted the researcher to attend. The teachers were told to schedule two classes but due to time issues a few of the teachers only scheduled one. The teachers were informed that they did not need to use the e-readers just because they were going to be observed, and was told that they should conduct the lessons as they usually did. The observations were recorded in scratch notes. Further, the researcher did not interact with the subjects.

Informal conversations

In order to get a more comprehensive image of the field and to get a deeper understanding of what the teacher talked about later in the interviews these conversations were extremely important for the study. In particular, during the first two weeks a great amount of time was spent talking to the teachers in the staffroom, which became a natural arena for discussing and exchanging ideas concerning education in general and in particular at Suzy Peacock. The informal conversations also served as a way of getting to know the interviewees and establish a relationship with them before the interviews took place.

Interviews

The interviews were conducted with the majority of the teaching staff at the school. In total 14 interviews were conducted at the school including one with the principal and one with the director of the school. The interviews were semi-structured and followed an interview guide, attached in the appendix of this essay, where teachers also got the opportunity to make personal elaborations on the answers. Before the interviews started the participants were informed that the interview was going to be recorded but that no names was going to published in the final report and all names presented
in the results have been changed to random names. The interviews were transcribed in order to keep the facts that the teachers provided me with as accurate as possible.

All classroom observations were completed before any interviews were performed. It was done so for several reasons. Firstly, because it was preferable to keep an open mind during the observations not letting them be affected by what the teachers would tell me during the interviews. Secondly, the interview gave me a chance to ask questions that arose during my observations.

Interviews were also conducted with the national project manager at the Worldreader office in Nairobi. She provided the researcher with information about the local projects and their work, which was not available on the website worldreader.org. I also interviewed staff at the Worldreader headquarters in San Francisco about their ongoing planning to enhance their educational impact and sustainable partnership with schools and partner organizations.

Research journal

A research journal was kept throughout the project in order to be able to go back and review lines of thought and try out new ideas. Further, the research journal provided an overview of the writing process. The research journal has been important for reflections, and it has been with the help of the journal that it was possible to spot preconceptions and conclusions made to fast about things observed at the school.

Ethical considerations

The ethical principles of the Swedish Research Council (Vetenskapsrådet, 2010) have been observed while conducting the research. Measures have been taken to ensure that all participants understand that participation in the study is voluntary and that they fully understand the nature of the study. All names in the study have been changed except for official informants of the organisation where permission has been given to the researcher to leave the names unchanged. Minimal information is given about the participants to ensure that it will not be possible to identify any of them when the results are shared with management and teachers at Suzy Peacock as well as Worldreader.
Results

In this section the results from the interviews and observations will be discussed. The first part of this section will describe the context at Suzy Peacock that was explored through the interviews and observations. The second part of this section will present the results for the question “In what ways do the teachers use the e-readers?” The next part of this section will present the results for the question: “In what ways do the e-readers affect the way teachers teach?” The final section will answer the question: “What are the hindrances and possibilities for greater integration of the e-readers in the classroom?” After the results have been presented, they will be discussed and related to the theory and previous research in a final section.

Context

During most of the classroom observations it became clear that the students listen to the teacher, take notes and answer questions if they are asked. This meant that the students seem to have little influence over the lessons and how they want to learn. The teachers do ask the students questions and a great amount of the questions were strictly limited to one factual answer. At other times though, the questions were open and the students had the opportunity to together with the teacher contribute in the process of finding an answer. During most of the lessons though, the students did not contribute unless the teacher encouraged them to.

The main physical tool used by the teacher to convey knowledge to the students was the blackboard. The teachers used the blackboard to draw images or write down text and to clarify concepts to the students. Sometimes whole blocks of texts were written on the blackboard and one student was then asked to read aloud what the teacher had written and the rest copied it into their notepads. The majority of the teachers brought their e-readers to the classroom and used them as a point of reference, just as they would with a book, for writing notes on the board. In every class there were also two to four students out of 30 to 50 who brought the e-reader to the lesson, and they had either the same text as the teacher talked about in front of them or tapped around between the books. During most of the lessons it was up to the individual student to bring the e-reader to the lesson. The individual student also had to take responsibility for borrowing the e-reader from the library and make sure it was fully charged in time for the lesson. In conclusion, when encouraged by the teacher, students used the e-readers but otherwise they were rarely used during the lessons.
During two of the 21 observed lessons students were asked to work on their e-readers. During both of these lessons there were only about five or six e-readers in the classroom. This made the students form groups around the e-readers, which made them to collaborate. As a result, this also made the teacher communicating with a group of students at a time rather than individual students. However, the collaborative work the e-readers sparked was not something the teachers observed as positive and all of them preferred that the students had one e-reader each.

“I feel that it would be a nice opportunity for every student in this school to have an e-reader of their own. Because now you find that they have to be returned to the library so that they can be issued again. But I feel if every student had an e-reader there would be a lot of material and maybe the issue of book would not come up that much. Because they already have their books they already have the books in their e-reader. If you need to do your assignment you don’t have to share with anyone you just do it comfortably.” (Personal Interview, Ms. Ndungu)

Hence it can be suggested that teachers do not value the interaction that students can have with their pairs to a great extent.

In what ways do the teachers use the e-readers?

When teachers plan their lessons they often choose to take part of the great amount of material available on the e-reader: “I can refer to up to three books with the e-reader, which is good and also you get questions from different sources which is good for the students when you give them to practice” (Personal interview, Ms. Ndungu). By being able to show, for example graphs and images, on the e-reader instead of drawing them on the board, teachers feel that it makes their lessons more time efficient. “I’m poor in drawing [laughter] so at times when I have to draw something I just inform them, check on the e-reader.” (Personal interview, Mr. Kiprop). During the observations it also became clear that some teachers similarly refer students to passages or images in the e-reader instead of writing it on the board.

Another thing that the teachers expressed as being important is that the e-reader contains a dictionary. The majority of the teachers see the e-readers as something positive, but above all the language teachers. “I don’t have to look for any dictionary. I just go directly to the dictionary. I look, I see what the word is all about, yeah before I get asked in class.” (Personal interview, Ms. Mwangi). The teachers feel that it is very convenient but they are also comforted by the fact that they always have a dictionary at their fingertips when they go to the lessons, and in any other case when they might get questions from the students. Another thing
that the language teachers highlighted was the storybooks contained in the e-reader. “There are some short stories, very interesting short stories where they can read very fast, and they can improve in their language (Personal interview, Ms. Kemei). Several teachers confirmed the idea that the novels and short stories on the e-readers help improve students’ language both when it comes to writing and speaking.

With the introduction of e-readers, there were some aspects that have made it easier for teachers to take work home. The most important one seems to be the portability. The e-reader is a small device, has a long battery life and contains hundreds of books in one device. “I can carry it because I need to prepare for the next lesson. Like if I have a lesson at eight tomorrow, I have to carry the e-reader to my house so that I’ll make some notes some short notes and prepare for the class” (Personal interview, Ms. Wacera). Secondly, whether at school or at home, teachers can continue to prepare for lessons even during blackouts since the e-reader contains background light. “Even in my house when there’s no power, unlike hard copies, when there is no source of light I continue” (Personal interview, Mr. Kwambai). During the period of the study, there were blackouts at least once every evening, which sometimes lasted for hours at a stretch. The fact that the teachers have a greater freedom working from home gives them a greater opportunity to choose how to spend their time when they are at school. One teacher said that, “when I’m in school, I prefer spending my time interacting with my colleagues” (Personal interview, Mr. Oduya). This confirms that teachers do use the time to do other things they feel are important when they are able to complete some work at home.

The teachers expressed in the interviews that with the e-readers the students have greater access to course books, which helps them complete assignments on time. This makes it easier for teachers to make a long-term plan for their lessons since they know that the students will be able to complete their tasks on time. As mentioned earlier, textbooks are expensive which makes it difficult for the management to provide students with an adequate number of textbooks. One teacher confirms that if his students were to do their assignments only using the hardcopies they would “have that book for once in a month” (Personal interview, Mr. Kiprop). This means that teachers do not have to worry about students falling behind simply due to the lack of textbooks.
In what ways do the e-readers affect the way the teachers teach?

A factor that contributed to the importance of these considerations was that students, as teachers expressed it, tended to be very motivated to use the e-reader, even during lessons, when the teacher thinks, they are supposed to listen to the teacher. “[T]he problem with these students, if they continue using the e-reader and you are teaching they might not concentrate.” (Personal interview, Mr. Kiprop). Teachers are faced with having a device in the classroom that can steal the students’ attention, a problem the teachers would not have been faced with if they only used regular textbooks.

However, it turned out that the teachers shared different views concerning the usage of e-readers during lessons. Some teachers wanted to control the usage of e-reader by only letting students use them after the teacher had stopped talking, alternatively not in class at all and just outside the classroom for completing assignments. “During my class they rarely use the e-readers while I’m teaching. I would rather have them reason, then I […] let them use the e-readers just like the textbooks.” (Personal interview, Mr. Magut). A common thought among the teachers who preferred that the students used the e-readers after the lessons was that the e-readers are just like normal textbooks that are to be used no different to how textbooks are normally used, or how students tend to use textbooks.

On the other hand, there were some teachers who let the students use the e-readers during their lessons and embraced that the students liked to use the e-readers even during the lesson. “[M]ost of [the students] use them for purposes of reference. When we are going through a certain topic most of them prefer going through it just to make confirmation so that I’m saying right yeah, then […] they also ask questions what they find there”. (Personal interview, Ms. Sigei). Not only did they think that the students were able to follow the class better, they also saw it as a positive thing that the students wanted to follow the class with the e-readers because it enabled them to ask more questions.

Several of the teachers expressed that students were able to study independently by engaging with material on the e-reader. This changes the role of the teacher at least for some students. During the interviews it became clear that the students to a great extent have to take responsibility for their studies. “For me I feel that the e-reader is very good for the student who has planned their time out well […] for our students who already know what he or she wants they are able to perform very well” (Personal interview, Ms. Ndungu). On the other hand, none of the teachers mentioned that it was part of their job to encourage their students
to become more independent in their studies, which confirm the fact that it was up to the
individual student to take this responsibility.

The fact that students now have the opportunity to choose between different sources and
gather information from several of them to complete assignments, can prepare them for the
information society. However, the teachers’ view about how their students would become an
attractive workforce seems to be more linked with the technology itself rather than what could
be done with the technology. “[W]e are living in a technological world. [The e-reader] helps
them even when they have laptops in the future. You know it’s almost exactly as small
laptops eh. When they have laptops in the future they know how to operate it” (Personal
interview, Ms. Mwangi). In general, when the teachers talked about the e-readers they did not
talk about it in terms of how it helped them to gather information or the potential for
communication but as a tool, which shares some technical aspects with other electronic tools.

The same focus on the purely technical aspects and the contents of the e-reader was
prominent when the teachers discussed the benefits the students will gain only by having the
experience of using a tool like the e-reader. “[T]hese e-readers will bring a difference to the
students […] our students will be unique in comparison to the other students” (Personal
interview, Ms. Kogo). When I asked her to clarify why she thought that the students would be
unique she answered that because the students have the experience of using an electronic tool.

What are the hindrances and possibilities for further integration of the e-readers?

One aspect is that there is a great amount of books on the e-reader, which accommodates the
needs of the teachers and enables them to develop professionally. “I enjoy, I read one part
science and I’m doing it at my comfort and it really makes me feel good, the study. Whenever
I am in the house, if I’m maybe washing or cooking I can do a paragraph that is very, very
convenient.” (Personal interview, Mr. Kwambai). The same teacher had also downloaded
other material on his personal e-reader, which he uses for professional development. The fact
that the teachers are able to study in the comfort of their home also contributes to their
professional identity.

The novels and short stories on the e-reader are also greatly appreciated among the
teachers to engage with during their free time. “I can use e-readers for personal reading,
extensive reading because there is a lot of books inside” (Personal interview, Mr. Magut). Not
only do the teachers benefit from the e-readers on their own, it also turned out that especially
the novels and short stories are read by their families. “There are some good stories for the children, and they can read the stories […] even my children can read some nice stories from the e-readers” (Personal interview, Ms. Kemei).

Many of the issues were related to the fact that the project had been unable to develop without the contact with Worldreader. These issues were related to getting more content on the e-readers, finding a sustainable solution for recharging the e-readers, knowledge about the price of the e-readers and what to do when an e-reader breaks. Worldreader are several times a year reaching out to the schools with guidelines and material that could solve these issues. However, in the case of Suzy Peacock the emails where regarded as not being important for the project by the person who received them and they never arrived to any of the teachers at the school who were the ones expressing the issues.

The teachers also worried about the issue of theft. There had been a few cases at the school where e-readers had disappeared but in those cases there have been no consequences for the students. Further, while discussing the issue with Worldreader it became clear that this was often a problem that the staff and management at many schools worried about even though it very rarely happened. According to their research their projects usually have a 2-5% breakage rate and devices are rarely stolen (Worldreader, 2015b).

Another issue that was raised by the teachers was that not every student had an e-reader. It became clear that there is a lack of communication between Worldreader and the management as well as the teachers at the school, which restricted teachers and management from solving the problems. The way Worldreader communicate with partners is through, regular emails and Whatsapp messages to the partner’s designated project manager informing them about book updates and the annual conferences they organize in Accra and Nairobi for all partners of the project. None of the teachers and neither the principal had ever seen any of these emails. The case at Suzy Peacock stresses the communication between the organisation and the school, and that this communication needs to be maintained so that a project can keep evolving at the specific schools.
Discussion

In this part of the essay the results will be discussed and each research question will be examined and evaluated according to existing literature and theories. The theoretical framework will also be critically evaluated. There will also be a section discussing the methods used, and more specifically how the methods were adapted to the context of a developing country.

Affordances of the e-reader and how the teachers orchestrate for learning

When finding out in what ways teachers use the e-readers in their design for learning and design in learning, several affordances of the e-reader were mentioned that provide new opportunities for the teachers in the design process. These opportunities include course books from different publishers, storybooks, an integrated dictionary as well as images and graphs. Also, the e-readers have background light and a long battery life. All of these affordances were important for how the teachers could plan and choose material for their lessons and design for learning. When having different kinds of material to choose from, the teachers got the opportunity to independently orchestrate material for their students. According to the teachers at Suzy Peacocks, most teachers took advantage of this affordance. Without the e-readers the opportunities for orchestration would have been limited to one course book.

Due to the portability of the e-reader teachers were able to work at home. Affordances such as the size of the e-reader, content and battery life contribute to its portability. The fact that the teachers are able to work from home implies that they are gaining control over time and can choose how to spend it while at school. The interviews show, that being able to prepare for lessons at home meant that teachers chose to spend more time with their colleagues discussing personal as well as professional matters while working. Mumtaz argues that teachers who spend time talking to their colleagues improve their teaching methods (Mumtaz, 2000, p. 324). It can also develop teachers professionally as they gain more self-belief in their own practice as they are able to share and compare experiences with their colleagues (Lichtenstein et al., 1991, p. 9). Spending time with colleagues implies that teachers are able to build good relationships involving a sense of trust. Trusting colleagues not only improves the teaching, the students’ learning and facilitates the implementation of reforms, in addition it also contributes to teacher empowerment (Yina et al., 2013, p. 15-16).
At Suzy Peacock, the language teachers in particular had a positive attitude towards the e-readers. The reason why e-readers seem to be particularly popular among language teachers at Suzy Peacock could be because many of the affordances work well for language development. Several studies argue that the affordances of the e-readers are especially suited for effective language learning (Zipke, 2012, Shraim, 2014, Wright et al., 2013). The language teachers at Suzy Peacock highlighted the storybooks and the dictionary as material that affected the orchestration of material for the students. In addition, another study mentioned the highlighting, bookmarking, note-making and searching feature as important affordances in particular for the students motivation to engage with the texts in ways they would not have done without the e-reader (Shraim, 2014, p. 25). Hence, the e-reader becomes an important tool for how language teachers can orchestrate material helpful for language development and design for learning.

Further, being able to use a dictionary and being able to analyse words are important for students’ vocabulary and spelling (Zipke, 2012, p. 432). Some of these affordances, like the dictionary, being able to take notes in the e-reader and using bookmarking are affordances that the students would have been able to access manually without the e-reader. However, with the e-reader they were used to a greater extent, which explain why the e-readers can be beneficial for language learning (Wright et al., 2013, p. 373).

The changing role of the teacher, representation and communication of knowledge and designs *in* learning

Next, the results found while exploring the question of whether the role of the teacher changes with the introduction of the e-reader or not will be presented. The implementation of an ICT tool such as the e-reader could lead to positive change in a school. Research suggest that ICT tools, without further definitions, can change teaching practice to become more student-centred and to a greater extent based on social constructive theories (Wims and Lawler, 2007, p. 7, Anderson, 2010, p. 6). In this section, representation and communication of knowledge will be important as well as design *in* learning describing how the learning opportunities change for the students. It can be concluded from the material collected at Suzy Peacock that students become less dependent on the teacher for receiving information when they can use the e-reader to get information and gain knowledge.

A shift to a more students-centred learning and more social constructive teaching methods makes the teachers become more like a guide to the students (Anderson, 2010, p. 6). It implies
that the teacher, instead of teaching content would teach the students to make sense of content and information to gain knowledge on their own (Anderson, 2010, p. 14). It was not further investigated whether the teachers thought it was part of their role as teachers to encourage student-centred learning considering the curriculum and guidelines from the ministry of education to encourage this kind of teaching though.

It was found that when the students use the e-reader in the classroom it had a tendency to direct the attention away from the teacher focusing the students’ attention on the machine. While some teachers appreciated that students took part of information through the e-readers other teachers did not let the students use the e-reader because it directed the attention away from them. The process when the students’ attention is directed towards some other source of information than the teacher is argued to be part of the process of the teaching becoming more students-centred (Jewitt, 2008, p. 251).

Outside of the classroom students had access to new and more sources of information with the e-reader. Some students used the e-readers to study independently. First of all this would not have been possible without the e-readers since there was a lack of hardcopy course books at the school. Secondly, it gave the students the opportunity to choose between different sources since, for example, the e-readers contain several books for the same subject but from several different publishers.

The teachers at Suzy Peacock recognized this opportunity that the students were able to gain knowledge independently from the e-reader. On the other hand, the teachers at Suzy Peacock expressed that it was up to the individual student to do this and not something that the teacher can force the student to do. Hence, it could not be said that the role of the teacher has changed to become a guide for the students in their search for information and formation of knowledge.

In addition, the teachers at Suzy Peacock seem to value the technical aspects of the e-readers more than the opportunities of gathering and handling information it provides. The e-reader has the potential to serve this purpose by providing access to information through books and Internet access. However, the teachers emphasised the technical similarities between the e-reader and a laptop when arguing that the students will become an attractive workforce. This point towards the fact that they have not yet fully understood what potential the e-reader has for the information society.

It is fair to suggest that the e-reader has not contributed to any substantial change considering the role of the teacher. The results from the interviews and classroom observations pointed towards the fact that teachers have a fixed idea that teaching and
communication of knowledge could be summed up as the teacher talking in front of students who are listening and asking questions. In conclusion, the teachers’ conception of what communication of knowledge is in a school setting does not seem to have changed with the introduction of the e-reader.

Further, the results show that the e-reader has the potential to spark collaborative work among students at Suzy Peacock. This could change the designs in learning since it could change the way students receive and take part of information. Yet this opportunity was something that the teachers did not highlight as something positive. Consequently, while the e-reader offers potential for changed designs in learning, the teachers did not take advantage of these potentials or recognize them as potentials at all.

Finally, the representation of knowledge remains the same. Even though the e-reader offers many opportunities for gaining knowledge from different kinds of books as well as the skills needed to find information the teachers still focused on teaching content needed to pass the exams. From the interviews and observations it became clear that the teachers teach content rather than skills. Also the interviews with the teachers at Suzy Peacock reveal that teachers are to a great extent driven by having enough time to go through all the content in the syllabus so that students are able to pass exams, which are also to a great extent based on content rather than skills. Thus, the representation of knowledge, what the teachers want the students to learn, also remains unchanged.

Explaining why the teachers do not use the e-readers to a great extent with the students could be argued to be because the idea of the representation and communication of knowledge, what should be taught and how it should be taught remain the same. Why they remain the same have not been investigated further but could be because teachers are driven by higher authorities and by things have always been.

Development of the project - A call for teacher training

As mentioned earlier in this essay, it can be difficult for individuals as well as institutions to give up previously accepted ideas about teaching, learning and knowledge in favour for other forms of knowledge (Selander and Rostvall, 2008, p. 15). This does not have to mean that teachers and the management are reluctant to the idea of change, it can also mean that there is lack of knowledge about what change implies. In the case of the teachers at Suzy Peacock it would be wrong to suggest that the teachers choose not to use the e-readers in the classroom because they are reluctant to change. The interviews revealed that the teachers are overall
very positive towards the e-readers and the change they believe that the e-readers have contributed to, such as the teachers being able to work at home. Hence, it could be suggested that the lack of integration is not reluctance towards using the e-readers but rather a lack of knowledge about the potential of the e-readers as well as recent teaching methods. Therefore, teachers could benefit from additional in-service teacher training.

Teacher training has proven to be an important factor for effective ICT implementation (Keengwe and Malapile, 2014, p. 319). Not only the technical aspects, it is even more important that teachers learn how to implement the e-reader successfully in their teaching and use it together with their students (Nyagowa, 2014, p. 236). Worldreader have identified the need to educate their participants about the potential of the e-reader by providing updated training material for the teachers and hosting a partnership conference once a year where teachers can meet to discuss and learn about issues such as how to implement the e-readers in their teaching and use the e-readers together with their students. However, none of the staff at Suzy Peacock had taken part in these activities. Further, the Kenyan ICT Master plan highlighted the need for further teacher training in ICT (ICTAuthority, 2014). However, this does not seem to have created any substantial impact yet even among the recent graduated teachers at Suzy Peacock.

When the results were presented and discussed with Worldreader staff, Sarah Jaffe, director of education and program design, it became clear that Worldreader are already working with some of the issues discussed above. In Worldreader’s new and updated teacher training material there is more focus on how teachers can teach students to make sense of information and become independent learners. Further, in countries where large-scale projects are implemented Worldreader are trying to work closely with governments to implement ICT and e-reading into government organised in-service training. In addition, in 2016 Worldreader will be experimenting with in-service training in the form of YouTube videos and Facebook forums.

Critical examination of theoretical framework

Designs for learning provided a theoretical framework with which it was possible to analyse different parts involved in the design process for learning. By being able to investigate the different parts of the design process it became clear which parts had changed and which parts had not. The limitations of designs for learning were that it is a relatively new theoretical framework and has never, as far as the author aware, been used in an ICT4D (Information and
communication for development) context. Most studies using this theory have also been conducted over a long period of time where researchers have been able to observe the changes with their own eyes. In this study the researcher had to rely on interpretations of teachers’ testimonials about their teaching practices to analyse the change the e-reader had made on their practices.

Methods used and the context of a developing country

Due to time constraints the, observations and interviews were exclusively designed for the teachers. Designing research methods involving the students might have given the researcher the opportunity to elaborate more on some of the topics. For example, asking the students how their teachers use e-readers in the classroom might have presented a nuanced image of the reality since the image teachers have and the image students have are likely to be slightly different.

Important for creating the framework for this essay especially concerning methods was the fact that the research was conducted in a development setting. As the authors of Development Fieldwork suggest, research conducted in an environment, which is unfamiliar to the researcher carries different implication than research conducted in an environment which the researcher is familiar with:

“The development fieldworker needs to be more eclectic than is the case with research in more familiar terrains, more sensitive to cultural and ethical issues, and more willing to re-design research strategy as the research project evolves.” (Murray and Overton, 2003, p. 32)

The choice of methods, how they were used and how the study developed was to a great extent formed by the fact that it took place in a developing country and in an unfamiliar setting for the researcher.

A crucial factor for the project was establishing and maintaining communication with the both Worldreader and Suzy Peacock seven months before and leading up to the point when the gathering of data began. Unlike many other studies (Scheyvens and Storey, 2003, p. 11) the process of establishing and maintaining contact with the different actors needed to conduct this study was smooth.

However, even though communication was maintained leading up to the study and questions concerning the field could be asked, it was impossible to form a comprehensive image of the field. The fact that it is impossible to know how it would look like in the field is typical for development fieldwork where the field often looks different from the one the
researcher expects to see and the design of the research is likely to shift during the actual fieldwork (Murray and Overton, 2003, p. 17).

This was also the case during the gathering of data for the study. During the observations, the researcher had expected to be able to study aspects such as how the communication between the teachers and the students change when the e-readers are incorporated in the teaching or how the role of the teacher changes when the e-reader is used in the classroom. However, the teachers only incorporated the e-readers during 2 out of the 21 lessons, which made it difficult to study the use of e-readers during the observations. Thus, the observations could not serve as a way of observing how the teachers used the e-readers in the classroom, but did serve to get an understanding of the context, and further to form the questions asked during the interviews. Due to the fact that the e-readers were rarely used during the lessons, it became clear that the study needed to change slightly. This is how the new purpose of this thesis, how the e-readers change and could change the conditions for teaching, was formed.

Because fields are “political locations” and since the field was unfamiliar to the researcher from the beginning, it was also important for the researcher to build an understanding of the field (Scheyvens and Storey, 2003, p. 9). Before departure, a great amount of time was spent to understand the situation for people in Kenya in general and concerning education in particular. According to Scheyvens and Nowak preparations of this kind are essential in order to give a good impression as a researcher and facilitate the establishment of contacts (Scheyvens and Nowak, 2003, p. 100).

In order to understand the field, meetings with actors in the field as well as informal conversations in particular with the teachers were important for the development of the researcher’s understanding of the school and its context. These conversations formed part of the methodology (Brockington and Sullivan, 2003, p. 57). In contrast to arranged interviews these conversations are important complements to the interviews and for the researcher to be able to understand what is being observed and experienced (Brockington and Sullivan, 2003, p. 73).
Conclusion

This essay has focused how teachers used the e-readers by examining the different affordances highlighted by the teachers. It was clear that the e-readers have the potential both to work as a tool to change the role of the teacher and to work as a tool to teach 21st century skills. It was emphasized that the teachers had a positive attitude towards the e-readers and used them to a great extent in their design for learning. However, there were many potentials of designs in learning and how the e-readers could change the way students took part of knowledge, most importantly co-operation between the students, increased student-centered learning and for the students to gain 21st century skills, but these potentials were not recognized by the teachers. Further, the representation of knowledge and communication of knowledge remain the same. This is most likely because the teachers have not undergone any type of training concerning how their role as teachers can change with the e-readers and how they can teach their students to become an attractive workforce for the 21st century and the information society.

The research conducted at Suzy Peacock in Eldoret confirms to a great extent what has already been concluded. Teacher training is indeed vital if the e-readers or any type of ICT tools should have any sustainable impact. However, the teacher training must be designed considering the needs of the teachers and what makes them motivated to use e-readers together with their students. Similarly, using ICT tools, in this case the e-readers, should make the teacher’s work easier, not more difficult or tiresome.

Even though the study was conducted in a development setting some of the findings in this study are also relevant in other contexts. When implementing an ICT tool in any school it is important to critically look at how the ICT tool can have a positive change on different parts of the design process. In order to achieve this it is important that ICT and learning how to teach students for the 21st century is incorporated in teacher training and that in service training is offered to educate teachers further.

There is a great amount of potential for further research on this specific topic. As there are some schools, connected to the Worldreader project, that have taken part in the training that Worldreader offer, it would be interesting to see if it is possible to find any differences in these two groups of teachers’ teaching practices. It would also be interesting to explore the possibilities of implementing teacher training through the e-readers and observe what kind of change this has on the teachers’ teaching practice.
Finally, ICT and its use in education is increasing rapidly all around the world. ICT opens up for new potentials in education. Immersing yourself into this field you easily get the impression that there are no limits to the possibilities. The body of research in this field is constantly growing and the question of how ICT will change education is present throughout. This essay has shown that ICT has the potential to change education. However, change will not take place just because you but an electronic device is put in the hands of a student. The teachers, who are the ones designing the learning opportunities for the students, need to be open to and aware of the possible positive changes ICT in education can have as well as how it can benefit young people growing up in an ever-changing society.
Appendix

Interview guide:

--- What would you say is the main advantage of the e-reader?
--- How often do you use the e-reader?
--- How do you feel that you best communicate knowledge to your students? Except
--- What is the purpose when you bring the e-reader to the lesson?
--- Does the e-reader play any part in your selection of material that you engage your
  students with?
--- What role does the e-reader play in the formation of your own knowledge?
--- Do you feel confident in using the e-reader?
--- Do you usually have discussions with other teachers on how to use the e-readers?
--- When do you choose to use the e-reader with your students?
--- How do you think that the e-reader can help students learn?
--- Would you like to use the e-reader more than you do today? How?
--- What do you feel is the advantage of the e-reader in contrast to other resources in the
  classroom?
--- Are the students confident in using the e-reader?
References


