The Relevance of Teacher Autonomy

A Qualitative Case-Study of Malawi Unlocking Talent: Learning Through Technology

Elisabeth Vestvik Kleiberg

MA of Philosophy in Comparative and International Education
Department for Educational Sciences

UNIVERSITY OF OSLO

May 2019

The Relevance of Teacher Autonomy

A Qualitative Case-Study of Malawi Unlocking Talent: Learning Through Technology

MA of Philosophy in Comparative and International Education

Department for Educational Sciences

UNIVERSITY OF OSLO

May 2019

2019

The Relevance of Teacher Autonomy. A Qualitative Case-Study of Malawi Unlocking Talent: Learning Through Technology

Elisabeth Vestvik Kleiberg

Trykk: Reprosentralen, Universitetet i Oslo

Abstract

While many countries worldwide have made substantial improvements in providing access to basic education, the quality of education has not been sufficiently emphasized. Attention within the international educational community has therefore been directed towards quality concerns, where information and communication technologies (ICTs) are considered to be central tools. ICTs have established themselves as significant tools for learning within educational systems worldwide, and considerable investments are placed on bringing ICTs into schools, even by countries with severely limited financial resources. Whether these investments are turned into profit, in the sense that the quality of education is enhanced as a consequence of the ICTs, remains a matter of debate. This study sets out to take part in the debate, by discussing whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of education in one of the world`s least developed nations.

A qualitative case-study of the donor-funded project Malawi Unlocking Talent (UT): learning through technology is conducted in order to critically contemplate on whether the investment in this specific project is appropriate taking in considerations of sustainability. Teacher autonomy, as depicted in Self Determination Theory (SDT), is identified as significant with regards to issues of sustainability. Qualitative observation and semi-structured interviews with some of the teachers working on the UT-project in Malawi constitutes the data of this study. Through a thematic analysis, the study is able to identify the standardized design of the UT-project as a significant threat towards teachers` feeling of autonomy. Conclusively, this research argue that quality judgements of these types of donor-funded projects should critically consider issues of autonomy not only for the sake of the sustainability of the specific ICT intervention, but also for the sake of the development of the individual teachers` well-being and for the educational system in its entirety.

Acknowledgements

I would like to emphasize my gratitude towards the participants of this study; teachers, principals and student-centre coordinators working on the UT-project in Malawi. You welcomed me at your schools and eagerly shared of your personal experiences and thoughts, and you helped me gain an understanding of the context that the UT-project is taking place in.

Moreover, thank you to officials from Norad, the Norwegian Embassy in Lilongwe and Voluntary Services Overseas. Without hesitation you shared information as well as more personal thoughts and experiences about the issues under investigation with me. Furthermore, thank you for the invaluable assistance in getting me in touch with schools in Malawi. A special thanks to "Billy" from VSO. In addition to giving me practical assistance, you patiently answered my questions about the UT-project and tirelessly discussed and shared your knowledge and reflections about educational development in Malawi with me. Our discussions spiralled many of the reflections to be found within the researcher.

Thank you to my supervisor, Tove Kvil. Your knowledge of not only academia but also the field of international and comparative education has been a valuable resource and anchor throughout the process. I would in addition like to thank my classmates for the cooperation and support during this process. Lastly, I would like to thank my mother, father, Margrethe and Magnus. You have patiently been giving me encouragements and acknowledgements throughout the process.

Elisabeth Vestvik Kleiberg Oslo, May 2019

Figures, Tables and Appendices

Acronyms

CDI – Communication and Development Initiatives

DEM – District Educational Management

IC – Integration Continuum

ICT – Information and Communications Technologies

MDG – Millennium Development Goals

MoEST – Malawian Ministry of Education, Science and Technology

NESP – National Education Sector Plan

NGO – Non-Governmental Organization

NORAD – Norwegian Agency for Development Cooperation

OLPC – One Laptop Per Child

SDG – Sustainable Development Goals

SDT – Self Determination Theory

UK – United Kingdom

UN – United Nations

USAID – United States Agency for International Development

UT – Unlocking Talent

UNESCO - United Nation`s Educational, Scientific and Cultural Organization

UNICEF – United Nations Children´s Fund

VSO – Voluntary Services Overseas

Table of Contents

1 Introduction

1.1 Background and Significance of the Study

The main topics that will be explored in this research are ICTs for education, aid to education, the sustainability of educational interventions and teacher autonomy. These topics will be explored through an investigation of the civil society project Malawi Unlocking Talent (UT): Learning Through Technology. The aim of the research is to acquire knowledge on the experiences and thoughts of some of the participant teachers in the UT-project, in order to discuss whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education.

Worldwide challenges of increasing access to education and simultaneously promoting the quality of education were agreed upon during a milestone event within the community of international education and development at the World Conference on Education for All in Jomtien, Thailand in 1990 (Wagner, 2018). These challenges were later drawn up in a more precise collection of educational targets at the World Conference on Education for All in Dakar, Senegal in 2000. The targets chosen were eventually made part of the 2015 United Nations (UN) Millennium Development Goals (MDGs), and later integrated into the 2030 UN Sustainable Development Goals (SDGs) (United Nations Development Programme, 2015; Wagner, 2018).

Today, several years after substantial investments in educational development have been made, multiple countries experience that children continue to not being able to read a single word, even after having attended school for several years (Wagner, 2018). While many countries have made significant leaps towards providing universal access to education since Dakar, improvements in educational quality has not managed to match the development. The international educational community has acknowledged the fact that universal access to education signifies universal access to a *quality* education (Lewin & Sabates, 2012; United Nation`s Educational, Scientific and Cultural Organization, 2005). The quality of education is a perquisite if education is to contribute fully to the development of the individual and of society. Information and communications technologies (ICTs) are considered important tools in improving educational quality and learning achievement, and consequently important tools in the attainment of the new UN SDGs. Considerable investments are placed on bringing ICTs

in their various forms into schools, even by countries with severely limited financial resources. Policies and programs that advocate ICTs for education have been established in nearly every current national government (Selwyn & Facer, 2013; Zhang, Yang, Maiga, & Chang, 2016). However, although huge investments and bets are being made on ICTs for education, a research-base of conclusive evidence confirming the relationship between quality educational development and technology in education ceases to exist (Lubin, 2018; Wagner, 2018). Consequently, it remains a matter of debate whether the substantial investments being made by organizations and countries worldwide on educational ICT programs for international development are worthwhile, Malawi being one of them.

Malawi is one of the world`s least developed nations. The education sector is perceived to be one of the key areas to drive Malawi`s socio-economic development forward. However, the educational system of Malawi has a long way to go before it can claim to offer a quality education to its citizens. Among the measures being taken to address the chronic educational challenges in the country comes via the introduction of ICTs in schools. Technology is claimed to be able to address Malawi´s poor learning outcomes and it is depicted as a powerful tool to increase the quality of education (VSO, 2018a). The UT-project aims at transforming Malawian children's learning achievements, through the use of ICTs in the form of touch-screen tablets (Hubber et al., 2016).

Depicted as a medium expected to revolutionize education, touch-screen tablets have established themselves as easy-to-use and child-friendly learning tools since their first appearance in 2010 (Kucirkova, 2014). The touch-screen tablets have three unique features that separates them from other currently available multimodal technologies. Firstly, touch-screen tablets are petite, light and easily transported. Secondly, touch-screen tablets do not require separate input devices. And thirdly, touch-screen tablets are purposefully designed to handle a plurality of educational applications, otherwise known as apps (Kucirkova, 2014).

The international development charity Voluntary Services Overseas (VSO) has carried out the UT-project for primary school children in Malawi in fourteen educational districts from 2013 through the present date (VSO, 2018a). Since the project`s initial implementation at Biwi Primary School in Lilongwe, more than 90 000 children have had improved access to quality education in Malawi according to the recent end-line evaluation issued by VSO (2018a). VSO is now in what is labelled phase two of the project, which takes place from April 2018 until

March 2021. In phase two, the Malawian Ministry of Education, Science and Technology (MoEST) will scale up the program to reach 160 schools and 110 000 learners (VSO, 2018a). As part of the institutionalization of the UT-project in phase two, district management educational offices (DEM) will be in the driver`s seat of capacity development in an expansion model (VSO, 2018a). The UT-project scales to eventually reach all primary education children in Malawi. As further investments and bets are being made on ICTs for education and on the UT-project in Malawi, a consideration of the project`s association to quality educational development is deemed to be significant.

1.2 Research Question and Purpose of the Study

Given the disparity between investments being made on ICTs for education and the contested nature of the research on the field, viewing the UT-project in relation to current research is important as it can be an addition to the field of educational technology. Moreover, this study is a contribution to the limited research that is done on the UT-project this far. Most importantly, the purpose of the study is to analyse whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education, because education remains a fundamental means towards a socio-economic development of the country and its inhabitants, leading to the following research-question;

Is the investment in touch-screen tablets an appropriate tool to enhance the quality of Malawian education?

The research-question was intentionally kept broad in scope throughout the research process, as the research pursued an inductive approach (Bryman, 2012). The extensiveness of the research-question and concepts under investigation were important in relation to remaining responsive during field work, as well as during the discussions within this study, where some of the multileveled and complex factors that influences teachers` perceptions of ICTs and ICTs appropriateness in the Malawian context are tried captured. Moreover, as the nature of the literature on the field of ICTs for education is contested, pursuing an inductive approach helped me in staying responsive to the different views in the literature. Even though staying receptive to the informants` perceptions of the state of affairs has been a valued trait throughout the research process, some commitment to certain concepts were eventually made. The conceptualizations of the main topics and the analytical framework of the research form the

lens that is applied to the study, and this lens will help narrow the scope of the research-question down.

The aim has not been to test a theory or hypothesis, but rather to explore the complex and intertwined phenomena of ICTs for education, aid to education, the sustainability of educational interventions and teacher autonomy in relation to the UT-project. These sensitizing concepts were not definite, but rather considered to be a general guidance in the research (Bryman, 2012). Within this research I do not seek to provide prescriptive answers to specific problems. The reader should approach this study as a problem-posing analysis of the case in question, in which concepts, theories and causations are proposed and questioned - but not answered. It is a study intended to discover and explore issues significant to the case in question, and a study that can potentially lay a foundation for future research in the relevant fields.

1.3 The Unlocking Talent Project (UT)

The overarching aim of the UT-project in Malawi is to improve the quality of basic education for primary age children. The UT-project is aiming at improving the quality by increasing Malawian students' learning achievements through the use of ICTs, in the form of touch-screen tablets and interactive applications (Hubber et al., 2016). Standard 1 and 2 learners, in-service and pre-service teachers, primary education advisors, out-of-school youth and children with special learning needs are the main marks of the UT-project (VSO, 2018a). The project is implemented in the following 14 education districts in Malawi: Karonga, Machinga, Dedzam, Ntecjeu, Blantyre Rural, Blantyre Urban, Lilongwe Urban, Lilongwe Rural West, Kasungu, Phalombe, Zomba, Samlima, Mangochi and Chiradzulu district.

The non-for-profit organization Onebillion provides the software, a solar powered energy source and technical support to the UT-project. VSO manages the implementation of the project within the schools, whilst the University of Nottingham is responsible for managing research on the project. MoEST authorizes the project and ensures that it is well embedded and maintained at all levels of the education system, according to VSO (2018a). Among the donor partners are the Norwegian Agency for Development Cooperation (NORAD)/Royal Norwegian Embassy in Lilongwe, the Government of Scotland, Comic Relief, the United Kingdom (UK) Department for International Development and the United Nations Children`s Fund (UNICEF) (Royal Norwegian Embassy in Malawi, 2017).

Figure 1: Picture: Children in the learning-center during a Chichewa lesson.

In addition to handing out the touch-screen tablets with software that is deliberately made for the Malawian context, the UT-project builds learning-centres that is either a renovated classroom or a new classroom in the participating primary schools (VSO, 2016). The learning-centre is supplied with touch-screen tablets (iPads), a charging point, solar panel electricity and security systems to protect the equipment (Royal Norwegian Embassy in Malawi, 2018). During the UT-classes there is either a regular teacher or an appointed learning-centre coordinator present. The teachers/learning-centre coordinators are given a designated teacher-

tablet where they can monitor the children`s progress. If technical problems occur or if equipment breaks, the schools contact VSO for maintenance.

The principal of the participating school coordinates the UT-classes in a rotation system, to make sure that each learner has a minimum amount of time of approximately two hours every week on the touch-screen tablet, depending on enrolment. The actual number of touch-screen tablets in the schools is also dependent on enrolment, but the estimate is about 30-40 on average (VSO, 2018a). The tablets are all confined to educational applications. The interactive applications, called Onecourse, are purposefully designed to improve the quality of teaching available at Standards 1 and 2 in literacy and numeracy. The applications are aligned to the national curriculum of Malawi. All the tasks and lectures within the software are explained through audio instructions by a virtual teacher in Malawi`s official language Chichewa. Consequently, children do not need to be literate in order to take advantage of the lessons (VSO, 2018b). Minimum adult supervision is necessary during the Onecourse sessions, because the children work through the lessons on their own and at their own pace. Furthermore, the virtual teacher "Anna" (see figure 2) provides simple guidance and repetition when needed (VSO, 2018b). In this way, the design of the project is delivered ready-to-use.

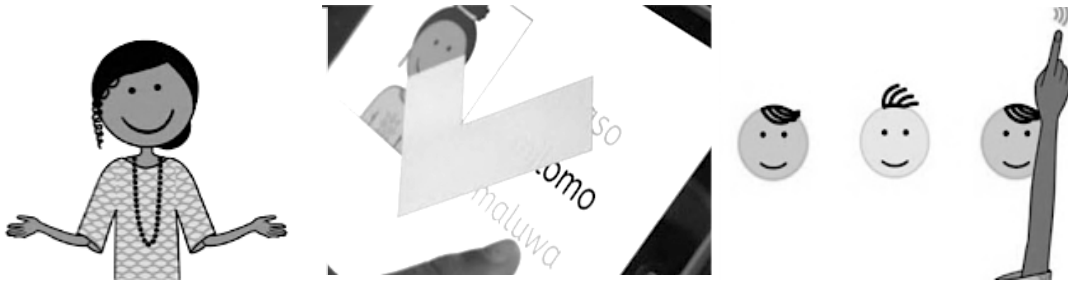


Figure 2: Picture: The virtual teacher Anna. Note: Provided by Onebillion (n.d.).

Onecourse switches between explicit instruction and unrestricted play, and the children are taken through a course that includes pedagogical constructs such as feedback, repetition, praise and rewards. The application provides a child-friendly learning environment and is able to scaffold the child`s learning and promote self-regulation in the learning process, according to VSO (2018a). The application that teaches Chichewa does not presume pre-existing literacy skills. The course does not require that the children have any previous reading or writing knowledge, as it starts from scratch and move towards more complex teaching as the children progress. Letters, sounds, syllables, whole words and stories make up the course that is meant

to teach children to read and write with understanding (VSO, 2018b). Covering two years of the Malawian curriculum, the application that teaches numeracy starts in the same way as the literacy course, at the very beginning. Initially simple elements of the learning process are taught (e.g. patterns, sorting and matching), followed by more complex issues (e.g. counting, weight and time). As the children progress, the level of difficulty increases and ultimately the children get to a point where they work on simple equations and multiplications (VSO, 2018b).

In the end-line study on the UT-project submitted to VSO by Communication and Development Initiatives (CDI) (2018), several advantages of using this exact intervention as a tool to assist in enhancing the quality of education within the Malawian context are set forward. In addition to the above-mentioned learner-centred approach the intervention pursues, it is e.g. argued that since there are no biases with the digital teacher, the use of the touch-screen tablets advocates inclusive learning. Moreover, through the use of the ICTs, all the children have access to the same curriculum and as such are not hindered by inadequate learning materials. Furthermore, the software promotes a culture of adhering to instruction in learners, since they are following the digital teacher and are checking their own progress. And lastly, children who are behind schedule are allowed by the software to continue from where they previously were. Children`s frequent absenteeism, and few possibilities for individual assistance within primary schools, makes this last trait of the UT-project specifically relevant within the Malawian context (Communications and Development Initiatives, 2018).

1.4 Delimitations and Limitations

In evaluating whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education, the most fundamental question to begin with would be whether the UT-project is able to contribute to enhanced learning outcomes within the selected primary schools. The first set of observations done on the UT-project in relation to enhancing learning outcomes were conducted by the University of Nottingham (see Pitchford, 2015). It was documented that after eight weeks of trials, pupils had a learning gain of 0,8 points in math as compared to 0,4 in the control group. The conclusion was drawn that it only takes eight weeks to make the same amount of learning progress that would under regular circumstances take a year to achieve (Pitchford, 2015). The research was conducted in order to establish proof-of-concept that the ICTs for education intervention is in fact effective at raising learning outcomes in Malawi, according to Pitchford (2015).

In their long-term and process evaluation of the UT-project, Pitchford, Hubber and Chigeda (2017) finds that children`s reading improves significantly more when using Onebillion`s Chichewa application as compared to regular teaching practice. Pitchford et. al. (2017) collected these results through a pupil-level randomized control trial. Furthermore, Pitchford, Kamchedzera, Hubber and Chigeda (2018) found that the intervention can be effective in enhancing learning outcomes for pupils with special educational needs and disabilities, through a quantitative proof-of-concept study. No further evidence or disclaim has been found regarding the project`s potential in raising learning outcomes in Malawi. The program has however been tested in the UK, where Outhwaite, Gulliford and Pitchford (2017) found that the intervention is effective at bolstering mainstream children`s acquisition of basic mathematical skills.

Hubber et. al. (2016) emphasizes that further research is needed to capture the scalability of the project, and they request a broader evidence-base of the measurable impact on learning. Even so, an assumption within this study is that learning gains cannot easily be measured. Insurance of the success of an ICTs for education intervention program in terms of rooted and long-term learning achievement, which should be the aim of such research, is hard to grasp given the cumulative nature of learning (Lubin, 2018). For that reason, and given the constrains of a master`s thesis, this study refrain from explicitly measuring children`s learning achievements, although it is implicitly addressed as a consequence of this study`s inquiry into the sustainability of the UT-project. Although the UT-project has shown to be effective in raising learning levels, the expenses of using this intervention as compared to other alternatives to reach the same goal, such as cost-benefit studies or inquiries into the added value of using touch-screen tablets, has not been found. However, determining whether or not it is actually the specific technological tools and the intervention at hand that causes the demonstrated learning achievements is difficult, as a complex set of elements influences educational change over time (Unwin, 2018). The clear-cut impact of any intervention is difficult to measure and deciding on real causality in relation to learning and education is challenging - and even more so in a master's thesis.

The literature within the field of ICTs for education, however divergent, seems to agree upon the fact that quality of learning with touch-screen tablets is closely tied to the quality of the application (Gorozidis & Papaioannou, 2014; Hirsh-Pasek et al., 2015; Neumann & Neumann, 2014; Papadakis, Kalogiannakis, & Zaranis, 2018). In the same manner, VSO (2018a) argue that successful use of touch-screen tablets is dependent on curriculum-based and child-centred software, and that the touch-screen tablets alone are not the main event. VSO (2018a) argue

that only when "child plus tablet plus software and efficient and motivated teachers" (pp. 5) are brought together, learning takes place. This research assumes that the software Onebillion provides is of such a quality that children are learning when spending time on it and using it correctly.

Therefore, the most pressing question is not whether the children are provided with a quality education through the application and intervention, the research assumes that they are. The most urgent question within this study is deemed to be whether an educational intervention like the UT-project is sustainable within the Malawian context. Moreover, and in connection to the sustainability of the project, the most pressing concern that should be taken into consideration when considering whether the investment in touch-screen tablets is an appropriate tool to enhance Malawian education is within study considered to be whether or not the Malawian schools and teachers themselves agree with the initiative. After all, they are the ones who are supposed to implement and benefit from the project. A curiosity into these concerns spiralled the development of this study and, as a consequence of the comprehensiveness of the research-question in combination with the nature of qualitative case-studies, the result is an analysis that incorporates elements from multiple research-fields. The most significant theoretical constructs identified in relation to the UT-project is provided in the subsequent section. In addition to being more explicitly addressed in chapter 5, the delimitations and limitations of this study are further addressed throughout the research when necessary.

1.5 Definitions of Key Constructs

The main topics that will be explored in this research, and which are deemed to be in need of further clarification, are ICTs for education, educational aid, the sustainability of educational interventions and teacher autonomy. This study, as a consequence of the nature of the case in question, operates with several composed and copious concepts that could have benefited from separate conceptualizations. However, the concepts beneath are prioritized because they are the most relevant constructs identified in relation to the case and the research-question. The conceptualization of these concepts will help tighten and direct the question of whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education. Although the concepts are highly interrelated in relation to the case in question and the way they are used within this study, they are in the following tried conceptualized separately

so to support issues of validity and reliability and to provide the reader with an elucidation of some of the assumptions within this study.

1.5.1 ICTs for Education

As touch-screen tablets are the central tools of the UT-project, ICTs for education is a central part of this research. ICTs for education is a general term for diverse ICT interventions and other types of programs that aims to improve the quality of education, in terms of enhancing learning achievements (Wagner, 2018). As there is limited literature concerning the UT-project as well as limited literature concerning the exact way ICTs are used in the UT-project, this research has engaged itself with a broad range of components in the field of ICTs for education. As it is not the technical or pedagogical content of the UT-project that is first and foremost of interest within this research, but rather the conceptualizations and narratives that have led to the investment in touch-screen tablets as a tool to enhance the quality of Malawian education, the general field of ICTs for education in a global context is deemed relevant.

Although the literature in the fields of educational technology, aid to education and sustainability of educational interventions, the concepts of ICT interventions, ICT innovations and ICT programs and projects are depicted as discrete concepts, they will in this study be used interchangeably to address the UT-project. As all of these concepts addresses qualities of the UT-project, and as their distinct features do not within this study have implications in relation to answering the research-question, separating them is deemed to lead to unnecessary confusion. The main concern has been to refer to them distinctively when references are made to the literature.

1.5.2 Educational Aid

Granted that the UT-project has shown potential in raising learning levels in Malawi in an efficient manner, it has managed to do so with help from donors. Although issues of educational aid are not at the forefront of this thesis, it frames the research throughout. The UT-project is in fact an externally initiated, implemented and financed project which leads to its own set of challenges and implications in relation to the sustainability of the project. This will be contemplated upon in relation to particular issues connected to Non-Governmental Organizations (NGOs) being the initiators of educational interventions.

Another construct of this study which involves the theme of educational aid is the investment angle this study employs. The reason the concept of investment is included in the research-question is because the inspiration for conducting this study in the first place came from the Norwegian government`s involvement in the project. As the Norwegian government is one of the UT-project`s main financial contributors I wanted to gain a better understanding of why the decision was made to invest in this exact project as a tool to help raise the quality of Malawian education, and whether the Malawian schools and teachers that are implementing the project identify with the decision.

1.5.3 Sustainability of Educational Interventions

This research will contemplate upon whether the UT-project is an appropriate tool to enhance the quality of Malawian education by amongst other matters asking if the UT-project is sustainable. Since the research aims to evaluate whether the investment in touch-screen tablets is an appropriate tool to enhance the *quality* of Malawian education, an elaboration of what this study considers as quality is deemed necessary, as any framework applied to the conceptualization of the quality of education is inevitably influenced by distinct values (Barret, Lowe, Chawla-Duggen, Nikel, & Ukpo, 2006). The sustainability of the intervention is within this research one of the quality-indicators used to evaluate the UT-project against the research-question.

The connection between sustainability and quality educational development is identified by Barret et. al. (2006) in their literature review on different quality definitions of education as imperative in any discussion of quality, but that it is seldomly devoted sufficient attention. Sustainability within this study aligns to the concept of institutionalization, which includes continuing and maintaining the use of an intervention beyond the initial implementation phase (Kirschner, Hendricks, Paas, Wopereis, & Cordewener, 2004, pp. 365). Institutionalization include challenges such as financial sustainability and policy alterations, to more localized challenges such as a defected technology.

This study has chosen to analyse sustainability in relation to teacher motivation and perceptions, as it is recognized as one of the most essential determinants for the successful implementation and sustainment of educational ICT interventions and programs (Chikasanda, Otrel-Cass, Williams, & Jones, 2013; Gorozidis & Papaioannou, 2014; Heystek & Terhoven, 2015; Kirschner et al., 2004; Montrieux, Vanderlinde, Schellens, & De Marez, 2015; Mtemang'ombe,

2017). Post-implementation phase is within this study considered to be when VSO is no longer in charge of the project, and MoEST have adopted the project as a government led initiative.

1.5.4 Teacher Autonomy

As a tool to help understand the motivations and perceptions of some of the teachers working on the UT-project, this research applies the Theory of Self Determination (SDT) as an analytical framework to analyse the themes identified in the thematic analysis of the data. In its practical form, SDT predicts whether behaviours are controlled or autonomous. Autonomous behaviour is enacted with a feeling of integrity and self-endorsement according to SDT, and it is a feature of human motivation that is associated with higher quality behaviour and greater persistence in behaviour (Ryan & Deci, 2012). As such, SDT is a useful tool to consider whether or not the teachers and schools working on the UT-project will continue to use the intervention beyond the initial implementation phase.

The concept of autonomy connects to issues in the field of educational aid as well as sustainability because it inhabits qualities that are associated with capacity development. Concepts such as empowerment, participation, ownership, agency and bottom-up planning are associated with capacity development to promote sustainable development, and emphasized as fundamental for the effectiveness of development initiatives (Bhattacharyya, 2004; Chaskin, 2001). In much the same manner, enabling the feeling of autonomy within individuals revolves around promoting a feeling of integrity and a sense of responsibility within humans, as opposed to the feeling of indifference and passiveness (Ryan & Deci, 2012).

SDT serves a dual purpose within this research. On the one hand, the theory is used to analyse whether the UT-project supports issues of autonomy in relation to sustainability, which is used as an indicator of quality to evaluate the UT-project against the research-question. On the other hand, the theory is used to critically consider whether this specific intervention supports issues of autonomy from a social development perspective, which in this research serves as an additional quality-indicator. SDT is essentially concerned with social surroundings that promotes or cripples human flourishing and wellness (Ryan & Deci, 2017). In much the same manner as Sen`s (1999) depiction of development as enhancing the lives we live towards greater freedoms, SDT argues that autonomy is fundamental for the individual development towards greater feeling of being in control of one`s own life and as such be self-determined. Even though these two theories are built on different philosophies and multifaceted understandings of quality

education that space does not allow for an elaborate explanation of, the point that is tried to set forward is that this research, in line with Sen (1999), does not align itself with conceptualizations of development as economic wealth. Development, or social development, within this study operationalizes itself as moving towards greater feeling of autonomy. As a result, the study seeks to not solely analyse autonomy within a specific context, it simultaneously sets out to argue *why* autonomy is in this research a quality-indicator applied to the evaluation of the UT-project.

1.6 Structure of the Thesis

In chapter 1, a general introduction of the study and a presentation of the main constructs and delimitations of this master`s thesis were given. A presentation of the Malawian context is put forward in chapter 2, through a brief presentation of the country`s history, the country`s educational system and the role of ICTs for education in the country. In chapter 3, a literature review concerning global rationales for investing in ICTs as well as global challenges with ICTs for education is accentuated. A presentation and justification of this research`s analytical framework is set forward in chapter 4. In chapter 5, the methodology of this study is illuminated through a presentation of the philosophical underpinnings, the participants, the data-collection tools, the analysis method and a discussion of the quality of the data. A presentation of this research`s findings is put forward in chapter 6, where the experiences and thoughts of some of the participant teachers in the UT-project are presented and analysed through the theoretical constructs of SDT. A critical consideration and discussion of the relevance of teacher autonomy is carried out in chapter 7, which creates the foundation for answering whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education. In chapter 8, a summary and conclusion is provided, in addition to suggestions for future research within the relevant fields.

2 The Malawian Context

In the following a presentation of the Malawian context is given. A brief presentation of the country`s history, the country`s educational system and the role of ICTs for education in the country will follow. The general aim of the contextual presentation is to create a foundation for discussing whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education. A presentation of Malawi`s history and present state is provided, so to cater a better understanding of the current conditions that surrounds and influences the teachers` roles as enablers of the UT-project. The presentation of Malawi`s educational system will help illuminate the importance of increasing the quality of Malawian education and consequently the importance of conducting research that can help determine the relevance of using touch-screen tablets as a tool to enhance the quality of education. And lastly, a presentation of the role of ICTs for education in Malawi is hoped to create a further understanding of why investments in ICTs are realized as tools to enhance educational quality in Malawi.

Figure 3: Picture: Position of Malawi on world map. Note: provided by Google Maps.

2.1 The Early and Present State of Malawi

Malawi has an estimated population of 19,843,000 million people, as of 2018 (Kadzamira, Kalinga, Ingham, Phiri, & Mitchell, 2019). Located in the southeast of Africa, Tanzania,

Zambia and Mozambique encircles the landlocked country. Malawi is one of the poorest countries in the world, and the geographical isolation and the population density are the most significant reasons for Malawi`s low per capita income, according to one of the previous Norwegian Ambassadors to Malawi, Eidhammer (2017, pp. 7). Among other developmental challenges the country faces are persistent malnutrition, excessive rates of infant mortality, low life expectancy, widespread unemployment and high prevalence of HIV/AIDS (Norad, 2018). Creating approaches to be able to deal with environmental threats, managing sound healthcare and developing the quality of their educational system is among the advancements Malawi seeks to attain.

The British have had a great presence in Malawi throughout the county`s history up to current date. Malawi was once part of the Maravi dynasty, which was founded in the late 15th century. During the Maravi dynasty, the first Europeans came in contact with Malawi when the Portuguese started trading with the region sometime during the 16th century (Johannessen & Leraand, 2017). The next consequential European contact occurred when the Scottish explorer David Livingstone arrived in the region in 1859, which was the beginning of the British increasingly taking control over the region. Scottish Presbyterian missionary societies started building missions, and British merchants began to sell commodities in the region. By the year of 1891, Malawi was a British protectorate with the name Nyasaland. In 1953, Nyasaland was made part of a federation with Rhodesia, which is former Zimbabwe and Zambia. The federation was abolished in December 1963, and on the 6. of July 1964 Malawi was an independent state (Johannessen & Leraand, 2017).

In 1964 Malawi was made a republic. However, the country was soon after declared a one-party state and their first president, Hastings Kamuzu Banda, announced himself as president for life. Banda`s rule became a dictatorship, which lasted for the next 30 years. The situation did however change in 1993, when far-reaching domestic protests and the withdrawal of western financial aid pressured president Banda to legalize other political parties. This led to a referendum where the plurality of Malawians voted for democracy (Eidhammer, 2017). The one-party system was consequently put to an end, and more parties were allowed. Within the next twenty years, Malawi changed from being one of the most restricted and confined societies in Africa to one of the most open (Eidhammer, 2017). In a survey conducted in 2017 by the research-network Afrobarometer, 77 percent of Malawians report that they feel somewhat or completely free to say what they think without fear (Isbell & Chunga, 2017, pp. 1). Even so,

despite the political and cultural changes of recent years, Malawi is still one of the least modernized countries in Southern Africa.

At present, the country`s economy is considerably based on agriculture, and tobacco is the country`s most important export commodity. Malawi`s great pride, Lake Malawi, constitutes one fifth of the country`s areal and it is a source of income for the many fishermen that can be viewed in their small boats and canoes on the lake. Huts built by dried soil and roofs covered by dried grass is a common sight in the rural areas of Malawi, where most of the country`s population is settled (Eidhammer, 2005). Farmers with simple hacks as their working gear strolling along the fields, and women balancing heavy loads of variating sorts characterizes the silent and tranquil scenery of Malawi`s countryside. Regionally Malawians are recognized for their patience, hard work and respect for authorities, and because of the friendliness of the people the country is commonly referred to as "the warm heart of Africa" (Eidhammer, 2005, pp. 14).

Given the many developmental challenges Malawi is facing, the country receives considerable amounts of financial aid. Although his dictatorship not was internationally acknowledged, Banda managed to establish a pro-western foreign affairs relationship, and the country maintains positive diplomatic relations with most countries to date. In terms of volume, the main bilateral donors are the United States, the UK and Norway. The International Development Association, the Global Fund and the European Union are the most important multilateral donors and international organizations, while the United Nations Development Programme is an important aid-coordinator (Chr. Michelsen Institute, 2017).

Eidhammer (2017), paints a picture of the developmental aid that is running to Malawi as on the one hand bettering several elements of the lives of Malawian citizens, and on the other hand not contributing to making any significant improvements in relation to the basic services and structures within the country. Eidhammer (2017) exemplifies by referring to a UN-funded program that is able to cut down the time it takes to test babies for HIV by using drones, all the while the most elementary drugs are lacking in Malawian hospitals concurrently. Furthermore, concerns have been made that the developmental aid that is running to the country is in some instances rendering Malawians dependent on external help and guidance. Eidhammer (2005, pp. 20) indicates that, although not a unique phenomenon in developing countries, Malawians have a particular tendency to refrain from action until it is suggested by an aid organization and that they tend to be hesitant towards participating in development programs if they are not

subsidized. These are however as emphasized, traits that *might* be common to Malawians and far too sensitive as well as irrelevant to generalize. The point that will be emphasized within this research is that although one can't, nor should, claim that Malawians given the country's history and present state are rendered more dependent on outside help and direction than others, supporting issues of self-determination and autonomy is relevant no matter a country`s or individual`s history or current social contextual situation.

2.2 The Educational System of Malawi

Malawi was among the countries that in 1990, as a consequence of the World Conference on Education for All, made a promise to introduce free primary education to its inhabitants. In 1994, this commitment translated into reality for the country (Hollow & Masperi, 2009). However, the quality of the educational system of Malawi was sincerely affected after the introduction of free primary education (Chimombo, 2005, 2009; VSO, n.d.). The quality of the education offered was sincerely affected in the sense that children were not secured an education where they actually learn and develop skills as a result of being in school.

As a consequence of the escalation of enrolments in primary schools across the country, a significant burden was placed on Malawian primary schools, and over-crowding in classrooms became an even bigger problem than it already was. Increased class sizes, inadequate infrastructure, limited teaching materials and a lack of qualified teachers sincerely affected and continues to affect the quality of the education offered (Hollow & Masperi, 2009). Although there is no ambiguity within the country on the importance of providing quality education for all, Malawi continues to struggle to maintain the advantages of improved access and simultaneously provide a quality education up to date.

Averaging 1 teacher to 80 pupils, and in frequent instances 1 teacher to 250 pupils, Malawi`s student-teacher ratio within basic education encompasses at present one of the highest ratios in the world. About half of all children enrolled in primary schools drop out before completing, and fewer than a quarter of the pupils that continue to lower secondary school finishes the cycle (Royal Norwegian Embassy in Malawi, 2017). Levels of learning are in addition low (Norad, 2017). On the World Bank`s Africa Student Learning Index for 2010, Malawi ranks among the lowest countries in the region (World Bank, 2010, in Royal Norwegian Embassy in Malawi, 2018). In 2012, the United States Agency for International Development (USAID) found that

38 percent of girls and 40 percent of boys in grade 4 did not manage to read a single word of connected text (USAID, 2012, in Norad, 2017, pp. 57).

As a means to increase learning achievement in primary education in Malawi, the quality of teaching is identified as an essential component. According to a report by the World Bank Group on primary education in Malawi (Ravishankar, El-Kogali, Sankar, Tanaka, & Rakoto-Tiana, 2016), primary school completion rates and children`s learning achievements are severely influenced by the motivation of teachers and the quality of teaching. So much so that although the student-teacher ratio levels are high, the learning achievements and outcomes within primary schools in Malawi is more dependent on the improvement of the work practices of existing teachers, than on increasing the amount of teachers within schools (Ravishankar et al., 2016).

Teacher motivation is generally low in Malawi (Ravishankar et al., 2016). MoEST fails to provide teachers with adequate salaries, which hinders them to use their skills fully and concentrate on teaching. Furthermore, the correlations between teacher performances and remunerations and promotions are low. According to the report by the World Bank Group, teachers spend less than four hours per day in class. Within those four hours, the World Bank Group found that on average 20 percent of the time allocated was off-task. 55 percent of the time was spent on passive learning, while 25 percent of the observed lectures were spent on active teaching and learning activities (e.g. discussions, group work, activities and answering questions) (Ravishankar et al., 2016).

The amount of money spent on education in Malawi is above the regional average for Sub-Saharan Africa, and overall spending on basic education is fairly high. Education constituted seven percent of gross domestic product between 2011 and 2016. The majority of public spending on basic education is predominantly used on primary education, and accounts for circa half of total education expenditure. The government finances more than 91 percent of the primary schools in Malawi (Ravishankar et al., 2016). MoEST has the overall responsibility for the education sector, with responsibility for supervision, quality assurance and the maintenance of primary schools (Ravishankar et al., 2016). The Directorate of Basic Education manages the primary education system. The primary education system is managed through a decentralized system (see appendix 1). DEM offices throughout the country are responsible for running primary school education at a district level. There are 33 education districts in Malawi, with

their own designated managers, administrators and supervisors. Within the districts there are furthermore education zones, that are headed by primary education advisors and primary schools headed by principals (Ravishankar et al., 2016). Malawi has adopted the UK system of education (Chikasanda et al., 2013). The formal education system in Malawi consist of primary (eight years), secondary (four years), and tertiary education (four years) (United Nation`s Educational, Scientific and Cultural Organization, n.d.) (see appendix 1).

2.3 ICTs for Education in Malawi

To counteract some of to the developmental obstacles the educational system of Malawi faces, MoEST implemented from 2008 to 2017 a priority scheme titled the National Education Sector Plan (NESP) (Ministry of Education, Science and Technology, 2008; Mtemang'ombe, 2017). The NESP was established as a means to improve primary education through diverse policy efforts. Improving teaching and learning *inputs* in primary schools are in the NESP identified as a number one priority (Ministry of Education, Science and Technology, 2008, pp. 11). Mtemang`ombe (2017) identifies within the NESP that the improvement of inputs, in the form of provision and improvement of teaching and learning materials, is held as the most important tool to enhance the quality of education in Malawi. ICTs for education is furthermore identified as one of these inputs that are meant to facilitate enhanced learning outcomes and achievements. NGOs have had a particularly prominent role in that manner, with ICT intervention programs as one of the methods offered to improve educational inputs. In order to improve the quality of basic education through NESP, MoEST, the local community, NGOs and the diverse donor countries and organizations are meant to work together to provide quality education. Serving as implementation partners through the government`s ICT programs within primary schools, the NGOs offer financial support and diverse resources such as materials, supervision and technical assistance (Mtemang'ombe, 2017).

Among the ICTs for education initiatives that have been implemented by the government in relation to NESP, and in collaboration with NGOs, within basic education in Malawi is the interactive radio instruction project Tikwere. The project was implemented with support from USAID. The aim of Tikwere was to develop and distribute interactive radio lessons for Malawi`s basic primary schools. Based on evaluations done on the project, scaling the project to reach all primary schools in Malawi was recommended and the Malawian government adopted the project as a national government program. How this project currently functions,

and how it has been implemented and integrated throughout the country, is however unknow as no studies have tracked its development (Mtemang'ombe, 2017).

In addition to Tikwere and the UT-project, two other ICT interventions in Malawi are identified by Mtemang`ombe (2017) that aligns with the priorities set forward by NESP, and are implemented in collaboration with NGOs; the Tiphunzire Limodzi project and the TeachTab project. The Tiphunzire Limodzi project was implemented from 2006 to 2010, and it provided selected schools with multimedia players that allowed children to actively work and communicate with each other and with lessons. Tiphunzire Limodzi was not institutionalized within the Malawian government. The TeachTab project was implemented in 2014, and in the same manner as the UT-project used touch-screen tablets to address problems related to shortage of learning resources and high student-teacher ratios. However, in the same manner as the above-mentioned projects, information regarding the impact and current status of the intervention is missing.

In his study of processes and contexts for ICT interventions in Malawian primary schools, Mtemang`ombe (2017) finds that what ICT intervention programs in Malawi have in common is that decision in relation to implementation has been hasty, and it is unclear how exactly MoEST is adopting these programs. It is not clear how the ICT interventions are regulated by MoEST, and whether the individual ICTs for education interventions integrate into coordinated plans and processes on a national level. Mtemang`ombe (2017) argues that as a result, the ICT interventions remain the individual NGOs` projects. As such, the interventions are primarily led and controlled by the NGOs, as opposed to being institutionalized and led by MoEST. Moreover, as several of these interventions are ongoing, a conclusive research-base regarding their implementation, impact and scale is lacking (Mtemang'ombe, 2017). When these types of indicators of the success of the interventions are lacking, it is difficult to tell what impacts ICTs for education have had in the country, other than that they have been used as tools *indented* to raise the quality of education in Malawi.

3 Literature Review

As there exist limited literature concerning the UT-project and literature concerning the exact way ICTs are used in the project, this research has engaged itself with the general field of ICTs for education in order to identify common benefits and challenges worldwide. Furthermore, as it is not the technical or pedagogical content of the project that is first and foremost of interest, but rather the conceptualizations and narratives that have led to the investment in touch-screen tablets as a tool to enhance the quality of Malawian education, the general field of ICTs for education is held relevant. Initially, a presentation of global rationales for investing in ICTs as well as global challenges with ICTs for education is given. Thereafter, a discussion of the importance of teachers` motivations to implement ICTs in schools is put forward. Subsequently, a presentation of particular issues related to NGOs as initiators of ICT interventions in developing countries is posed. An emphasis is put on illuminating the importance of not only considering the individual educational intervention at hand when quality judgements are made with regards to the appropriateness of investing in ICTs for education, but rather the educational system in its entirety.

3.1 Global Rationales for Investing in ICTs

ICTs for education uphold a promise of being able to create learning environments that are referred to in the literature as "transformative" (Mtemang`ombe, 2017, pp. 19). The learning environments are transformative in the sense that ICTs have the capacity to combine text, image, sound and video, which allows for creating authentic learning environments that transcends the constraints of a classroom. Furthermore, these transformative learning environments allow learners to visualize, manipulate and actively interacting in solving problems and working on abstract and complex concepts of curriculums (Mtemang'ombe, 2017; Papadakis et al., 2018). These transformative learning environments align with the most common perception of how people best learn currently; constructivism. This alignment to a contemporary learning paradigm can account for some of ICTs for education`s popularity, according to Mikre (2011).

From the point of view of the constructivist learning paradigm, also referred to as learner-centred education, ICTs for education offer an adequate tool to provide quality education. As a

counter theory of learning opposing the behaviourist tradition, the constructivist paradigm assumes that individuals construct meaning and understanding based on their prior knowledge and experiences (Mikre, 2011). The transformative learning environments that ICTs can create refutes the notion of the construction of knowledge, because these specific learning environments provide learners and teachers with the opportunity to adjust learning and teaching to individual needs in combination with providing the learners with greater responsibility of knowledge acquisition. As these constructivist learning principles are associated with what constitutes a quality education, schools are somewhat forced to react accordingly, with reference to Mikre (2011).

As ICTs for education are associated with the provision of quality education it connects to the concept of development, and the tools become particularly relevant in developing countries. The socio-economic development of a country is argued to be significantly influenced by the quality of the education system, and thus ICTs become beneficial in this regard (Mikre, 2011). Significant investments in actualizing the potentials of ICTs in education is in many developing countries being made, even when the financial resources are at a minimum. Nonetheless, the tools` potential in relation to supporting economic development and social progress is accentuated as the major motivation behind the priority they are given (Zhang et al., 2016).

ICTs are furthermore identified as important in relation to equality of opportunities (Zhang et al., 2016). From a humanistic perspective on education and development, the United Nation`s Educational, Scientific and Cultural Organization (UNESCO) sets forward that ICTs establishes possibilities for participation and access to knowledge separate from the constraints of contexts (UNESCO, 2015, in Zhang et al., 2016, pp. 2). These multiple advantages enclose the discourse that is created around ICTs for education and ICTs for education in the developing world. It is in addition suggested that the enthusiasm that surrounds ICTs for education might be even stronger in relation to their potentials in the developing world because, as a consequence of the above-mentioned advantages, connotations are created towards ICTs for education as tools that are able to bypass educational challenges (Hollow & Masperi, 2009; Mikre, 2011; Wagner, 2018). As such, they are perceived as a means to fast-tracking educational, economical and societal development. Anticipation towards inventing the next wonder drug that is going to revolutionize education can as such be created, and the OLPC initiative can in that manner serve as an illustration.

3.1.1 The OLPC Initiative

Considered to be one of the most significant global educational technology programs of recent times, the One Laptop per Child initiative (OLPC) which launched in 2007 is one of these types of projects where connotations of transformative learning and technology´s potential to bypassing educational challenges are created (Wagner, 2018). The objective behind the OLPC initiative is that learning and educational opportunities are enabled for the poorest children in the world, by being given low-powered, resistant and low-cost portable computers founded on progressive learning principles. The initiator of OLPC, Nicolas Negroponte, went as far as associating this educational technology as a solution to most issues in relation to development by stating that*;* "if I really have to look at sort of, how to eliminate poverty and create peace and work on the environment, I think—I can't think of a better way to do it" (Negroponte, cited from OLPC Foundation, 2007, n. pp.).

The OLPC initiative has received extensive critiques. In particular the association it carries towards being a product that is appropriate across contexts, and being depicted as a solution to complex global problems are issues that has been under scrutiny (Selwyn, 2013). Even so, the potentials of the OLPC initiative and ICTs to be a wonder drug for educational challenges in the developing world have simultaneously received a lot of support within the educational technology community (Selwyn & Facer, 2013; Wagner, 2018). The laptops of OLPC are still being produced and disseminated, and new models are being developed (Robertson, 2018). The enthusiasm surrounding ICTs` potential to bypass educational challenges in the developing world does thus not seem to decrease, and programs similar to the OLPC initiative are being implemented in educational systems worldwide.

The UT-project is one of these programs that are not too different from the OLPC initiative, because it in some manners carries connotations of having the potential to revolutionize education. The software provided by Onebillion which is used in the UT-project is a contestant in the competition Global Learning Xprice. The competition challenges software developers to create programs that will enable children in developing countries to teach themselves basic reading, writing and arithmetic within 15 months. The software must in addition be scalable and fit in any context. The competition can be a doorway to a significant change in how the world thinks about learning, if it manages to prove that children can teach themselves basic skills according to the initiators of Global Learning Xprice ("Global Learning XPRIZE," n.d.). The winner of the competition will be announced in June 2019.

3.2 The Promised Transformation is Missing

It seems that the enthusiasm and hope for the next revolutionary technological tool to transform education in the developing world is in no way decreasing. That the next revolutionary technological tool is on the threshold of changing education as we know it, has however been a reality for the past 30 years, according to Selwyn and Facer (2013). Despite the hopes that the educational tools that is ICTs are hoped to do for education in relation to quick quality improvements and development, particularly in the developing world, there is a discrepancy between what is said to happen and what actually happens, which leads to scepticism of the actual usefulness of ICTs within education.

Selwyn and Facer (2013) caution against applying grandiose terms to educational ICT innovations and depicting the tools as distinct and instantaneous solutions to educational and developmental challenges. As they put forward, history shows that changes in education are rarely drastic, but rather cumulative and gradual. Many educational institutions and learning environments have not undergone fundamental changes, and bear resemblance to those that existed hundred years ago. ICTs` for education`s expected institutionalization within schools are as such taking much more time than anticipated, and forethought is therefore advised (Hollow & Masperi, 2009).

Another factor leading to scepticism of the usefulness of ICTs for education is that there is a lack of substantial research and evidence that ICTs for education is causing any profound change to the field, neither in developing nor developed countries (Hollow & Masperi, 2009). One of the proposed reasons for the lack of substantial evidence is the rapid changes of ICTs. When the evaluations of the ICT interventions have completed or even managed to start, it might be the case that the ICTs have changed to the point where the studies are no longer relevant (Wagner, 2018). Furthermore, concerns are raised by Selwyn and Facer (2013) in relation to the research field being dominated by psychological perspectives on learning and teaching, which they argue to provide restricted views of ICTs. According to Selwyn and Facer (2013), research on ICTs for education needs to consider the embedded and multileveled contexts in which the tools are situated in order for their potentials to be fully realized.

Another common problem found in the literature through the history of ICTs within education is that hardware often is handed out to schools without first considering the educational content

or aims that the hardware is supposed to support. It is rolled out as merely an activity or as a tool for representation and replication of regular practice, and not as a tool to create transformative learning environments. Moreover, the ICTs are also at times thought of primarily as tools that should be used for the development of ICT skills, and not to enhance the learning experience (Zhang et al., 2016). In that case, the tools are serving the purpose of educating individuals to use ICTs, and not to actually educate individuals.

In addition to the above-mentioned challenges identified in relation to ICTs for education, developing countries have extra challenges that needs to be dealt with if the investment is going to be worthwhile. There is often an absence of electricity and internet infrastructure, especially in rural areas. There is also often limited availability of support staff that are technically skilled and teaching staff sufficiently qualified and knowledgeable in ICTs (Zhang et al., 2016). Even so, despite the contexts that can be characterized as technology hostile, the possible promise of bypassing educational challenges and fast-track into development seeds to underscore the investments rationales put forward within the field.

A lot of the same positive features and identified problems found in the literature in relation to ICTs for education in developed and developing countries in general, are found in relation to tablet technology specifically. The current knowledge-base of the use of touch-screen tablets and its connection to quality education and enhanced learning outcomes has a fragmented nature (Haßler, Major, & Hennessy, 2016). According to Haßler et. al. (2016), evidence of the effectiveness of using touch-screen tablets to enhance learning achievement is contextual in nature. Furthermore, detailed explanations as to why using touch-screen tablets within certain activities can improve learning outcomes remain elusive. Moreover, in the same manner as general ICT use, the potential of the touch-screen tablet in relation to creating progressive learning environments is underutilized, even though educational workers are convinced of its benefits (Haßler et al., 2016; Montrieux et al., 2015; Rikala, Vesisenaho, & Mylläri, 2013; Searson, 2014). The touch-screen tablets are mainly used as a replicate of, or a substitute to, practice and not as tools to transform practice.

3.3 Teachers` Motivations to Implement ICTs

Moving on from a discussion of rationales for investing in or not investing in ICTs for education, the next central concern becomes the implementation of the educational

intervention. The implementation of ICT interventions usually requires several changes within schools, such as changes in policies, management, teacher education, teaching styles and learning approaches. Besides these alterations required within schools, larger societal elements such as politics and culture also impacts on the implementation of educational interventions (Mtemang'ombe, 2017). As a result of the multiple and often complex elements influencing the implementation and integration of ICT interventions, one single theory or model cannot completely and thoroughly explain the nature of ICTs within educational systems.

Notwithstanding the entangled nature of implementation of educational interventions and ICTs, as well as the inconclusive research-base in the field of ICTs for education, the most crucial component identified for successful implementation and sustained use is teachers` motivation in the sense of perceptions (Chikasanda et al., 2013; Gorozidis & Papaioannou, 2014; Heystek & Terhoven, 2015; Montrieux et al., 2015; Mtemang'ombe, 2017). And identified as the biggest challenge in relation to teachers` perceptions of ICTs, and consequently their will to implement the tools, is to move away from the perception among teachers of ICTs as just one more thing that is forced and dumped upon their already heavy workload (Magambo, 2007, in Mtemang`ombe, 2017, pp. 27). Thinking of ICTs as an integrated and natural part of the teaching and learning process, and utilizing their potentials as progressive learning tools is by Mtemang`ombe (2017) recognized as the element that has most impact on implementation. Although it is the approach preferred by initiators of educational ICT interventions, placing most weight on training teachers how to use ICTs is not enough taking into consideration the impact of teachers´ perceptions (Cox, Preston, & Cox, 2000). Teachers` motivations to actually wanting to implement the ICTs must be part of the equation, as it is fundamental in the realization of educational technology`s potential.

Several theories and models have been used in attempts to explain teachers` motivations and perceptions towards implementation of ICT interventions, and among the proposed motivational factors that influences successful implementation of ICTs for education is teachers` experience with the tools, depicted as ICT competence (Hollow & Masperi, 2009; Lucas, 2018; Mtemang'ombe, 2017; Ryan & Deci, 2017). The more experience a teacher has in using a particular ICT, the more useful the teacher will perceive the ICT for teaching and learning purposes. Hollow and Masperi (2009) suggest that one of the ways to support teachers` feeling of competence is monitoring and appraisal from program implementors. Teachers` self-efficacy is among the additional proposed motivational factors that influences teachers`

perceptions of ICTs. Self-efficacy is an individual`s belief that he or she will manage to accomplish an activity or action required to achieve a goal or task that he or she values (Bandura, 1997). According to this construct, teachers` willingness to utilize ICTs and their perceptions and attitudes towards the tools are influenced by their belief in their personal abilities to utilize them (Mtemang'ombe, 2017).

In the same manner, the Diffusion of Innovations Theory by Rogers (1995) addresses the importance of perceptions such as feeling of competence for successful implementation. The Diffusion of Innovations Theory is one of the most widely applied theories for evaluating the implementation of ICT interventions and educational changes (Mtemang'ombe, 2017). The theory posits that teachers` perceptions of the ICTs, and their feeling of competence in relation to the resources, are influential in how the educational innovation is adopted and implemented. Greater perceived benefit as compared to other alternatives, simplicity of use, perceived positive impact and correspondence with teachers` existing values and practices are among the perceptual determinants for an educational innovation`s adoption within an educational system, according to the Diffusion of Innovations Theory (Rogers, 1995).

Mtemang'ombe (2017) argue that the Diffusion of Innovations Theory is limiting in understanding teachers` motivations to implement ICTs because the theory does not elaborate upon *why* teachers approve of or dismiss an ICT innovation. Although the theory offers indicators that can be applied to help determine the success of the implementation of an intervention based on the perceptions of teachers, the theory does not manage to capture social contextual factors that can account for the specific perceptions that teachers have of the ICTs. Taking into consideration social contextual factors when studying educational ICT intervention programs, allows for proposing features of an innovation that might explain why teachers have the specific perceptions and motivations that they do. NGOs as initiators of ICT interventions is within this study depicted to be a social contextual component that has a particular impact on teachers` motivations and perceptions.

3.4 NGOs as Initiators of ICT Interventions

As described in chapter 2, the government through MoEST implements educational ICT interventions in Malawi in collaboration with NGOs, such as in the case of the UT-project. This phenomenon is particularly common in developing countries (Mtemang'ombe, 2017). ICTs for

education interventions are often initiated, financed and implemented by, or in collaboration with, external agents such as NGOs. Several hazards are identified in the literature in relation to ICTs for education in developing countries, where the ICT intervention often is delivered by an external NGO. Large investments being made on unproven technology, lack of monitoring and evaluations, lack of thought of the complete cost of the intervention, teachers not trained appropriately, flaws being attributed to technical and training challenges and lastly that the intervention providers do not have the educational system in its entirety in mind, are among the potential pitfalls (Hollow & Masperi, 2009; Mtemang'ombe, 2017; Tabulawa, 1997; Trucano, 2010; Zhang et al., 2016).

Not having the total system in mind is a particular issue with regards to NGOs as initiators and implementors of educational interventions, who tend first and foremost to be concerned with the individual intervention at hand. An example of how NGOs can fail to coordinate into an integrated system on national level, is the way teachers are trained. Instead of training teachers in using ICTs and enhancing their ICT skills and knowledge as part of a professional development initiative on a national level, the training teachers are given in relation to the ICT interventions is often custom-built for the specific intervention at hand (Mtemang'ombe, 2017). Consequently, the training is first and foremost serving the intervention and not necessarily the national effort to enhance educational quality.

As discussed, teachers` resentment towards implementing ICTs in their teaching because they have a perception that it is just another new task that is forced upon them, without their request nor consent, was identified as the most difficult issue in relation to realizing the progressive learning potentials of ICTs (Magambo, 2007, in Mtemang`ombe, 2017, pp. 27). This phenomenon is just as relevant, if not more, in developing countries where it is often the ICT intervention implementors who are the frontrunners of the initiatives. Teachers who are already dealing with poor infrastructure, low salaries and extremely high student-teacher ratios might not have the implementation of the ICTs at the top of their priority list. Although the interventions might have only the best intentions, a relationship to the ICT intervention providers can be created where schools and teachers are dependent on whatever are demanded and supplied by the NGOs, because the schools do not have the resources required to sufficiently implement and integrate the changes (Mtemang'ombe, 2017). Furthermore, acknowledgement over the fact that the interventions are implemented in schools with already established teaching and learning practices, goals and values is often overlooked by the external

organization who most likely will first and foremost ensure that the schools adapt to the new requirements (Mtemang'ombe, 2017). In that case, although the intervention is intended to assist the practices of the schools it is implemented in, the intervention ends up requiring that the schools accommodate specific requirements and not the other way around.

3.4.1 Short-Term Impact Pressure

Another issue connected to NGOs being in charge of educational interventions, and not managing to consider the total educational system, is the pressure of showing results of the specific intervention - and showing them quickly. In their review of what works and what doesn't work in foreign aid to education, Riddell and Niño-Zarazúa (2016) find that, as addressed in chapter 1, the most certain contribution aid to education has made over the years is expanding enrolment in basic education. Reaching the potential of what aid could achieve in relation to increasing educational quality is however not yet grasped. As a response to the increased concern within the international educational community of the importance of increasing the quality of education offered to children worldwide, more pressure has been put on demonstrating impact and outcomes of the aid provided. And often within a short period of time, if further funding is going to be assured.

The pressure of showing results quickly gets to dictate what kind of evidence is used to demonstrate the outcomes and impacts of educational ICT interventions (Lubin, 2018; Unwin, 2018). As opposed to studying policies and systems, a lot of aid-supported research is fixated on studying individual interventions and variating programs through randomized control trials. Randomized control trials are the new ideal measures of impact analysis, according to Riddell & Niño-Zarazúa (2016). What these studies however fail to consider is the educational system in its entirety. While the recipient country needs to consider the educational system in its entirety, the randomized control trials only captures the individual intervention at hand. In that way, the randomized control trials are subsiding donor`s interest above the interests of the recipient country (Riddell & Niño-Zarazúa, 2016). The type of impact-evidence commonly used to determine the success of educational ICT intervention programs is thus limited to demonstrating that a project has been a success for the project`s sake.

However, as Riddell and Niño- Zarazúa (2016) argue, the development of sustained educational quality within the recipient country is not achieved by the continued production of successful

but all the while individual projects. Although these types of interventions address the quality of education, and although the success of the interventions are claimed demonstrated through research such as randomized control trials, they might simultaneously be undermining permanent impact. Sustainable and rooted development requires considerations of educational systems in their entirety (Mtemang'ombe, 2017; Riddell & Niño-Zarazúa, 2016). Studies on these types of educational interventions therefore require a holistic consideration of an educational system, before judgements are made on ICTs` contribution to quality educational development.

3.4.2 Sustainability of ICT Intervention Programs

Connected to issues of NGOs being the initiators of educational interventions and not managing to consider the total educational system, is that the ICT educational intervention fails to institutionalize and in that manner fails to be sustained. According to Kirschner et. al. (2004), the sustainability of educational programs entails that the project at some point passages from being an externally initiated, funded and implemented intervention into becoming the principal means of regular practices. In order to make the money, the time and the effort profitable in terms of widespread learning achievements, the sustainability of ICT intervention programs needs to be thoroughly considered. Kirschner et al. (2004) emphasizes that the achievements of an educational intervention at project level does not necessarily convert into success at the institutional or national level. Consequently, sustainability is within this research one of the quality-indicators applied to the analysis of the UT-project.

Sustainability entails within this research, in line with Kirschner`s et. al. (2004, pp. 365) depiction of the concept, institutionalizing an educational intervention within the educational system it is operating in, in the sense that the project is maintained and preserved beyond the initial implementation phase. If not issues of how an educational intervention is going to be sustained and institutionalized are taken into consideration, one can risk the same phenomenon as found in relation to evaluations and the way training is thought of; that the program was first and foremost a success for the initiators of the project, and not necessarily a success for the educational system in its entirety.

Furthermore, as teachers were identified as the most important component of successful use of ICTs in education, so are they in relation to sustaining educational ICT intervention programs. In their review of determinants for failure and success of the sustainability of educational

innovation projects, Kirschner et. al. (2004) finds that projects` transition into becoming maintained and preserved beyond the initial implementation and becoming institutionalized is where most programs are deserted. And they find that although changing or innovating educational systems is not surprisingly a complex process consisting of multiple determinants, the human factor is the most influential component in relation to institutionalization (Kirschner et al., 2004). In the same manner as Mtemang`ombe (2017), Kirschner et. al. (2004) refer to the Diffusion of Innovations Theory by Rogers (1995) as a means to illuminate the importance of recognizing the interconnectedness between the sustainability of educational innovations, and the motivation and perceptions of the ones who are supposed to implement and use the innovation in the long run.

A particular issue identified in relation to the implementation of educational interventions in developing countries is that it should be done with particular care and caution, because it can lead to additional challenges to already fragile school systems and societies (Mtemang'ombe, 2017). If not issues of institutionalization are addressed, educational intervention programs can create extra work for educational systems that are already in severe need of more resources. If the program is not institutionalized, or collapses due to lack of funding, the program can furthermore end up being a disappointment leading to low morale and trust in these types of programs. And if not issues of capacity development and empowerment are addressed as part of the institutionalization initiatives, the individuals who are supposed to benefit from the programs can be rendered more dependent (Mtemang'ombe, 2017; Wagner, Day, & Sun, 2004). Basic training and technical approaches often compose the paramount part of capacity development initiatives, even though social aspects such as perceptions and motivation needs to be considered in order for capacity development to lead to sustainable development (Baser & Morgan, 2008). This study will contemplate on one of these social aspects, by arguing that autonomy should be part of capacity development initiatives. The concept of autonomy will be further elaborated upon and explored in the subsequent chapter.

4 Analytical Framework

Self-Determination Theory (SDT) is used as an analytical framework to analyse and interpret this study`s themes as identified in the data-material. Based on the conceptualizations and delimitations defined in the introduction of the research as well as the issues identified in chapter 3, a lens of human psychology and motivation is found as beneficial to answer the research-question. Ultimately, SDT creates the foundation for answering whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education, which will be contemplated upon in chapter 7.

In the following, a general introduction to SDT is given. A justification of why the theory is found appropriate to analyse and interpret the themes identified in the data-material of this research is attempted, followed by a presentation of critical theory. Critical theory is in this research an additional lens which is used not to analyse the data-material, but to analyse the findings from a critical perspective in chapter 7. Lastly a presentation of four of the mini-theories that SDT consists of will be provided, as they are used to interpret the themes identified in the data-material in the findings-section of the study. Special attention is directed towards the theory of organismic integration, as it is within this theory Ryan and Deci (2012) explains how people can be autonomous even though the behaviour is extrinsically motivated. As this study will argue, teachers` level of relative autonomy when working on the UT-project is within this research an indicator of whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education.

4.1 The Theory of Self Determination (SDT)

The Theory of Self-Determination is a theory about motivation. The theory describes how social contexts either can reinforce or impair individuals` intrinsic motivated behaviour. **Intrinsic motivated behaviour** is commonly understood as an individual`s natural inclination to be engaged and committed (Ryan & Deci, 2012). Intrinsic motivation is often thought of as a type of action where it is the activity itself that creates motivation, and not necessarily the possible promise of a reward. The opposite to intrinsic motivation is extrinsic motivation (Ryan & Deci, 2017). In contrast to intrinsic motivation, an **extrinsically motivated behaviour** is enacted because the activity leads to a separable consequence. The goal is separate from the activity itself. Rewards and punishments are classic separable goals. Extrinsically motivated

individuals are inclined to become reliant on contingencies, which entails that individuals will not do certain behaviours if the contingencies are not at disposal. Furthermore, in addition to becoming dependent on these contingencies, this environment is experienced as controlling (Ryan & Deci, 2012).

Although the most common description of intrinsic motivation is as previously depicted doing an activity where the activity is the benefit itself, Ryan and Deci (2012) have a slightly different definition. An intrinsically motivated behaviour is an internal condition that is inherently fulfilling, according to SDT. Since the condition is fulfilling, individuals want to achieve and maintain that condition. Ryan and Deci (2012) argue that the inherently satisfactory condition, principally derive from experiences of competence, autonomy and relatedness. These three inherently satisfying experiences are proposed by SDT to be fundamental psychological needs that all human beings possess. If these needs are satisfied, people will according to SDT experience their motivation and actions as autonomous. If these needs are curbed, people will according to SDT experience their actions as controlled (Ryan & Deci, 2012). Further clarification of what each of the needs entail will be provided in chapter 6. The need to feel autonomous is however elaborated upon below, because it is the principal construct of SDT.

To be autonomous means to behave with a sense of willingness, meaning that one fully endorses the activity one is engaged in, and thus feel that the action is self-regulated. It is a trait that all human beings have a capacity for, as well as an aspiration to experience, according to SDT (Ryan & Deci, 2012). One of SDT`s fundamental presumptions is that greater autonomy leads to higher quality behaviour as well as greater persistence in behaviours. Moreover, autonomy is in addition within SDT depicted as a foundation for optimal social development, in the understanding of development as greater well-being and thriving amongst individuals. Human thriving is understood as wellness, in terms of feeling self-determined (Ryan & Deci, 2017).

4.2 Rational for Using SDT

One of the main reasons SDT is used as an analytical framework to analyse the themes identified in the thematic analysis of the data, is that the concept of autonomy inhabits qualities that are associated with capacity development, and as such connects to central concerns within the fields of educational aid as well as sustainability. Concepts such as empowerment, participation, ownership, agency and bottom-up planning are associated with capacity

development to bolster sustainable development (Bhattacharyya, 2004). This association to significant concepts within the fields of educational aid and sustainability of development initiatives help support the relevance of the theory in relation to the case in question.

Another rational for the relevance of the theory in relation to the case of the UT-project, is that teacher motivation was in chapter 3 recognized as one the most essential catalysts for the successful implementation as well as sustainment of educational interventions. In the end-line study on the UT-project submitted to VSO in June 2018, CDI (Communication and Development Initiatives, 2018) specifically claim that the success of the UT-project is dependent on the commitment of the principals and teachers working on the project. Although the teachers working on the UT-project does not have to be particularly involved in what goes on in the learning-centre when it comes to children's learning, because the software is standardized, they still remain the initiators and facilitators of the project on a daily basis. That the teachers are motivated to use the UT-project is therefore without a doubt important for the project to be implemented properly and for it to be sustained.

SDT contains several of the similar concepts that were identified in chapter 3 to be significant components of teacher motivation for the successful implementation of educational ICT interventions. As will be further elaborated upon, SDT addresses teachers` perceptions of perceived benefit, simplicity of use, perceived positive impact and resemblance to existing practices, which were all components of the Diffusion of Innovations Theory (Rogers, 1995). ICT self-efficacy and ICT competence as identified in chapter 3 are also features of SDT, and Ryan and Deci (2012) refer explicitly to Bandura`s (1997) and White`s (1959) influence on their understanding of these concepts. The issue of autonomy in relation to teacher motivation is also specifically addressed by other theorists, such as Gorozidis & Papaioannou (2014), as essential for enhanced performance, psychological health, creativity and persistence in variating educational contexts.

Although SDT has not been used to research an ICTs for education program quite like the UT-project before, the theory has been used in relation to research on intentions of sustaining educational ICT innovation programs (see Roca & Gagné, 2008; Sørebø, Halvari, Gulli, & Kristiansen, 2009). Even though these studies do not compare to the qualitative analysis that is this research, they strengthen the conviction that SDT can be a predictor of teachers` intentions to sustain educational innovations. As the above-mentioned examples illustrate, SDT is

compatible with several of the main theoretical constructs in the field of teacher motivation and implementation of educational ICT interventions. There are however also traits of SDT that separates it from the most common theories of human motivation, and in which simultaneously makes it especially suited to analyse the motivation of the teachers working on the UT-project.

4.2.1 SDT and its Distinctive Features

One of the reasons SDT is especially suiting to answer the research-question, against optional theories about motivation, is that Ryan and Deci (2017) argue that the theory is relevant beyond possible influential factors such as developmental epochs, cultural contexts, gender and socio-economic status. Critiques have been raised towards the appropriateness of referring to the needs as universal and relevant across cultures (Bandura, 1989, Hofstede, 2001, in Ryan & Deci, 2017), which will be further elaborated upon in chapter 7. The essential assumption is that every individual has basic needs. And the satisfaction versus thwarting of those needs will impact on the wellness of that person, regardless of the individual`s perception of the importance or value of the needs. This sets the theory apart from the prevailing perspectives on motivation, such as expectancy theories, where it is assumed that an individual will only experience motivational benefits if the obtained outcomes are of value for the individual itself, according to Ryan and Deci (2017).

Furthermore, although other theories about motivation manages to predict amount or intensity of behaviour, they do not manage to predict the quality of behaviour in the same manner as SDT does, according to Ryan and Deci (2012). Whether behaviour is more controlled or more autonomous is a better predictor of quality performance and engagement than amount of behaviour, according to SDT (Ryan & Deci, 2012). This study of the UT-project consequently does not analyse how *much* motivation the UT-teachers have in relation to the project, but rather what *quality* and type of motivation they have in relation to it.

Another way that SDT extinguishes itself from other theories about motivation is that the theory argues that a behaviour can be autonomous and experienced as non-controlling, despite the fact that it is extrinsically motivated. In addition to facilitating intrinsic motivation, SDT argue that contexts that support the basic psychological needs bolster internalization and integration of extrinsic motivation (Ryan & Deci, 2012). SDT argue that extrinsically motivated behaviour can be internalized and integrated to the degree that the action is experienced as autonomous, but that it depends on the social context and whether that context support the basic needs (Ryan

& Deci, 2012). This is what makes the theory especially suited to help interpret the UT-teachers` experiences and thoughts on the UT-project.

Sine the UT-project is an externally initiated intervention, one can assume that the Malawian teachers` motivations to implement and sustain the project is essentially extrinsic. SDT posits that although the teachers` motivations are extrinsic in relation to the UT-project, they can experience autonomy and feel self-determined while working on it if their basic psychological needs are satisfied. Consequently, the advantages in relation to quality implementation and intentions of sustaining the project will be enabled if the teachers` needs are met, even though their motivation in relation implementing the UT-project is extrinsic. For that reason, this research will analyse if, and in what way, the UT-project affects the UT-teachers` basic psychological needs.

Finally, the last significant way that SDT separates itself from other theories about motivation, and yet another rational for why the theory is a suiting framework to help answer the research-question of this study, is that SDT suggests social contextual reason as to why teachers have the specific perceptions that they do. As found in the literature review, most research on teachers` implementations of ICTs for education is exclusively focused on perceptions. As Mtemang`ombe (2017) argues, this can be limiting because it does not capture social contextual explanations as to *why* teachers have the specific experiences and thoughts that they do. In this research, SDT will assist in identifying possible contextual reasons that can account for why the teachers have the perceptions that they do. These contextual reasons are captured through an analysis of whether or not the UT-teachers have their basic psychological needs met in relation to the UT-project. Furthermore, whether the UT-project supports the UT-teachers` basic psychological needs establishes the foundation for the addition critical perspective that this study employs.

4.2.2 Rational for the Additional Critical Perspective

The critical perspective this study engages is based on a conceptualization of critical theory as a tool that helps reveal power-constellations in society, so to support issues of social justice, and encourage and increase autonomy, equality and empowerment for individuals (Østerud, 2007a; Selwyn & Facer, 2013). SDT does first and foremost inhabit a practical approach to the study of motivation, because it concerns itself with disclosing how contexts impact on basic

psychological needs and consequently autonomy, which results in different qualities of behaviours. However, SDT also inhabits a critical unit to the analysis of human motivation.

SDT is critical because the theory examines and compares social contexts with regards to their ability to support versus cripple social development towards greater self-determination, flourishing and wellness (Ryan & Deci, 2017). With other words, development towards greater autonomy. SDT thus serves a dual purpose within this study; it provides the opportunity to analyse persistence and quality of behaviour in relation to a distinct task, and at the same time the theory allows for analysing whether specific contexts support or thwart social development towards greater autonomy, which in this study is the second quality-indicator applied to the analysis of the UT-project.

In the framework of critical theory, question of whether social situations are as they should be are commonly put forward (Thagaard, 2013). When the aim of the findings section of this study is to consider the UT-teachers` feelings of autonomy, and to posit that the social contextual reason for their relative autonomy is dependent on whether or not they have their basic needs met, the aim of the discussion section of the study is to consider whether or not the social contextual situation the UT-project creates for the UT-teacher is as it should be. According to SDT, contexts that do not support the development of individual autonomy do not contribute to a fundamental necessity for both quality performance as well as wellness for individuals which, as this research will argue from a critical perspective, creates the basis for determining the appropriateness of the investment in the UT-project within the Malawian context.

It is my anticipation that by adding the critical perspective, the research`s findings will be contextualized through a politically conscious approach toward this research`s topics of ICTs for education, sustainability of educational interventions and aid to education. Overall, the critical stance will hopefully provide a more holistic understanding of the UT-project, and consequently a more complete analysis of whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education. The critical stance is also reflected in this research`s social paradigm and comparative dimension, which will be further elaborated upon in chapter 5.

4.3 Theoretical Constructs within SDT

SDT is a theory that still is under development and new sub-theories are advancing (see "selfdeterminationtheory.org – Theory," n.d.) An exhaustive presentation of each of these theories is beyond the space limitations, as well as beyond the interest-field, of this master`s thesis. In the following a short presentation of four of the mini-theories that SDT consists of is given, which are the Theory of Basic Psychological Needs, Causality Orientations Theory, Organismic Integration Theory and Cognitive Evaluation Theory. The presentation of these theories is meant to give a more comprehensive explanation of why SDT is a suited framework to answer the research-question, and how the theoretical reasonings behind this research`s findings are arrived at. In the subsequent chapters, the theories will not be separately addressed (except from in a few instances), because they are interrelated to the extent where separating them might cause more confusion than assistance to the reader.

4.3.1 The Mini-Theories of SDT

The psychological needs that according to SDT need to be satisfied in order for individuals to be autonomous are, as already referred to competence, relatedness and autonomy. What these needs entail, Ryan and Deci (2017) elaborate upon in the **Theory of Basic Needs**. Basic psychological needs are depicted as something disparate from desires. One can long for power and money, but satisfaction of these longings does not necessarily expedite intrinsic motivation and integration of extrinsic motivation. Bearing resemblance to the way physiological nutrients are required for corporal health, basic psychological needs consist of nutrients that are required for social development towards growth, integrity and well-being. It is in comparison with this that the Theory of Basic Needs provides an explanation of why certain activities are sustained, whereas some are not. As previously set forward, intrinsic motivation is in SDT depicted as the experience of internal satisfaction and enjoyment. This satisfactorily feeling is a result of experiences of competence, autonomy and relatedness. Since individuals experience enjoyment when these needs are met, they want to sustain the activity, according to Ryan and Deci (2012). Further elaboration of what each of the needs contain will be provided in chapter 6, as they are used to interpret the data-material of this research.

The **Theory of Causality Orientations** explains that there exists differences between individuals in personality that influences motivation (Ryan & Deci, 2017). Individual differences affect how one orient oneself in the environment, which is referred to as causality

orientations. Which type of orientation an individual has, impacts on the feeling of autonomy within that individual. SDT define three different causality orientations; autonomous, controlled, and impersonal orientations. Autonomous causality orientation is a type of orientation where an individual feel that he or she has a choice when enacting a behaviour. No matter if the action is extrinsically or intrinsically motivated, if an individual feel that he or she is able to regulate an action based on personal values and interests, the behaviour is autonomously regulated. If, on the other hand, the individual does not experience the existence of choice when enacting a behaviour, and if that individual feel that the cause of the action is outside him- or herself, the causality orientation is controlled. If the situation is experienced controlled to the point where it is viewed as unachievable, the causation is impersonal. Impersonal causation is related to concepts such as amotivation, apathy, incompetence and helplessness (Ryan & Deci, 2017). The environment can alter and influence on how individuals explain causations, which is elaborated upon in the Theory of Cognitive Evaluation.

The **Theory of Cognitive Evaluation** is particularly concerned with intrinsic motivation. The theory explores how rewards, supervision, feedback, and other external factors and requests in individuals` social environments impacts on intrinsic motivation (Ryan & Deci, 2017). Through the Theory of Cognitive Evaluation, Ryan and Deci (2017) argue that an extrinsically motivated request can have damaging impact on individuals` intrinsic motivation, because it affects their need to be autonomous. There are although nuances in how self-determined and autonomous individuals feel faced with these extrinsically motivational factors and requests, which they present in the Theory of Organismic Integration.

4.3.2 The Theory of Organismic Integration

The Theory of Organismic Integration discusses what motivates individuals to participate in behaviours that are not intrinsically motivated, and in which individuals engage in because of an instrumental and separable value. The motivation for engaging in such behaviour is with other words extrinsic. It is within the Theory of Organismic Integration Ryan and Deci (2017) explain how people can experience feeling autonomous, even though the behaviour is extrinsically motivated, which is a particularly relevant feature of SDT in relation to the UT-project. The Theory of Organismic Integration provides an elaborate explanation of how extrinsically motivated behaviour can be autonomous by referring to the view of human nature that underscores SDT. An essential presumption within SDT is that it has an image of human

nature as active, which is contrasted to the more passive and deterministic role individuals are given within the behaviouristic view of human nature. According to SDT, all humans are inclined towards psychological growth, development and internalization (Ryan & Deci, 2017).

Inspired by amongst others the psychologist Jean Piaget, SDT argue that humans actively strive to internalize the environment`s norms and regulations. This phenomenon SDT put alongside the concept of acting with integrity. However, this natural tendency towards internalizing extrinsically motivated behaviours will not be enabled if the three basic psychological needs are not satisfied (Ryan & Deci, 2012). If the basic psychological needs are not satisfied, the extrinsically motivated behaviours will not be internalized. As a consequence, individuals are likely to feel that the control of the behaviour lies with someone else. The behaviours are therefore likely to be enacted passively, and not with a sense of integrity, responsibility and enjoyment (Ryan & Deci, 2012).

The degree to which extrinsically motivated behaviours are integrated, varies according to SDT. The cognitive process of internalizing contexts` norms and values is depicted as resulting in four types of motivational regulation; external, introjected, identified and integrated (Ryan & Deci, 2017). These four types of motivational regulations represent different degrees of extrinsically motivated behaviour, which exist between intrinsic and extrinsic motivation. This is illustrated by Howard, Gagné, & Bureau (2017) as falling along a continuum scale of internalization (IC-scale) (see figure 4). The more the extrinsically initiated behaviour is internalized, the more autonomous an individual will be when enacting a behaviour. As previously discussed, greater relative autonomy is associated with higher quality behaviour, greater persistence as well as greater well-being among individuals.

External regulation is a form of extrinsically motivated behaviour that is dependent on external contingencies. As long as the external contingent is at disposal, the behaviour is likely to persist. It is the possible promise of a reward, or the possibility of avoiding punishment, that underscores the action. The context´s norms and regulations are in that case not integrated within the individual, and the actions are consequently not autonomous or self-regulated (Ryan & Deci, 2017). The most controlling form of extrinsically motivated behaviour subsequent to external regulation is **introjected motivation**. Introjected motivation is experienced as controlling because the values and norms in the social context are acted out, without being accepted and integrated as one`s one norms and values. While enacting the extrinsically

motivated behaviour, the control remains someone else`s and the behaviour is as a consequence not executed with a feeling of integrity and autonomy (Ryan & Deci, 2017).

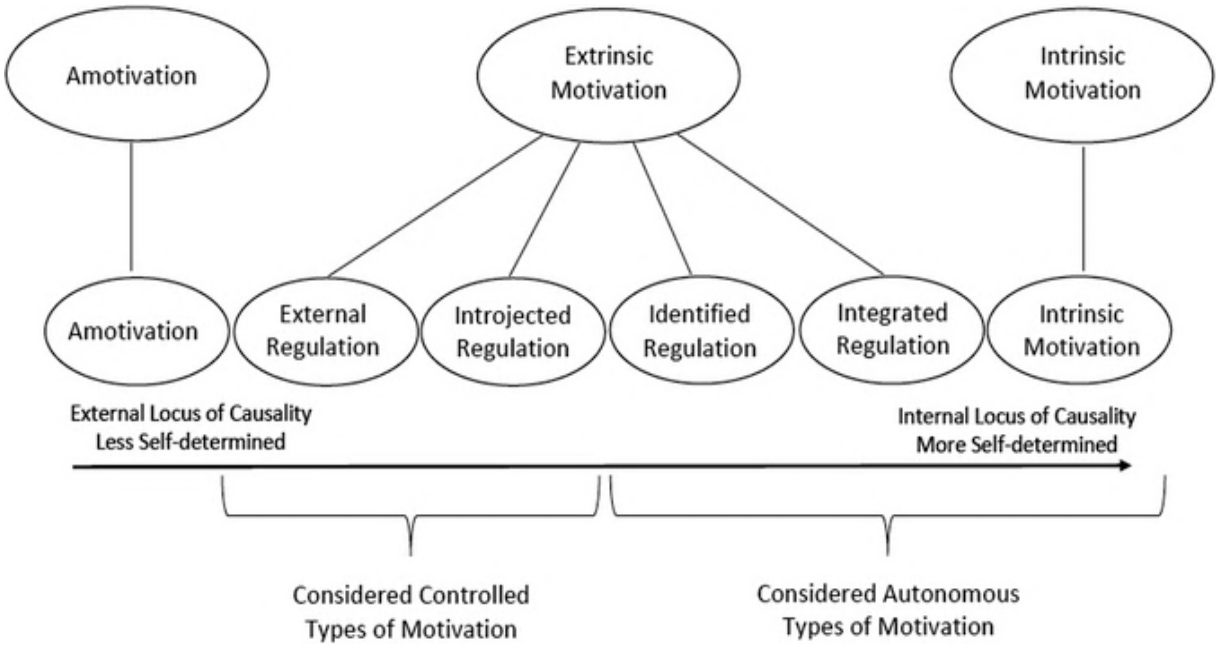


Figure 4: IC-scale. Source: Howard et. al. (2017).

Identified motivation is less of a controlling form of extrinsic motivation. Identified motivation is experienced as less controlling because within this type of action, the individual understands and acknowledges the external norms and values. However, the context`s norms and values are only somewhat valuable and does not necessarily complement other interests within the individual. The extrinsic norms and regulations are therefore not fully internalized, and one acts with a partial feeling of integrity and autonomy (Ryan & Deci, 2017). **Integrated motivation** is a type of extrinsically initiated behaviour that is experienced as non-controlling because the feeling of autonomy is maintained while enacting the behaviour. The feeling of autonomy is maintained because the individual acknowledges and endorses the specific context`s norms, and thus acts with a feeling of integrity (Ryan & Deci, 2017). The extrinsically motivated request or obligation is in this case integrated to the point where the individual feels autonomous while enacting it, even though the motivation behind it is extrinsic.

In the analysis to follow in chapter 6, the UT-teachers` level of integration of the extrinsic motivation that is the UT-project will be categorized and establish in accordance with the classifications put forward in the Theory of Organismic Integration and, illustrated on the IC-scale (figure 4). However, these categorizations should only be interpreted by the reader as tools of illustration. Because, as SDT emphasizes, motivation is an elusive concept. Types of extrinsically motivated regulations might for example coexist and people`s causality orientations are inclined to interact, as every individual have each orientation to some degree (Ryan & Deci, 2012). SDT therefore addresses a person`s actions and feeling of autonomy as *relative* autonomy. In the same manner, although this study during the analysis of the data-material categorizes the UT-teachers` perceptions in line with the constructs set forward on the IC-scale (figure 4), the aim is not to confine the quality of the teachers´ motivations. Feeling of competence, relatedness and autonomy are elusive and interdependent concepts, and the research acknowledges this fact by referring to the *relative* autonomy of the UT-teachers.

5 Methodology

In the following a presentation of this study`s methodology is given. In order to fully understand and appreciate the methodology, initially a discussion of this research`s view of social reality is provided. The philosophical and ideological underpinnings of the research are reflected in the qualitative design of the study, which takes the shape of the representative case-study as depicted by Yin (2009). Although this qualitative case-study not is generalizable and directly applicable to other cases, the case of the UT-project is in this study believed to be representative in terms of illuminating worldwide issues in relation to the main themes of the study; ICTs for education, aid to education, sustainability of educational interventions and teacher autonomy.

Succeeding the discussion of the design of the study, a consideration of the different analysis-levels of the research is put forward. Although the study does no inhabit a comparative case-study design, it is argued that the study does contain elements that resembles multilevel analysis as depicted by Bray and Thomas (1995), since the study contemplates upon social contextual factors that influences the teachers` perceptions on several levels. Subsequently, a presentation of the participants of the study, the data-collection tools and the analysis method used in this research is given. Lastly a discussion of the quality of the data is carried out, where challenges in relation to amongst other matters reliability and validity of the data are emphasized.

5.1 Methodology

This is a qualitative study. The aim of the study is not to depict a static image of social reality, but rather to show the interconnectedness between the actions of participants of the social setting that is the UT-project in a holistic and in-depth manner. These are all traits common to qualitative research (Bryman, 2012). These presumptions of how the UT-project should be studied, alongside other philosophical and ideological underpinnings, are in the following accentuated. Being implicitly or explicitly expressed, social scientists have several assumptions about the way in which the social world should be researched which tightly connect to the methods they use, present study included (Burrell & Morgan, 1979). The first two assumption that will be addressed is this research`s ontological and epistemological nature.

The ontological nature addresses whether reality exists objectively from an individual, or if reality is constructed within individual cognition (Burrell & Morgan, 1979). This research places itself within the ontological tradition of nominalism and constructivism, because I do not within this research believe it is relevant to analyse the UT-project or answer the research-question separately from the reality of the individuals that it concerns. The epistemological nature revolves around assumptions about what constitute acceptable knowledge in a discipline, and this research acquires an epistemological tradition conceptualized as anti-positivist and interpretivist (Burrell & Morgan, 1979). This study is interpretivist because the aim of the research is not so much about explaining the UT-project and present facts and concrete evidence, as it is about understanding it. The research wishes to obtain and present knowledge about the UT-project from the point of view of the research participants, as opposed to taking the role of an observer. The most significant reflections on whether the investment in touch-screen tablets is appropriate within the Malawian context is believed to stem from the teachers who are in fact using the intervention in its intended context.

The abovementioned meta-theoretical assumptions of science and society are theorized by Burrell and Morgan (1979) as different social paradigms. Given the philosophical and ideological underpinnings of this research, consisting of the nominalist, anti-positivist, and interpretivist assumptions of social reality, this research bares resemblance to the paradigm that Burrell and Morgan (1979) conceptualizes as the radical humanist paradigm. The assumption of the radical humanist paradigm is that there exist certain social arrangements that constrains and impinges human cognition and development, which research should set out to elucidate and overcome (Burrell & Morgan, 1979). This study of the UT-project inhabits features of the radical humanist paradigm because the discussion part of the research critically analyses whether or not the investment in touch-screen tablets is an appropriate tool to enhance Malawian education, by elucidating and arguing that contexts that does not support autonomy not contributes to a fundamental component of human wellness and development.

5.2 Research Design

The research design of this study is qualitative, in the form of a case-study. A detailed and intense study of one case will take place, that is the study of the UT-project. Case-studies facilitate in-depth studies of real life and often complex phenomena, dealing with an assortment of documents, interviews and observations (Yin, 2009). An investigation of the UT-project in

its natural context is deemed important because as is typical with case-studies, the boundaries between phenomena and context are not clearly evident. Actually being in the UT-schools, observing and talking to the people it involves and trying to capture some of its complexities without altering the natural context, is deemed invaluable in order to answer the research-question. The comprehensiveness of this study`s research-question and associated concepts is a result of the case-study design, in the sense that the nature of the case got to decide the direction of the study. Although I initially sat out to solely operate within the field of educational ICTs, the complexity of the case in question led to the additional intertwined fields of educational aid, sustainability of educational interventions and teacher autonomy being included.

Albeit this study is classified as a case-study it does simultaneously resemble ethnographic research, since data from both interviews and observations are collected (Bryman, 2012, pp. 432). However, the main aim is not to describe a cultural group, as is the case with ethnographic research. This study could also resemble evaluation-research (Bryman, 2012, pp. 57). Applying theories from the field of organizational evaluation would be suiting if the research had a practical orientation. However, this research does not aim to conclude with a set of practical tips for teachers or offer concrete policy alterations, which is the case within evaluation-research. Rather, this study sets out to analytically explore intertwined phenomena, theoretical constructs and concepts in relation to the UT-project.

Yin (2009) distinguishes between different types of cases. This research could fall into two of the distinct categories. This study could be classified as a unique case, because the UT-project has its own methods and innovative features in Malawi which makes it unique. However, the area of interest is in this research not to highlight what the difference is between the UT-project and other cases. It suits more in the category that Yin (2009, pp. 48) labels the representative case. Within this category a case is chosen because, as opposed to being unique, it elucidates commonalities of broader phenomena (Yin, 2009). Although the case of the UT-project not is generalizable to other cases, it is believed to be representative of worldwide issues connected to ICTs for education, aid to education, the sustainability of educational interventions and teacher autonomy.

5.2.1 Levels and Units of Comparison

This is not a comparative study design because it does not compare multiple cases. The Norwegian Embassy in Lilongwe, Norad, VSO and the different schools could as an example have been contrasted and compared as characteristic cases, with the UT-project as a phenomenon they have in common. However, the aim is to study the single case of the UT-project. Even so, since these multiple stakeholders are involved in the research in the sense that they helped shape the investment angle, the study does contain elements of the comparative design, and in particular elements that resembles cross-cultural and multilevel analysis (Manzon, 2014).

Although referred to by Bray and Thomas (1995) as multilevel comparison, some of it`s advantages are relevant in relation to the analysis of the UT-project. The assumption is that pedagogy extends the boundaries of a classroom, and that studies of learning benefits of being located within several contexts. That people are under the influence of numerous embedded contexts is theorized by Bronfenbrenner (1979) as ecological environments. Bronfenbrenner (1979) identifies five environmental systems (also referred to as contexts within this study); the micro, meso, exo, and macrosystem, in which every individual is immersed in and in which inform and reshape each other reciprocally.

Amongst the implications of this theory in relation to the UT-project is that quality judgements of the UT-project requires acknowledgement over the fact that individuals exist within multiple contexts, and these contexts vary in the degree to which they support individuals` autonomy versus act controlling. As will be further elaborated upon in chapter 7, this study will illuminate the relationship between some of these systems by showing that the investment and design decisions made ate more distant levels to the UT-teachers, unintentionally can influence feeling of autonomy and as such affect the sustainability of the UT-project. Furthermore, it helps elucidate that these types of educational intervention programs can have an impact on the social development of teachers, irrespective of the success of the individual educational ICT intervention.

5.3 Research Site and Participants

The unit of analysis is in this research the UT-project, and the teachers are the factors that are illuminating the UT-project. The research sites are five Malawian primary schools that are

applying the UT-project. The sampling-method of this research is purposive, which entails that the research-question has been decisive in the sampling-process, and directed the selection of relevant participants (Bryman, 2012). With other words, choices in relation to sampling have revolved around who would be best fitted to answer if the UT-project reaches its goal; increasing the quality of Malawian education. Some of the people closest affected by the UT-project on a daily basis is believed to be able to give crucial information with regards to how the research-question is conceptualized. The informants are therefore teachers, principals and student-centre coordinators working on the UT-project. Their thoughts and feelings about the question in manner is believed to be indispensable. Five schools were researched, where in total five principals, five learning-centre coordinators and eight teachers were interviewed (see table 1).

Table 1: Participants in the study. Note: Elaborated by researcher.

Participants	**School 1** (S1)	**School 2** (S2)	**School 3** (S3)	**School 4** (S4)	**School 5** (S5)	**Total**
Teachers (T)	1	2	2	1	2	8
Principals (P)	1	1	1	1	1	5
Coordinators (C)	1	1	1	1	1	5
Total	3	4	4	3	4	18

The first few weeks of my stay in Malawi were spent on getting to know potential informants and gatekeepers. These encounters assisted me in enhancing my knowledge of the UT-project, as well as the country. All of the sampled schools were visited prior to the actual data-collection day, in order to set up appointments and getting familiar with one another. These prior visits were particularly valuable, as I got to casually observe and interact with teachers and children. As a result, I could contextualize the information I had gained so far on the UT-project and alter the interview guide accordingly. A complete school-day was spent on each of the schools during the formal data-collection period, which left me enough time to observe regular classes and UT-classes and to conduct the necessary interviews.

Teachers are included as participants because they are the initiators and facilitators of the UT-project and as discussed, their motivations are fundamental in relation to the successful implementation and sustainment of the UT-project. Principals are included in the sample because they might have slightly different perceptions than the teachers of what the benefits and challenges of the UT-project are. The student-centre coordinators are teachers who are responsible for the learning-centre. Although dependent on how the schools choose to organize their timetable of learning-centre use, the coordinators are usually the ones who spend the most time in the centre and they are therefore included in the sample. Throughout this research the teachers, principals and student-centre coordinators are all referred to as teachers. The reason is that I am within this study not concerned with their perceptions of the UT-project in comparison to their specific professional role, but rather their general role as individuals with first-hand knowledge on the UT-project.

There was generally limited information on the UT-project online, especially information regarding justifications for this specific investment in Malawi. Therefore, before gathering the empirical material, I felt that it was necessary to conduct unofficial/informal interviews with key stakeholders to gain more information about the workings and different components of the UT-project in order to better comprehend the case in question. Informal interviews were conducted with officials from VSO in Malawi, Norad and the Norwegian Embassy in Lilongwe. The reason Norad and the Norwegian Embassy in Lilongwe are used as informal sources, in addition to VSO, is because Norway is the UT-project`s most significant financial donor in phase two thus far (VSO, 2018a). The interview guide for these interviews is not attached to this study, as the interviews are not part of the data-material. Even so, it felt necessary to shed light on the fact that these sources of information have been somewhat influential in how the UT-project is understood and depicted within this research.

5.3.1 Selection Method

The schools and the teachers are sampled based on criteria (Bryman, 2012). Although generalization and probability sampling not are relevant issues within this research, having the schools and teachers working under more or less the same conditions was deemed important as the aim is to understand the UT-project thoroughly as a possible representative case. The schools` criteria were that they were in the same educational district in rural Malawi. Being in the same district, they have been implementing the UT-project for the same amount of time.

Moreover, being in the same area they have the same VSO-volunteer that supervises the implementation. Being in the same area also help rule out differences in relation to the societal and practical abbreviations associated with rural and urban educational districts. The resources and general conditions within primary schools is worse in rural areas in Malawi, which comprises over 85% of enrolments (Ravishankar et al., 2016).

The teachers were sampled based on the criteria that they were working with children from Standard 2. Depending on amongst enrolment, it sometimes varies from school to school which Standard gets to use the learning-centre, and in some schools both Standard 1, 2 and 3 were using the centres. However, VSO suggest that Standard 2 learners achieve greater learning gains as compared to Standard 1, and they therefore have decided to prioritize standard 2 in phase two (VSO, 2018a). In every school, teachers were in addition sampled based on gender so that not one group was overrepresented. Sampling based on criteria was also the method used in relation to the observation of teaching. At each school, groups of students from Standard 2 were observed in the learning-centre. Moreover, time was also spent on each school observing Standard 2 students in regular classes. This criterion was used in order to create a somewhat coherent understanding of the school-day of Standard 2 students and teachers.

Theoretical saturation was used as a criterion for deciding on the adequacy of the size of the sample (Bryman, 2012). How many schools to visit and the size of the sample was not settled in advance. After each school that was visited, a revision of the data collected was done throughout the data-collection process until I felt confident that visiting more schools would not yield new information. The feeling of theoretical saturation is however not the same as *actual* and demonstrated theoretical saturation; it simply signifies that theoretical saturation was attained at that specific moment in time (Bryman, 2012).

5.4 Data-Collection Tools and Analysis Method

The data-collection methods chosen for this research are the qualitative interview and participant observation. Among the reasons the qualitative interview was chosen as a data-gathering tool is because of the flexibility it offers, and because of the weight it places on the interviewee`s point of view (Bryman, 2012). Among the advantages of making qualitative observation part of this research`s data-material is that it complements, modifies as well as contextualizes the data collected by the semi-structured interviews (Bryman, 2012).

5.4.1 Semi-Structured Interviews

Although I found it important that the interviews remained flexible during field-work, some commitment to certain topics had to be made. Since the UT-project is the unit of analysis, the interviews had to stay fairly inside of the concepts relating to it, which categorizes the interview as semi-structured (Bryman, 2012). As opposed to the structured interview, where the researcher has a clear set of questions to be answered, the direction of the interview was to a great extent led by what the informants chose to put forward in relation to the concepts that are being researched. A priority was that the informants shared the knowledge she/he inhabited, and not that the pre-constructed questions were systematically answered. The interview guide for the semi-structured interviews is attached to this study (see appendix 2). Although the interview guide was the outline for the interviews, it does not capture all of the questions and topics discussed during the interview situation, as the interview style allowed for spontaneous themes and follow-up questions to appear.

The interview guide created for the teachers working on the UT-project was organized around the main topics of this research, and themes included; children`s learning, teachers` thoughts on upscaling and continued use of the touch-screen tablets and teachers` thoughts and feelings in relation to alternative approaches to increase the quality of Malawian education. The intention was to let the teachers reflect upon their experiences with the UT-project. The theoretical constructs embedded in SDT were not identified specifically as themes in the interview guide in order to let the teachers` words, and not the theory, decide the direction of the study at this point.

5.4.2 Participant Observation

UT-classes as well as regular classes from Standard 2 were observed on each of the five schools visited. Among the advantages of using qualitative observation as part of this research`s data-material is that in the same way as the qualitative interview allows for unknown or not-thought-of concepts and phenomena to appear during the data-collection, so does qualitative observation (Bryman, 2012). The observations of regular classes were in line with what Bryman (2012, pp. 443) categorizes as minimally participating observer. The researcher observed, but did not participate in the regular classes other than sitting in. Furthermore, observation was not the main source of data. The observation of the UT-classes on the other hand was more in line with what Bryman (2012, pp. 443) categorizes as partially participating observer. In line with the

minimally participating observation, the partially participating observation is not the main source of data. It does however differ from the minimally participating category in that it is a type of observation where the researcher participates in the activities, albeit not as a full member (Bryman, 2012). I observed, asked questions and interacted with the teachers, student-centre coordinators and learners during the UT-classes.

In each school, two regular classes from Standard 2 were observed for 30 minutes each. Subjects varied between maths, English and Chichewa. In the learning-centres, two groups of children were observed for 60 minutes each, which allowed for in total four Oneclass sessions to be observed in each school (see table 2). Each group of Standard 2 learners had 30 minutes of Chichewa and 30 minutes of maths during their Oneclass sessions.

Table 2: Type of class and hours spent observing. Note: Elaborated by researcher.

Type of class observed	School 1	School 2	School 3	School 4	School 5	Total
Regular class (hours)	1	1	1	1	1	5
UT-class (hours)	2	2	2	2	2	10

For each of the observations, field notes were collected. Furthermore, a common observation-guide was developed prior to the observations (see appendix 3). Although qualitative observation and the field notes are part of the data-material, since it allows for a rich and comprehensive data-set and consequently understanding of the UT-project, the observation is not as prominent in the findings section as the data collected in relation to the semi-structured interviews. What the teachers said during the interviews is the fundamental body of this research`s findings, whereas the observation serves more as a validity-tool to help nuance and contextualize the information collected through the interviews. Observation as a validity-tool is further elaborated upon in the discussion of the quality of this research`s data.

5.4.3 Thematic Analysis of the Data

The qualitative analysis method used in this research is thematic analysis ("Thematic Analysis," 2010). All of the interviews conducted were audio-recorded. Audio-recording the interviews allowed me as a researcher to be alert and responsive during the interviews. The recordings

were later transcribed in order to make the analysis of the data easier. The data collection and analysis process started without any pre-defined theories or hypothesis to be answered. The only guidance the research was led by were the main topics and the questions formulated in relation to them. In that way the analysis of the data-material contains elements that resembles grounded-theory and interpretative phenomenological analysis (Glaser & Strauss, 1967; Smith & Larkin, 2009). Although thematic analysis does not share all of the characteristics of these more definite analysis methods, the main principle is that the themes that emerged are grounded in the data and consequently that the relationship between the data-material and theory is predominantly inductive.

During the analysis, explicit and implicit meanings and ideas in the data were identified. Emphasis was put on the meaning behind the words of the teachers, which is a common trait of qualitative methodology (Bryman, 2012). Significant themes were determined based on major repetitions and similarities, but also differences, that reflected the UT-teachers` experiences and thoughts of the UT-project that cut across practical implementation challenges. SDT`s theoretical constructs were used to analyse the themes derived from the thematic analysis of the data, as will be presented in chapter 6.

5.5 Quality of the Data

5.5.1 Credibility, Transferability and Limitations

Issues of reliability and validity are more commonly associated with quantitative research-designs, as the concepts presuppose that there exist absolute truths about the social world that research ought to disclose (Bryman, 2012). Therefore, an altered understanding of validity and reliability to fit qualitative research-designs is adopted on to this study. As outlined by Guba and Lincoln (1994), the following four criteria are used to evaluate the quality of the research; credibility, transferability, dependability and confirmability.

The **credibility** of this research, which parallels internal validity, revolves around whether the findings of the research are attained through injunctions of proper research practice (Bryman, 2012). Throughout the study I have illuminated how the theoretical constructs of the study relates to the research-question, and as such supported issues of credibility. Continuously I have tried to illuminate why sustainability and autonomy are applied as quality-indicators to the

evaluation of whether the investment in touch-screen tablets is an appropriate tool to enhance the quality Malawian education. Triangulation of the data collected from the observations and interviews also helps support issues of credibility within this study (Bryman, 2012). On the one hand, observation was important in relation to better understanding what the teachers were talking about during the interviews and to better comprehend the workings of the UT-project. On the other hand, the observation was important in relation to validating and to cross-check the data from the semi-structured interviews and vice versa. The aim was not to as within the positivist tradition to arrive at an absolute truth by using triangulation, but it was to gain an as holistic understanding as possible of how the teachers` basic needs and relative autonomy is affected when working on the UT-project.

The second of the concepts Guba and Lincoln (1994) set forward is **transferability**, which parallels external validity. External validity revolves around whether the findings can be generalized to other settings (Bryman, 2012; Østerud, 2007b). The most frequent criticism of case-studies is nonetheless that they are incapable of providing generalizable results (Idowu, 2016). Even though the findings of this study can illustrate exemplifying issues in relation to the main themes of the study, the findings are not generalizable to other cases. A premise within this study is that the case of the UT-project is contextually dependent (Yin, 2009). By providing the reader with thorough and in-depth descriptions of both methods and theoretical reasonings issues of transferability are however supported. Thick descriptions provide the readers with a database for making judgements themselves about the possible comparability and transferability of the findings (Bryman, 2012).

5.5.2 Dependability, Confirmability and Limitations

The third concept Guba and Lincoln (1994) set forward is **dependability**, which parallels reliability in quantitative research. Dependability entails questioning whether the methodology is followed properly, which makes it similar to issues of credibility (Shento, 2004). I have within the study supported issues of dependability by setting forward elements from the research process such as philosophical underpinnings, and the approach taken to data-collection, sampling and analysis. In relation to limitations of the quality of the analysis, researchers conforming to the positivist tradition might claim that thematic analysis lacks a clearly successive and rigorous approach, and therefore compromises issues of dependability ("Thematic Analysis," 2010). Although this signifies that the study cannot be easily replicated,

the advantage of using this analysis-method from an interpretivist point of view is that it allows for interpretation of phenomena that are contextually bounded. A more explicit issue in relation to the dependability and limitations of the quality of the data is however that the interviews were conducted in English. English is neither the researcher`s-, nor the informants` mother tongue. Although the level of fluency was sufficient enough for carrying out meaningful conversations, some elements are bound to be lost in translation.

Awareness relating to reactive effect was furthermore taken into consideration, as part of the dependability concerns. As observation is part of the data collection tools, acknowledgement to the fact that people might behave differently with a researcher in the room is of importance (Bryman, 2012). Although slight alterations of behaviour might have occurred, visiting several schools helped counteract this issue, as a general understanding of what was normal practice was obtained. A final issue in relation to dependability concerns that should be illuminated, is that although I tried to make it clear that this research was *not* issued by VSO, the Norwegian Embassy in Lilongwe or any other organization or nation that have a supervisory position, some of the participants` attitudes indicated a different perception of my positionality within this project. Some of the respondents, no matter the question, chose to talk about practical implementation problems. Being used to having people coming to evaluate the project in relation to supervisory purposes, it was necessary to spend some time with the teachers prior to the interviews to explain the positionality of the researcher and the nature of the research.

The last concept Guba and Lincoln (1994) set forward is **confirmability**, which parallel objectivity. A premise within this study is that the depiction of the UT-teachers` perceptions are based on my subjective interpretations. Furthermore, all the background-information on the UT-project is gathered from the Norwegian Embassy in Lilongwe, VSO and other stakeholders who have specific interest in the project. Information on the project separate from the stakeholders themselves was not found. The potential biases of these organizations were taken into consideration when the information was reviewed. Moreover, I as a research, and my previous knowledge and experiences, have unavoidably influenced what I saw, heard and read in the field and throughout the process (Shento, 2004). As mentioned in the introduction, the inspiration behind the study came from the Norwegian government`s involvement in this project. I wanted to gain a better understanding of why the decision was made to invest in this exact project as a tool to help raise the quality of Malawian education, and whether the

Malawian teachers agree with this decision. What I saw and heard in the field and how the data is analysed is likely to be influenced by this specific position.

Although complete objectivity is unattainable, issues of confirmability can be supported by elucidating that the researcher not has overtly let personal values and inclinations influence the findings or theoretical reasonings within the study (Bryman, 2012; Shento, 2004). I have tried as far as possible to let the findings be a reflection of the experiences of the informants, rather than a reflection of my characteristics and preferences. The fact that this research pursued an inductive approach in relation to theory, did to a certain extent ensure that theories were not forced upon the data-material, because it assisted me in remaining open-minded and observant to my surroundings during field-work and analysis. In the same manner, the fact that there was limited information on the UT-project, the specific ways the program is designed, and the way ICTs are used within the program managed to support issues of confirmability, because it helped limit pre-assumptions before I went into the field. I was throughout the process not funded or in similar ways under external influence.

5.5.3 Ethical Considerations

An ethical issue that has been taken into consideration in this master`s thesis is the assurance of informed consent (see appendix 4). The purpose of informed consent is to make sure that the research participants are provided with sufficient information about the project, so to be enabled to consciously determine whether or not they wish to participate (Bryman, 2012). As discussed, this is a qualitative study that developed throughout the process which means that theory, concepts and research-questions constantly were redefined. Consequently, giving the respondents exhaustive information about the research-project was not possible. However, sufficient decisions about the research-project was established before the data-collection process for not to deceive anyone or use the collected data differently than agreed upon.

The consent form was handed out in written text for the participants to sign. In addition to giving the respondents time to read the consent form and space for questions, an oral repetition of the content was done before each interview. Special attention was given to the researcher`s responsibility in relation to anonymity and protection of the data. As discussed, some of the participants did not initially understand the purpose of the research. It seemed that some of the respondents saw me as an official from an organization who was there to evaluate their use of the UT-project, which made me concerned that they felt that they *had* to participate. This

concern was expressed to officials from VSO, who know the schools well. I was assured that the fact that they were so willing and un-sceptical to participate in the research was more a sign of excitement of having someone wanting to listen to their stories, than anything else. Furthermore, although being thorough in making sure that the respondents were as informed about the research as possible, English is as mentioned neither mine nor the informants` mother tongue. To make absolutely sure that the research subjects understood all of the information, I asked if the respondents could repeat back what had been agreed upon. Moreover, at every school that was visited, I had a local contact person who explained to participants what the project and the purpose of the visit was in Chichewa.

The Data Protection Official at the Norwegian Centre for Research Data has given ethical clearance to this study (see appendix 5). This research does not treat sensitive personal information, nor does it reveal personal details that can be used to identify the research subjects. All of the respondent's identities are kept anonymous, and the information was stored according to the University of Oslo`s framework for safe data storing. The respondents are kept anonymous as the issue of interest in this research is not the individual persons, but their opinions about a case. In the analysis, anonymity is assured by coding the names of participants and schools into numbers. The volunteer from VSO is assured anonymity by being referred to by a pseudo-name and not by the real name. Upon completion of the analysis, the information related to the participants was destroyed.

6 Presentation of Findings

In the following a presentation of this research`s findings is given. The experiences and thoughts of some of the participant teachers in the UT-project are presented, in order to discuss whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education. Beneath a repetition as well as an illustration of how the research-question is going to be considered based on the conceptualizations and theoretical constructs presented earlier in the study is provided (figure 5).

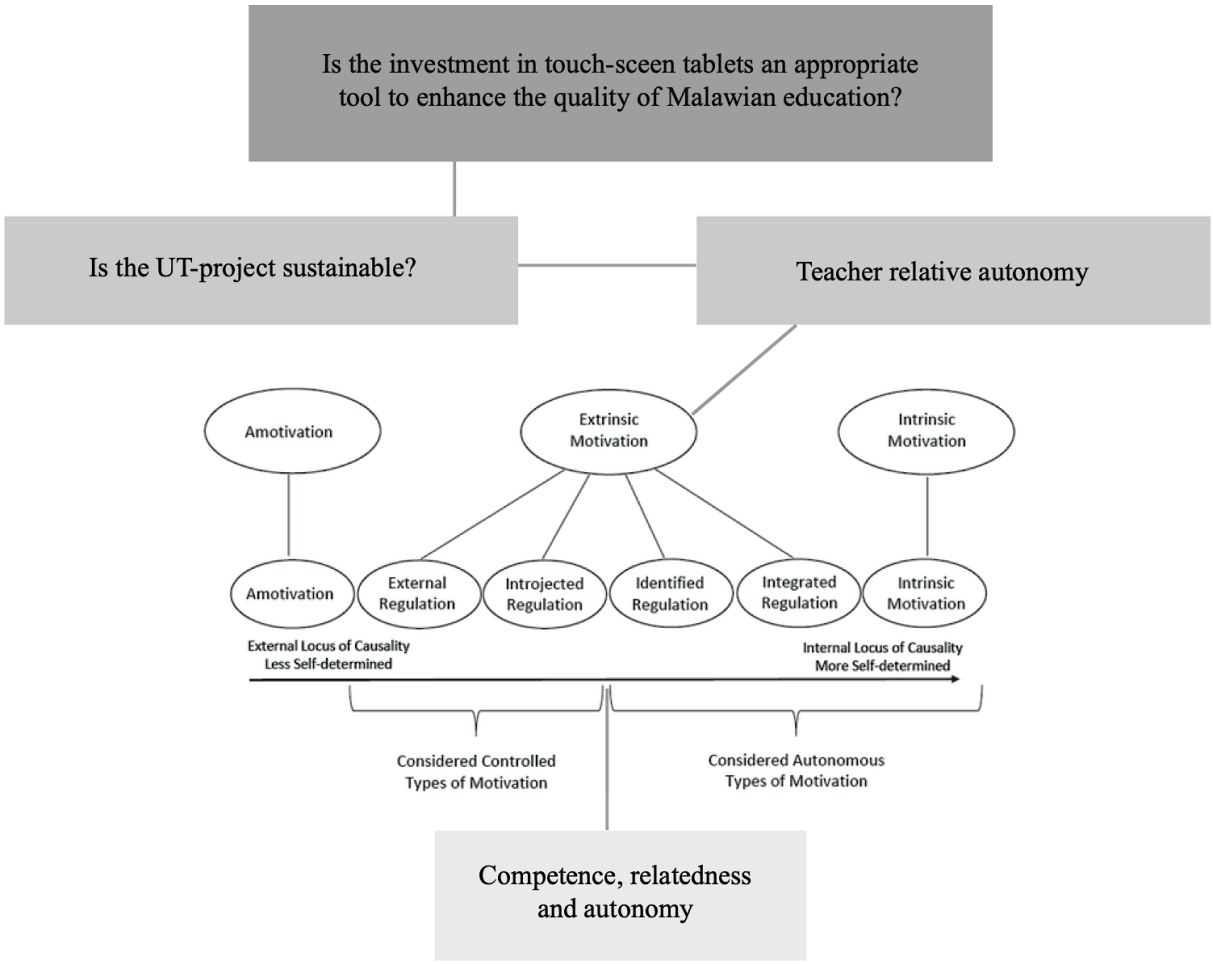


Figure 5: Overview of the research-question conceptually integrated into the IC-scale. Source: Howard et. al. (2017). Note: Elaborated by researcher.

Initially, the following chapter will provide an examination of the themes identified in the analysis of the data-material which is considered through the lens of SDT`s Theory of Basic Needs, in order to try to identify whether the context of the UT-project manages to support the teachers` basic needs. The themes that emerged during the thematic analysis of the data are set forward in the table below (table 3).

Table 3: Coding and analysis scheme. Note: Elaborated by researcher.

Basic psychological need	Theme
Competence	Learning environment
	Handling the technology
Relatedness	Value of supervision
	Defected technology
	Choice of investment
Autonomy	Defected technology
	Provision of choice

Simultaneously, through the use of SDT, possible social contextual reasons as to why the teachers have the specific perceptions they do of the UT-project are put forward. As a consequence, the language in the following chapter is occasionally argumentative. A summary of the findings is provided by the end of the chapter, accompanied by an identification of what is considered to be the main problem-areas identified in the findings in relation to autonomy and sustainability. These problem-areas will lay the foundation for the discussion to follow in chapter 7.

Considering the main themes identified in the thematic analysis in relation to the Theory of Basic Needs enables a basis for discussing whether the UT-project creates conditions that facilitate what Ryan and Deci (2017) refer to as intrinsic motivation, integration of extrinsic motivation and more autonomous causality orientations. At issue in this research is not whether the teachers are intrinsically motivated when working on the project, but whether they are autonomous in relation to it. The main interest in this study lies within identifying the UT-teachers` relative autonomy by discussing their internalization of the UT-project´s norms and the causality orientation they have in relation to the project.

Based on the analysis of the themes identified in the data-material of the research, the themes will be suggested to fall in one of the major types of motivational regulation as illustrated in the IC-scale (figure 4, pp. 41). A prerequisite that cannot be overly emphasized is that this categorization of autonomy is solely a foundation for the further discussion of the topics and research-question at stake, and not a permanent state of affairs. Satisfaction and frustration of psychological needs vary within persons over time and contexts, and each individual will have different predispositions of how they react to the UT-project`s framework (Ryan & Deci, 2017). Therefore, the quality of the teachers` actions and motivations are referred to as relative autonomy. Furthermore, the reader is reminded that the following categorizations are intended to be a tool to help illuminate how this study has resonated and arrived at its findings. Although the categorizations can`t be interpreted as more than indicatives of the UT-teachers` feeling of autonomy, the categorization helps support issues of credibility (Bryman, 2012). As discussed in relation to the quality of the data, the categorizations help illuminate whether there is a match between the findings and the theoretical ideas put forward.

6.1 The Need to Feel Competent

The need to feel competent is a fundamental psychological need within every human being, according to SDT (Ryan & Deci, 2012). The need to feel competent is a thoroughly established theoretical concept and set forward by several motivational theorists (see Bandura, 1997; White, 1959). The need to feel competent revolves around having opportunities to exercise and enable one`s capacities and gaining a sense of mastery (Ryan & Deci, 2017). It is not so much about how competent one actually is, as it is about how competent one perceives oneself. According to SDT we have a natural need for challenges that are optimally suited to our predispositions (Deci & Ryan, 2012). That the challenges the UT-project present for the teacher`s everyday workday is optimally constructed is therefore important, if the motivational benefits SDT promotes are going to be enabled.

An optimally constructed task depends on the individual's predispositions (Ryan & Deci, 2017). As the design of the UT-project is predominantly standardized, the issue of individual optimization is difficult to capture. A more suiting way to conceptualize individual optimization in relation to the UT-project is therefore whether the teachers are given a tool they can handle or not. It is important that the teachers are able to use the gadgets they are handed in order for them feel competent. Giving them tools that they can`t use would be impractical as well as it

could be hurtful on their sense of competence. At the same time, it is important that they are somewhat challenged by the tools if the feeling of competence is going to be provoked. If the project does not require the teachers to engage, participate, or challenge themselves in any way whilst using the touch-screen tablets, a feeling of mastery might not be enabled.

During the thematic analysis of the data-material, a theme that frequently appeared was that almost all of the teachers praised the UT-projects` ability to create an effective learning environment for the children. Moreover, several of the teachers chose to put forward the fact that they were proud that they themselves could handle the technology provided to them and create a different type of learning-environment for the children. These two themes are in the following analysed in relation to the feeling of competence, in order to consider the phenomena in relation to relative autonomy.

6.1.1 Competence and Learning Environment

All of the respondents reported that the children are benefitting from the UT-project in terms of learning outcomes. Among the benefits that the touch-screen tablet prompted highlighted by the research subjects was the individualized learning experience, the instant feedback and the joy they saw the children found in it:

> S1T1: The unlocking talent project is a good idea. Learners learn well through play. And when they go to the learning-centre, they assume they are playing, not knowing they are learning. When you teach in class you can see some learners grab the concept very fast and some are slow. When they go to the learning-centre they learn at their own pace. So it is a very good idea.

> S2P: Yes, this is almost the answer. A good percentage of the answer because by the use of these iPads a learner come into this room without anything. But they do activities. Time which is used in the activities is just a minimum, but it covers a lot of material. From there the learners are mighty interested. Even talking about enrolment. Before the project we had few enrolments. But when it started enrolments shoot high. Someway this project is the answer to our problems.

Through the lens of SDT, these answers could be interpreted to mean that the fact that the teachers are handed a tool that they themselves feel is a well-working supplement to their regular classes, could underpin their feeling of being a capable teacher. That the teachers feel they are able to provide an efficient learning environment for their learners through the use of the UT-project, could give them a sense of competence. The context of the UT-project has in

this instant affected the teachers` feeling of autonomy through allowing them to feel competent in using the technology, even though the initial motivation behind the project is extrinsic.

Applying the lens of the IC-scale (figure 4), the teachers` integration of the extrinsic motivation that is the UT-project, could in this instance be placed on the scale conceptualized as **integrated regulation**. The type of extrinsic motivation the teachers have in relation to the theme of competence in organizing an environment for learning is placed within this rubric because there seems to be cooperation between the individual teacher`s norms and values, and the context of the UT-project`s norms and values. There is a cooperation because the teachers seem to agree with the type of learning-environment the UT-project has created for the children. This is a relatively self-determined type of extrinsic motivation which, according to SDT, signifies that the teachers are relatively autonomous and therefore more inclined to sustain the UT-project in relation to this issue.

6.1.2 Competence and Handling the Technology

On the question of whether the investment in touch-screen tablets is an appropriate tool to enhance the educational quality of their school, several of the teachers expressed ease of use in handling the technology. During observation, several of the teachers were eager to demonstrate to the researcher their ability to handle the technology as well as demonstrating the children`s ability to handle and benefit from the technology. Moreover, several asserted a sense of pride in working with technology:

> S5P: We shouldn't say that this was a wrong investment, because at least it has given us knowledge of what is happening in the outside world. You are telling us in the outside world there are this things happening.
>
> S1C: Even we as teachers are very happy about this system because Malawi has got to be somewhere. In terms of technology we are now being improved.

Furthermore, not only did they feel that they were able to handle the technology, several of the respondents also expressed joy in that they themselves were learning from it:

> S1C: Even I myself am also learning from these iPads as I am assisting. I also learn something.

Being introduced to, and mastering this new tool they are given, and being part of the worldwide development of technology seemed to be giving the teachers a sense of competence, in a context

where they in so many matters are behind in terms of overall infrastructural and socio-economic development.

The UT-project seems to a great extent to be underpinning the teachers` feeling of competence in relation to handling the technology. However, this phenomenon might not be sustainable. After some time, the teachers` feeling of competent might decrease. Since the UT-project is standardized in a way that does not allow the teachers to develop or adapt the content on the tablet, all they have to do is choose subject, the project might not be challenging enough in the long run for it to be of optimal challenge-level. And consequently, the feeling of autonomy might be compromised as a result of the way the UT-project is designed.

In the long run the UT-project might not be challenging enough for the teachers to continuing gaining a feeling of competence when working on it. Applying the lens of the IC-scale (figure 4) the teachers` integration of the extrinsic motivation that is the UT-project is therefore placed on the rubric conceptualized as **introjected regulation**. After enough time has passed, the UT-project is inclined to not being able to continue giving the teachers a feeling of competence because it is not challenging enough. Consequently, the teachers might be less inclined to wanting to sustain the activity.

6.2 The Need to Feel Relatedness

The need to feel relatedness assumes that every human being has a need to be part of safe unities and to feel socially connected to others (Ryan & Deci, 2012). These unities must be safe in the sense that they are founded on a feeling of reciprocal trust, and consists of meaningful relationships. Moreover, feeling related is both about feeling connected and close to others and at the same time being a valued member of social groups (Ryan & Deci, 2017). In relation to the teachers working on the UT-project, the feeling of relatedness is understood as teachers` feeling of trust as well as identification to the project. That the UT-project creates an environment where the teachers have a feeling of relatedness to the project and the people involved is important if the motivational benefits SDT promotes are going to be enabled.

During the thematic analysis of the data-material it was found that a lot of the respondents emphasized the importance of being supervised by a specific volunteer from VSO. Relatedness and the theme of supervision is therefore considered in the following, in order to analyse the phenomenon in relation to relative autonomy. Furthermore, two more themes are in addition

considered in relation to feeling of relatedness, which is a consequence of the first theme; defected technology and choice of investment. These two themes were brought up when questions of *why* supervision is important were addressed.

6.2.1 Relatedness and the Value of Supervision

The schools that are implementing the intervention have a volunteer from VSO responsible for supervising the project, which several of the research subjects expressed gratitude towards. As mentioned in the introduction of the study, the UT-project is now in what is labelled phase two. Phase two of the UT-project will take place from April 2018 until March 2021, and a clear focus is set on the institutionalization of the program within MoEST during this phase. Consequently, the aim is for the government to take over the responsibility of the UT-project and be in charge of sustaining it (VSO, 2018a).

The teachers were asked what they thought would happen if the project were to be handed over to the government. Responding to this question, almost all of the respondents expressed a great deal of trust in donor organizations and at the same time a great deal of distrust in their government:

> S2T2: I know the government of Malawi. We need some donors to help us. If the donors stop, the project ends there.
>
> S4T1: Talking of the government of Malawi a lot of programs have been started by NGOs but once they leave for their country you find that the programs come to an end.

Concurrently as a lot of the respondents expressed distrust towards their government, they also praised the implementors of the project; VSO. They expressed gratitude towards the organization for selecting them as schools that were to implement this program, and they expressed a feeling of being seen by the organization:

> S2P: Because education is implemented by teacher. So if you care about teachers, but if you don't care it stops there. Aid can come but it won`t work unless we implement. Simply because VSO cares about teachers, learners are doing everything good. What VSO promises to do to teachers they do. They see it through.

When asked what are the reasons the government would fail to take over the responsibility of the project, supervision was set forward as an explanation:

> S3P: Reason is lack of supervision. Government do not supervise.

Although not all of the respondents expressed the value of being supervised just as explicitly as the aforementioned teacher, several of the research subjects chose to put forward that it was very valuable to have a volunteer from VSO come to visit and supervise the project in each school every day. “Billy” was one of these volunteers from VSO, and he was in charge of supervising and assisting the schools within the educational district sampled for this research.

Several of the teachers talked about and praised “Billy” for the way he was collaborating with them and the work he was doing in order to make sure the project was operative. Furthermore, during observation of UT-classes it became evident that the teachers not only valued “Billy” and the work he was doing, but they were eager to demonstrate their ability to utilize and organize the learning-centre to him. It seemed that the reason the theme of supervision consistently appeared during the analysis of the data-material and the reason it was deemed important by the teachers, was because it created a feeling of relatedness within the teachers.

The fact that the teachers had someone to supervise them on a daily basis, asking about their needs and opinions in relation to the project, seemed to create a feeling of trust and community within the teachers in relation to the UT-project. On the other hand, although the supervision seemed to satisfy the teachers` feelings of relatedness to a certain extent, it could also signify that the teachers were dependent on the external contingent that is supervision, which makes the feeling of relatedness in relation to this theme vulnerable.

As found both in relation to the feeling of competence and relatedness, the teachers were eager to demonstrate their ability to implement the UT-project. This can be interpreted to signify that they were implementing the project *because of* the supervision, and not necessarily for the value they found in the project. Applying the lens of the IC-scale (figure 4) the teachers` integration of the extrinsic motivation is therefore placed on the scale conceptualized as **external regulation** because the feeling of relatedness might not be satisfied if the external contingent that is supervision disappears, which again make the teachers less autonomous and therefore less inclined to sustain the UT-project.

6.2.2 Relatedness and Defected Technology

The partial reason set forward by the teachers as to why they worried in relation to MoEST taking over the responsibility of the project, and why supervision was important to them, was their lack of ability to maintain and repair the technology. The theme of defected technology is

contemplated upon with regards to the feeling of relatedness because it can help understand *why* the teachers seemed to have a stronger feeling of relatedness towards VSO and consequently the UT-project than they did towards their own government:

> S3P: Billy hard working man always coming to this centre every day to find out what is the problem and solve the problem. But in the hands of the government, technicians are required. At school level we don't have right fundraising activity. Seats you can fix. But UT-materials more expensive than iron seats.
>
> S1T2: The ministry officials are not dedicated as much as VSO. To go on will be more difficult. Our learners have got a lot of problems the government are failing to address. Most pupils are using UT is a little bit expensive as compared to actual books and pens. When they are failing to address the cheaper materials, then it will be more worse to address the challenges concerning this material which seems to be expensive.

Evidently, the UT-project created a feeling of relatedness within the teachers because they felt that the necessary materials were being provided and maintained as of now and consequently the teachers felt that they were being acknowledged and appreciated by VSO. However, on the contrary, the issue of MoEST taking over responsibility of the project seemed to create a causality orientation that resembles amotivation as conceptualized on the IC-scale (figure 4).

Amotivation is placed outside the confines of the continuum of extrinsic motivation because it is a condition characterized by feelings of apathy and indifference, in which an individual finds no meaning or purpose in preforming a specific behaviour (Ryan & Deci, 2017). The way the respondents addressed their government resembled amotivation, because of amongst other their past experiences with their government being in charge of maintaining projects that are dependent on functioning technology:

> S4C: I think in time you will find that the materials not will be requested and it will be the end of this program in the hands of the government. Challenge is the materials. If government say we will support materials there will be no problem. With experience from radio program it will not take long time. As of now running this centre, "Billy" takes care of everything.

Several of the respondents mentioned the program Tikwere as an example of why they don`t trust their government to take over the project:

> S1P: It is just past experience. The government failed to take over. Nobody is interested in it to go on. The donors have stopped. Radios are cheaper as compared to iPads. So it will be very difficult taking over the iPad project.

Applying the lens of the IC-scale (figure 4) the teachers` integration of the extrinsic motivation in relation to the theme of defected technology is placed on the scale conceptualized as **amotivation**. The feeling of relatedness is not satisfied in relation to their government and defected technology, which makes the extrinsic motivation that is the UT-project less internalized which again makes the teachers less autonomous and therefore less inclined to sustain the UT-project.

6.2.3 Relatedness and Choice of Investment

All of the respondents were asked what they would do if they were in the Ministry of Education and in charge of where money should be invested in order to raise the quality of Malawian primary education. Applying the lens of SDT, discussing alternative investment possibilities can illuminate whether the teachers identify or relate to the choice of investing in and implementing the UT-project as a tool to enhance the quality of Malawian education.

The theme of choice of investment is relevant in relation to feeling of relatedness because it to a certain extent illuminates teachers` feelings of community and companionship to the people in charge of how money should be spent in order to enhance educational quality, and in consequence if it is something that is done *for* the teachers. If they identify with this exact choice of investment over other possible alternatives, they might feel a companionship and relatedness to authorities in charge of their workplace. And consequently, they might have a more autonomous causality orientation towards the UT-project.

When the concept of relatedness was applied to the theme of choice of investment, although they as shown in relation to feeling of competence saw great value in the UT-project, the amount of value changed relative to other options. The teachers were asked whether they wished that they were consulted before the choice was made to invest in this exact project as a tool to enhance the quality of Malawian education, and if they felt that other tools would have been more effective. Several of the respondents expressed that although they might not have chosen to invest in the same way, they did not feel that the UT-project was a wasteful investment:

> S3P: This was already built. We cannot put it as a mistake. But if more chances are coming and if I was asked, I would have said more classes.

> S5C: Now, it may happen that Norway may decide no can you collect and assist Malawian infrastructure that would be very welcome. Does not mean that this is not enough. It is something complementary.
>
> S2P: All things are better. All have advantages. Books are required. Everything is important on their part. iPads are required.

As these answers could indicate, it was not that they did not see any value in the project. However, given the chance they might not have prioritized this as a tool to enhance the quality of Malawian education themselves. Consequently, the UT-project influences the teachers` basic needs in different ways. Through the lens of feeling of competence, most of the teachers could identify with the project, and their causality orientation in relation to this issue is therefore relatively autonomous. However, applying the concept of relatedness in relation to the theme of choice of investment the causality orientation changes.

Given that the teachers did say that they might not have chosen to invest in the same way as the donors and other relevant stakeholders of the UT-project have, their type of motivation in relation to this issue is placed within the more controlled forms of motivation on the IC-scale (figure 4). The investment is not something most of the teachers personally would have done likewise, and their relative autonomy is fairly low in relation to this issue. Even so, since the teachers seemed to *acknowledge* the choice of investing in this exact tool to enhance the quality of Malawian education, the teachers` relative autonomy in relation to the theme of choice of investment is not put in the most external form of motivation. The teachers have partially internalized the external regulation. Applying the lens of the IC-scale (figure 4) the teachers` integration of the extrinsic motivation in relation to the theme of choice of investment is placed on the scale conceptualized as **introjected regulation**. The feeling of relatedness is to a certain extent satisfied, which makes the extrinsic motivation more internalized which again makes the teachers more autonomous and therefore more inclined to sustain the UT-project.

6.3 The Need to Feel Autonomy

The need to feel autonomy revolves around having a sense of ownership in one`s actions and a need to experience the existence of choice. The need to feel autonomy is not the same as independence, but rather it is a feeling of acting voluntarily and as such be self-regulated. When a behaviour is autonomous, individuals will feel that their actions are congruent with their own norms and values, as opposed to being in conflict with their convictions and interests (Ryan &

Deci, 2017). During the thematic analysis, the themes that came up and were particularly influential on the teachers` feeling of autonomy were issues in relation to defected technology and the provision of choice.

6.3.1 Autonomy and Defected Technology

How the research subjects position themselves in relation to defected technology can impart on their feeling of autonomy. VSO (2018a) claim that there is willingness from the Malawian government to continue promoting the use of ICTs for education in schools. However, VSO (2018a) also expresses concerns, in line with this research`s respondents, that it will be difficult to sustain the use of ICTs for education as the government is already failing to provide basic materials for learning. There are several examples of interventions that are implemented in Malawian primary schools that end with the end of the project, according to the end-line study by CDI (Communications and Development Initiatives, 2018). The tendency within the Malawian government is to just look forward to the next project, instead of following through and commit to the ongoing projects, according to VSO (2018a).

These issues compare to what the teachers expressed in relation to the issue of the government taking over responsibility of the UT-project. As identified in relation to the feeling of relatedness, many of the teachers expressed a lot of trust in the UT-project and VSO, and at the same time distrust in their own government. Part of the reason why was that the teachers did not have any confidence that the government would be able to maintain the technology in the same way as VSO does.

That the technology works is a fundamental necessity of the UT-project. As VSO (2018a) highlights, usability of the touch-screen tablet is dependent on how the technology functions. Being handed a tool that requires specialists if, and when, it breaks can seriously affect the autonomy of the teachers. The teachers might for example have expressed frustration over the fact that they are given a tool they do not have the skills to maintain. The main frustration seemed however to be in relation to the government:

> S2C: If Billy leaves so we know our government sometimes can`t identify someone always coming here as Billy does. So we need more information how to do this on school level, without the government. So I am saying that since Billy is coming here every day so government must identify someone as Billy, if not so they can give us information so we are in control.

As discussed, the teachers expressed a feeling that resembles amotivation when talking about the government being in charge of the project and in charge of maintaining the technology. A crucial difference here was that the feeling of amotivation was related to their government being in charge, and not the technology itself. What some of the teachers explicitly expressed a need for, was to be in control themselves. Thus, it seemed like it was not the technology itself that created a feeling of helplessness and apathy, but rather the fact that government would be in charge. Fixing the technology was viewed a solvable problem, because it is something that the teachers could potentially control themselves:

> S5C: For me I think we can be empowered at school level to learn the project will be good. If we can be empowered.
>
> S5T1: If we teacher have more information to now have to fix, but just waiting for other not good. If we have more information we can improve this in our own, we are the ones on the ground.

Applying the lens of the IC-scale (figure 4) the teachers` integration of the extrinsic motivation in relation to the theme of defected technology is placed on the scale conceptualized as **introjected regulation**. This is a fairly controlled type of extrinsic motivation. Their motivation in relation to fixing technology can be argued to be controlled, as they do not have the skills to repair technology and thus are dependent on someone else for help. However, they did not express amotivation in relation to the issue. Even so, as they are not in control of how the technology functions the teachers are less autonomous. Consequently, the extrinsic motivation is less internalized which again makes the teachers less inclined to sustain the UT-project.

6.3.2 Autonomy and the Provision of Choice

The UT-project is designed in a way that does not provide the teachers with choice in relation to software development and adaption. According to VSO (2018a), what is meant to happen in relation to teacher involvement is that in addition to generally engaging in the learner-tablet interaction, teachers are supposed to use the teacher-tablet to interpret and monitor learners` progress. On the teacher-tablet, teachers can check the amount of time learners have spent on a topic as well as their progress, and consequently they can identify areas that are more difficult for the learner. If one or several of the learners are spending a lot of time on one topic, teaching on this topic can be repeated in regular classes (VSO, 2018a).

The teachers were asked how exactly they monitor and use the information provided to them from the learners via the teacher-tablet. It was difficult to get a clear answer from the teachers in relation to this issue. Furthermore, when asked how they engage in what is happening between the learner and the tablet, the answers were evasive and indistinctive. Evidently, for many of the teachers the whole point of the UT-project is that the learners are able to learn on their own, without any teacher involvement:

> S2T2: Best part learners are able to learn on their own without help. Just listen instructions. So they are able to get things done. Most of the time do things on their own.

The teachers often chose to talk about the project as a work-reduction tool, as opposed to talking about it as an integrated part of their own teaching. Furthermore, very little interaction between learners and teachers was observed during UT-classes. The children very seldom asked for help to solve tasks on the touch-screen tablet. They worked primarily quietly and individually with their touch-screen tablet.

This phenomenon was however not restricted to UT-classes. The same was observed in regular classes. Children very rarely asked questions and the teacher-student relation was of a top-down nature, and the lectures were predominantly teacher-centred. Since there was not much interaction between teachers and learners in the regular classes either, this phenomenon cannot necessarily be assumed to be an indicator of teacher involvement in the UT-project.

Even though the lack of student-teacher interaction cannot be interpreted as a phenomenon exclusively associated with the UT-project, the lack of monitoring could be interpreted as an indicator of lack of teacher involvement in the UT-project. That the teachers did not fully understand the question of how they are monitoring and using the information provided to them on the learners seems to be related to their perception of the UT-project as valuable because of its ability to self-run, without teacher involvement. For many of the teachers, the whole point is that the UT-project can release practice as opposed to be integrated to practice.

The reason why the UT-project was not made part of the teachers` own educational agenda might be the way the UT-project is designed. The teachers only have to start and end the lesson and choose between Maths and Chichewa. The teachers do not have the option to choose which theme or topic that should be worked on, it depends on which level the learner is at. Although the teachers are meant to invest themselves in what type of learning is going on in the children`s

interactions with the touch-screen tablets, they don`t *have to* for the project to function on a practical level. The teachers do not have to be much involved in the project, other than facilitate the technology and organize the lesson.

Since the design of this program does not require the teachers to do anything else than press play, it seemed like in the observation that teachers did not do anything else than that either. The UT-project seemed to be viewed as something separate from regular classes and something external to their normal practice and their` own educational agendas and goals. Although the teachers seemed to value the fact that the children worked on their own on the touch-screen tablets, it might be repressing the teachers´ autonomy in relation to the UT-project.

A pivotal concept within SDT is as discussed the provision of choice. It is not the teachers themselves who have requested, initiated or developed the UT-project. Nor do they have any options to alter the content so that it fits their agendas. Consequently, the teachers are not given much possibilities to feel in control or autonomous in relation to the UT-project as it is almost entirely initiated and acted out by someone other than themselves.

Applying the lens of the IC-scale (figure 4) the teachers` integration of the extrinsic motivation in relation to the theme of provision of choice is placed on the scale conceptualized as **external regulation**. Since the UT-project is designed in a way that does not provide the teachers with much choice in relation to the design of the content, the teachers do not have much possibility to experience autonomy in relation to the content of the software which makes the extrinsic motivation less internalized. The teachers did not seem to have integrated the UT-project as part of their own educational agenda, which ultimately makes the teachers less inclined to sustain the UT-project.

6.4 Summary of Findings

Analysing whether the context of the UT-project support the satisfaction of the UT-teachers` basic psychological needs has allowed me to put forward a suggestion of the degree to which the teachers have integrated the extrinsic motivation that is the UT-project. As previously put forward, the degree to which an extrinsic motivation is internalized determines the degree of feeling of autonomy and consequently decides the quality of implementation and the likeliness of the action being sustained (Ryan & Deci, 2017). An overview of the analysis of the themes

identified in the thematic analysis of the data-material in relation to the Theory of Basic Needs and categorization on the IC-scale is provided in the table below (table 4).

Table 4: Coding and analysis scheme with categorization of extrinsic motivation. Note: Elaborated by researcher.

Basic psychological need	Theme	Integration of extrinsic motivation
Competence	Learning environment	Integrated regulation
	Handling the technology	Introjected regulation
Relatedness	Value of supervision	External regulation
	Defected technology	Amotivation
	Choice of investment	Introjected regulation
Autonomy	Defected technology	Introjected regulation
	Provision of choice	External regulation

As formerly elucidated, SDT expects that the three basic psychological needs will tend to be intercorrelated (Ryan & Deci, 2017). Satisfaction or thwarting of one of the needs is likely to create a spiralling effect and influence on the other needs. The fact that the UT-project is delivered in a ready-to-use form is in this research believed to be a factor that influences all three needs, and an example of what SDT refer to as the *interrelatedness* of the needs. The fact that the UT-project is standardized and not is providing the teachers with much provision of choice or responsibility, is believed to not only be affecting their feeling of autonomy but also their feelings of relatedness and competence.

The issues identified in relation to competence and relatedness were categorized as fairly extrinsic (table 4), and the suggested reason is that the UT-project is standardized. As found in relation to competence, the teachers might not be gaining a feeling of competence and as a consequence loose interest after a while because the project is not of an optimal challenge level. Furthermore, as found in relation to the feeling of relatedness the teachers were very concerned with being supervised, which could be interpreted to signify that they were implementing the project because of the extrinsic contingent that is supervision.

Had however the teachers been given greater responsibilities and more provision of choice in relation to the UT-project, and as a consequence felt more autonomous in relation to it, the feeling of competence and relatedness might have been more easily sustained. Because of the spiralling effect of the phenomenon, delivering the UT-project as a ready-to-use and standardized package is in this research believed to be the main problem-area identified in the data-material in relation to feeling of autonomy, and as a result sustainability of the UT-project. Issues in relation to standardization of the UT-project is therefore the foundation of the subsequent discussion part of the study, alongside critically contemplating on the relevance of autonomy.

7 Discussion of Findings

An inquiry into some of the UT-teachers` perceptions of the appropriateness of using touch-screen tablets as a tool to enhance Malawian primary education was conducted in the previous section. The theory of SDT was used as an analytical framework to help interpret the main themes identified in the thematic analysis of the findings. SDT helps illuminate the teachers` level of relative autonomy when working on the UT-project. The study was able to find that the UT-teachers` overall autonomy was relatively low, because their reflections and behaviours indicates controlled types of behaviour. A central issue of concern that affects teachers` relative autonomy was suggested to be the standardized design of the program.

The following chapter initially discusses the differences and similarities between the perceptions of the UT-teachers and the most common perceptions identified in the literature. It will be argued that ICTs for education are in both cases often not used in line with their progressive potentials. Subsequently, a discussion and further elaboration of the value that was placed on supervision by the UT-teachers and its impact on the feeling of autonomy is provided. The main intent behind the findings section was to consider the sustainability of the UT-project, as it is one of the quality-indicators applied to the evaluation of the UT-project. The discussion concerns itself particularly with the second quality-indicator this study partakes to evaluate the UT-project; defending autonomy as a relevant construct in relation to the themes of ICTs for education, aid to education and the sustainability of educational interventions.

The remains of the subsequent chapter is motivated by the fact that the intent behind the study is not to solely evaluate the sustainability of the UT-project for the sake of the project, but simultaneously to consider whether it is an investment worth sustaining, tying in the contextual section, the literature and applying a more holistic perspective on the findings. Notwithstanding that the topics in the following section can seem arbitrary and splayed, they are a result of the nature of qualitative case-studies and the complexity of the case in question. A discussion of the institutionalization of the UT-project within the Malawian government will be carried out, followed by a discussion of the universality of the basic psychological needs. Thereafter, it will be argued that if the main intent behind the UT-project is to replace regular teaching, the UT-project might in fact conceal fundamental problems within the Malawian educational system. Related to this, a consideration of particular issues with NGOs implementing educational innovations will be done. Lastly a discussion of the importance of considering the embedded

contexts that the UT-project is placed within when quality judgements are executed, is carried out. Recognizing some of these contexts illuminates the relevance of teacher autonomy, and as such establishes the answer to whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education.

7.1 A Valued but Detached Educational Tool

The research subjects saw great value in the UT-project, in terms of the learning environment the project creates for the children. As found in chapter 3, the incorporation of ICTs into educational systems worldwide is slow (Hollow & Masperi, 2009; Selwyn & Facer, 2013). The determinants behind it are often traced back to teachers, as they are the ones who are in charge of implementing the educational programs. Consequently, understanding teachers` perceptions of educational interventions is critical in understanding what leads to successful implementation of ICTs for education (Chikasanda et al., 2013; Gorozidis & Papaioannou, 2014; Heystek & Terhoven, 2015; Montrieux et al., 2015; Mtemang'ombe, 2017). Some disparity between the perceptions of the teachers working on the UT-project and the perceptions most commonly identified in chapter 3 was found.

When the most common problem found in the literature review in relation to teachers` perceptions of ICTs for education is that teachers feel that ICTs are making their workload heavier, the opposite perception was found amongst several of the teachers in relation to the UT-project. Quite a few of the teachers talked about the UT-project as a work-reduction tool and saw the fact that children are able to learn on their own without teacher involvement as one of the main benefits of the program. For many of the teachers, the UT-project was not viewed as another burden to an already heavy workload (Magambo, 2007, in Mtemang'ombe, 2017). On the contrary, it was something that in fact reduced their overall workload.

The clearest reason regarding these opposite phenomena found between the literature and the UT-teachers in relation to perceptions of the ICTs, flows from the different ways the ICTs are designed. The most common approach for the ICT designs involves the rolling out of the hardware, and an individual teacher then utilises it as a pedagogical tool and adapts it within his or her teaching. As argued by Mtemang'ombe (2017), what often happens is that teachers use the tool to replicate ordinary teaching, and not as a tool to instead "transform" (pp. 19) the

learning environment. The progressive principles that were used as an argument to invest in the ICTs in the first place is thus missing.

Regarding the UT project, the content on the hardware is so thoroughly designed that all that is left for the teachers to do is more or less to press play. The UT-project is not dependent on teachers integrating and developing progressive learning methods on the hardware, as was the common case identified in the literature. The extra work the ICTs create cannot be used as an explanation of why the ICT tools are not fully utilized in this case, because it is viewed as work-reduction tool. Even so, the UT-teachers did not seem to fully utilize the ICT tools in accordance with their transformative potentials. The teachers working on the UT-project did not monitor their students´ progress, nor did they incorporate UT-centre learning in to their standard teaching.

However different the designs of the ICTs for education programs identified in the literature are from the UT-project, the value that is so widely appreciated with ICTs for education is not adopted thoroughly by teachers in neither of the cases. ICTs for education are not used in accordance with their progressive learning potential. The proposed social contextual reason is within this study tied to the UT-teachers` basic psychological needs not being sufficiently satisfied. As a result, the teachers have not fully integrated the ICTs as part of their own educational agenda and are not using the tools as an integrated part of their teaching.

This research will not analyse in which way the teachers working on the educational ICT programs featured in the literature did not have their basic psychological needs met. The proposed reason why the *UT-teachers* did not utilize the ICTs in accordance with their progressive potentials, is due to the project´s standardization. The teachers are left with little choices because of the design of the program, even though the feeling of choice is essential for the feeling of autonomy (Ryan & Deci, 2012). When the teachers talk about the UT-project as a work-reduction tool, it signals not only that the ICTs are not used in accordance with their progressive potential, but also that the project is something separate from the teachers` own goals and agendas. As found in relation to the feeling of relatedness, the UT-project is not something that the teachers themselves would necessarily invest in if given a choice. They did value the project, and they were able to handle the technology, but they did not internalize it to the degree where it was *their* project. Since the project is standardized, and with no influence over the development of the program, no possibility to adapt it to their teaching, and no

resources to sustain the technology, the context of the UT-project fosters a type of behaviour that is more controlled than autonomous.

7.1.1 Supervision`s Impact on Feeling of Autonomy

Another predictor of the UT-project not being fully internalized by the UT-teachers, is the importance the teachers place on supervision, as identified in the previous chapter. Hollow and Masperi (2009) argue in the same manner as Ryan and Deci (2012) that teachers need to feel competent in mastering the educational technology to fully integrate it. Hollow and Masperi (2009) also explicitly mentions that one of the ways to support the teachers` feeling of competence is to make sure that the program implementor continues to supervise the project. In their evaluation of the use of ICT within primary education in Malawi, Hollow and Masperi (2009) found that after a while, schools neglect to use the technology if no one supervises the project. The schools are inclined to continue to use the technology if they on the other hand know that someone is in charge of monitoring and visits the schools on a regular basis, because they feel that somebody is acknowledging their work.

As found in relation to the UT-project, the teachers valued VSO and expressed a feeling of being seen by the organization. They valued the fact that the volunteer came to oversee the project every day, because it gave them a feeling of relatedness which translated into a feeling of interrelatedness to the project. This can in addition spiral to support the feeling of competence and autonomy (Ryan & Deci, 2017). The value they found in VSO`s supervision was contrasted by the respondents to what would happen if the government were in charge, in which they expressed amotivation in relation to. What was put forward by the respondents as problems if MoEST was to take over, was that they did not believe that anyone would evaluate, supervise or acknowledge their work, and no one would maintain the technology. It seems that they were lacking someone to sufficiently acknowledge their efforts. They used the previously discussed Tikwere-project as a statuary example of these issues.

Because there is a lack of research evaluating educational technology programs in Malawi, and because many of these programs are ongoing, it is difficult to determine the actual impacts of ICTs for education programs like the Tikwere-project (Mtemang'ombe, 2017). The program was originally initiated by an NGO, and later taken over by MoEST. The radios were suggested to be applied in every primary school in the country (Mtemang'ombe, 2017). For the respondents of this study, the Tikwere-project is an example of what happens when an NGO

leaves and the government takes over a program. According to the respondents, the government failed to follow up on the project, in terms of ensuring sustained use and maintenance of the radios. As a consequence, the project gradually ceased to exist.

This can be an example of what Mtemang`ombe (2017) refers to when he argues that in occasions ICT programs implemented in collaboration with NGOs in developing countries not only prevent sustained learning achievement, but in addition have negative impact on the educational system. As identified in chapter 3, one of the challenges in relation to a program failing to institutionalize within the recipient country, is that it can end up being a disappointment leading to low morale and trust in ICTs for education programs. Due to the UT-teachers` previous experience with the Tikwere-project, their feeling of autonomy in relation to the government taking over the UT-project was close to non-existent and categorized as amotivation on the IC-scale (table 4).

What is most interesting for this study in relation to their lack of faith in their government to take over the responsibility of the UT-project is however that it can be interpreted as a sign that the UT-project not was fully internalized, since they seemed very dependent on being supervised. By continuing the use of the touch-screen tablets and organizing the learning-centre, the teachers know that they will receive appreciation from VSO. Although the supervision gave the teachers a feeling of relatedness which can spiral into greater relative autonomy, it is a vulnerable trait of the project to ensure its success. The question rises whether they will continue to feel relatedness and competence if VSO no longer is present. Activity because they are monitored is not likely to promote independent and autonomous use of the new technology. Activity because they are monitored is more in line with the attributes of extrinsically motivated behaviour (Ryan & Deci, 2012). Moreover, it is time-consuming and costly to be dependent on external monitoring beyond the implementation phase of an intervention, and indeed why autonomy support is important.

7.2 The Delicate Institutionalization Phase

As defined in chapter 3, institutionalization entails that the implemented intervention changes from being an externally financed, initiated, evaluated and implemented intervention into becoming the principal means of regular practices and settled within a country and the relevant schools (Kirschner et al., 2004). It is throughout the institutionalization phase that most

programs fail to become sustainable. This delicate phase of ICT educational intervention programs should therefore be allowed sufficient attention, so to make sure that the initiative is worthwhile, according to Kirschner et al. (2004). And as this study argue, particular attention should be given to the relevance of teacher autonomy within this phase.

As referred to in the introduction of the research, Malawi has in line with most other countries of the world adopted ICTs for education as part of their educational agenda. ICTs for education is by MoEST applied as an alternative method to provide education in Malawi (Ministry of Education, Science and Technology, 2008; VSO, 2018a). This has according to VSO (2018a) set the stage for institutionalizing the UT-project in phase two, in the sense that it is made one of the means of delivering teaching and learning within schools. In line with the abovementioned conceptualization of institutionalization, VSO (2018a) sets forward that the successful institutionalization of the UT-project in MoEST is linked to the sustainability of the intervention.

Sustainability is by VSO (2018a) related to issues of local community capacity development. Capacity development initiatives in relation to the UT-project are addressed as the enablement of local support structures (e.g. personnel, technicians and managers) that can ensure the sustainable implementation of the intervention (VSO, 2018a). DEM offices are defined as a critical feature of the delivery and management of the next phase of the UT-project. The DEM offices will lead the implementation of the next phase at district level when VSO no longer is present, and they will be in charge of capacity building in an expansion model (VSO, 2018a). As far as the sustainability of the technical parts of the project goes, VSO (2018a) put forward that the plan in phase two is to work on capacity building of MoEST ICT-staff, while technical support in relation to the software will continue to be supported by Onebillion.

These targets addressed by VSO (2018a) in relation to capacity building, institutionalization, and sustainability of the UT-project are thus among the *planned* outcomes of phase two of the project. Capacity building of local structures are addressed, as was requested from the UT-teachers. As found in relation to the theme of autonomy and defected technology, the UT-teachers requested to be empowered to manage this project on their own, as opposed to being dependent on the government sustaining the project. Their feeling of autonomy in relation to the sustainability of the technology was not *as* control oriented as when it was suggested governmental responsibility. This led to the proposition that it is not the technology itself that

threatens to repress the feeling of autonomy, but rather their government being in charge of sustaining the project. Continuously working on strengthening the capacity of local structures therefore seems to have a positive effect on the teachers` feeling of autonomy. However, even though relevant stakeholders will receive training and structures will be created in order to make this project sustain without VSO, the design of the project will remain the same. And as long as the design of the project remains standardized, the teachers` feeling of autonomy is likely to remain relatively unfulfilled. Consequently, the teachers are less likely to continue using the touch-screen tablets in the long run, even if the necessary practical support structures are created.

7.2.1 Institutionalization and Autonomy

As a means to support the institutionalization of the UT-project within the Malawian educational system, this study argue that teacher autonomy needs to be part of the equation. As previously discussed, it is often the case within educational ICT intervention programs and innovations that most weight is placed on training teachers how to use the ICTs. Less attention is directed towards the perceptions and motivations of the teachers to actually wanting to use the tools (Cox et al., 2000). In the same manner, training and technical approaches often constitute the principal part of capacity development initiatives (Baser & Morgan, 2008). As this study has been able to detect, the perceptions and motivations of the UT-teachers in relation to the UT-project seem to angle towards controlled forms of motivation. As found in relation to the theme of autonomy and the provision of choice, the UT-teachers did not integrate the UT-project`s content as part of their regular teaching, and thus they did not utilize the progressive principles of the ICTs to the fullest.

The reason proposed is as argued the standardized and ready-to-use design of the UT-project, which might signify that more technical training not is sufficient. Developing capacities in the sense that the teachers get more training in how to use the touch-screen tablets and with them organize an environment for learning might not be enough. An environment needs to be created that supports the teachers` basic needs, in order for the teachers to internalize the norms and values of the extrinsic motivation that is the UT-project. This will result in the teachers feeling autonomous when working on the UT-project, and consequently enhance the chance of quality implementation and continued use of the project (Ryan & Deci, 2012) .

Even though attention towards capacity development has been increasingly emphasized by donors and providers of educational interventions in later years, it does not have much impact on issues of sustainability if not the national governments themselves crave capacity development in the same manner, according to Riddell and Niño-Zarazúa (2016). Whether the Malawian government is intending to sustain the UT-project, is beyond the limitations of this study to consider. However, based on the teachers` responses in relation to MoEST taking over responsibility of the UT-project, it seems that the likeliness for the Malawian government to be able to sustain this exact project given the amount of fundamental issues the educational system is facing, is low. Even so, no matter whether the capacity development needed to sustain the UT-project is ensured by the intervention providers or the Malawian government themselves, this study argues that the understanding of capacities need to extend to teachers` feeling of autonomy. There is little use of managing elaborate trainings and support-structures for an educational intervention if the teachers who are supposed to implement and benefit from the project do not feel any ownership or sense of responsibility in relation to it, but on the contrary view it as a work-reduction tool and entirely separate from their agendas. The perceptions the UT-teachers have of the intervention are as argued a result of the context of the UT-project not supporting the teachers` basic needs. Assuming that autonomy is with certainty a relevant construct for the Malawian teachers, due to its trait as a universal psychological need, is yet not a fact easily accepted.

7.2.2 Autonomy as a Universal Psychological Need

Within this study, autonomy is viewed as a basic psychological need that is universal, and relevant across cultures. It is within this study argued that the need should be included in discussion of capacity development and institutionalization of educational interventions, in order to support issues of sustainability. Besides, it is my assumption within this research that the support of feeling of autonomy is not only important for the sustainability of the UT-project for the project`s sake, but simultaneously important for the teachers` well-being and social development. This study conceptualizes social development as greater autonomy for individuals and assumes that contexts that promote or cripple the feeling of autonomy impacts on human flourishing and wellness, regardless of individuals` social-cultural backgrounds.

Arguing that basic psychological needs are universal, and that the Malawian teachers will with certainty benefit from developing towards greater feeling of autonomy, can possibly be a

delicate standpoint. Among cultural relativists and social-learning scholars critiques have been put forward towards the assumption that the needs are universal, and the issue of autonomy has been viewed as particularly problematic (Ryan & Deci, 2017). Some theorists argue that it is a concept exclusively fitting to Western, male and wealthy individuals. Other theorists, such as Bandura (1989, in Ryan & Deci, 2017, pp. 568), argue that individuals who act in the interest of a collective or is conforming to tradition and norms, would according to SDT be categorized as control-oriented individuals. Ryan and Deci (2017) argue that these critiques are based on misunderstandings of the concept of autonomy. The concept of autonomy is by theorists such as Bandura depicted as an undifferentiated construct equated with individualism (Ryan & Deci, 2017). However, according to SDT, autonomy does not coincide with being independent. Autonomy is within SDT understood as the experience of acting with integrity and maintaining a feeling of self-endorsement and wellness, and not necessarily self-efficiency.

Another issue in relation to the notion of the universality of the basic psychological needs, set forward by cultural relativists, is that evaluating certain cultures and contexts based on universal assumptions of basic needs is inappropriate because one can end up appointing cultural viewpoints on others whose cultural meanings may be very different (Ryan & Deci, 2017). Setting forward assessments and subsequent conclusions concerning other people, communities and cultures are therefore discouraged by cultural relativists (Hofstede, 2001, in Deci & Ryan, 2017, pp. 565). For this study to claim that the Malawian teachers working on the UT-project have certain basic needs is from this perspective dismissed, since the positionality of me as a researcher as discussed in chapter 5 is indeed foreign and alien to Malawian customs and culture.

Ryan and Deci (2017) does however argue that SDT does not intend to impose cultural norms and values on cultures or groups, but rather to simply evaluate specific perceptions and practices within contexts regarding whether they fulfil or frustrate the basic psychological needs. As found in the presentation of the Malawian context in chapter 2, the country is not unfamiliar with dominating forces. Once freed from British rule in 1964, a dictatorship followed for the next 30 years. Although the country broke free from the one-party system in 1993, the economic situation was, and continues to be poor, which renders the country financially dependent on developmental aid (Eidhammer, 2017). Analysing whether or not this oppressive history has made Malawians more dependent on external help and guidance, and more in need of greater support of feeling of autonomy than other cultural groups is a controversial topic that could

quickly result in imposing cultural viewpoints and generalizations, in which this study aims to avoid.

This research does on the other hand assume that the Malawian teachers will benefit from developing towards greater feeling of autonomy, not matter their history or current social contextual situation. Had the context of the UT-initiative to a greater extent supported the teachers` basic psychological needs, it could have been a positive contribution to their feeling of integrity, wellness and empowerment, irrespective of the success of the individual intervention. However, the UT-project exposes teachers` feeling of autonomy because, as the subsequent section will discuss, the UT-project is in some manners implemented as a tool intended to substitute practice.

7.3 Patching up Fundamental Problems

The UT-project can be viewed to be patching up fundamental problems within the educational system of Malawi, because it in some manners fails to consider the totality of the system. As it was argued by the World Bank Group in their report on Malawian primary education, improving the current working methods of existing teachers is more important than increasing the amount of teachers, in order to improve the educational outcomes of primary-age children in Malawi (Ravishankar et al., 2016). It is specifically stated in the report by the World Bank Group that the motivation of teachers in Malawi, and the quality of teaching, has significant influence on primary school completion rates and learning achievement (Ravishankar et al., 2016).

Although the UT-project offers quality teaching, it does so through touch-screen tablets. The project does not address what the World Bank Group request; increased teacher quality. On the contrary, as this study has been able to detect, the UT-project is actually repressing the quality of teachers in some manners. As a consequence of teachers` feeling of relative autonomy being low in relation to certain aspects of the UT-project, it is amongst other matters running the risk of making the teachers feel that they are under someone else`s control. This in contrast to encouraging their feelings of integrity and sense of responsibility.

Among the arguments set forward by VSO (2018a) as to why the UT-project is particularly relevant within the Malawian context, and consequently why it is an investment worthwhile, is that ICTs for education addresses issues in relation to learning resources. According to the end-

line evaluation issued by VSO (2018a), the UT-project is relevant because the touch-screen tablets function as a way to provide an individualized learning experience in a context where the student-teacher ratio is extremely high. Because of the UT-project, Malawian primary age children are provided with an individualized learning environment through a quality application, which they are not expected to retain from regular teaching, according to VSO (2018a).

Using poor teacher quality as an assertion for why the UT-project is particularly relevant in low-resourced countries such as Malawi, is an argument not exclusively set forward by VSO. In her review of iPads in early education, Kucirkova (2014) argue that the UT-project is proof that iPads can be a cost-effective tool to deliver individualized, innovative and quality content in contexts where teachers are not adequately qualified and effective. In the same manner, Hubber et. al. (2016) argue that among the advantages of the UT-project in the Malawian context is that "it does not rely too heavily on teacher quality" (pp.1).

The commonality of the abovementioned arguments is that the UT-project is particularly suited in the Malawian context, because of the quality of the lessons it provides. Instead of investing in more teachers, because that might not help, with the touch-screen tablets you have a guarantee that a quality lesson is delivered. The connotation attached to these arguments is that the ICTs are meant to replace practice, as the standard of teaching not is good enough. And as this study has been able to detect in relation to the UT-project, the touch-screen tablets are currently perceived and used by the teachers as tools that replaces, as opposed to being integrated into, regular teaching practices. Although there is not necessarily anything wrong with the UT-project periodically substituting regular teaching practice, the investment angle that this research applies to the case in question renders the substitute connotations the UT-project inhabits particularly problematic. Because of the investment angle, the question is raised within this research if it would be better to invest in something else than the touch-screen tablets as a tool to enhance the quality of Malawian education.

Although the touch-screen tablets are able to deliver quality teaching to Malawian primary schools, this solution to the country`s educational challenges do not really address the issue from the World Bank Group. The World Bank Group argue that the quality of teachers must improve – not be replaced (Ravishankar et al., 2016). From the investment angle, increasing the quality of Malawian primary education by delivering ready-to-use lessons on touch-screen

tablets thus can be viewed as patching up the fundamental problem that is the quality of teaching. Even so, the arguments surrounding the UT-project`s appropriateness in the Malawian context seem to be exactly that it avoids relying on the human factor that is teachers, and as such offers an almost bulletproof tool to enhance the quality of education. This line of thinking bears resemblance to the OLPC initiative.

In line with the OLPC initiative, the UT-project is an ICTs for education program almost above critiques. In addition to the demonstrated learning achievements, the philosophy underscoring the project is built on ideologies of equal, progressive and child-centred educational opportunities (Selwyn, 2013). At the same time, the UT-project carries in line with the OLPC initiative certain anti-institutional elements, in which Selwyn (2013) refers to as an "antischool" (pp. 114) tendency in relation to the OLPC initiative. Even though the OLPC initiative is relying on national school systems to expedite the allocation of the laptops, the initiative is grounded in an ideology that advocates individualized and self-empowered educational technology. Patching up the fundamental problem that is teacher quality, resembles some of the anti-institutional elements of the OLPC initiative. Much in the same manner, the UT-project is relying on schools and teachers to implement the project, and at the same time the project is somehow dismissing the schools and the teachers.

7.3.1 Inquiring the Appropriateness of the Investment

The fact that this is an externally financed project leads to its own sets of challenges and implications in relation to how the success of the project is evaluated. And it leads to its own set of challenges of how judgements are made in relation to whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education among different stakeholders (e.g. donors, collaborators, governments, governmental organizations and NGOs). The type of evidence used to guarantee further funding, and the ways in which it is gained, is often influenced by an obligation to demonstrate success sooner, rather than later (Unwin, 2018). In relation to the UT-project, the proof-of-concept studies and randomized control trials conducted by the University of Nottingham (see Outhwaite et. al. 2017; Pitchford, 2015; Pitchford et. al. 2018) are continuously referred to within the evaluations and reports done on the UT-project. It is likely that these studies are among the different stakeholders serving as crucial evidence to determine the effectiveness of the program, and to determine

whether or not the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education.

Riddell and Niño-Zarazùa (2016) argue that randomized control trials of educational interventions are first and foremost a contribution to the program implementors and relevant donors. The randomized control trials manage to confirm that the project has been a success for the project`s sake. The recipient country does not have much use for these studies, as long-term impacts on learning, teachers` perceptions and the education system in its entirety is beyond the apprehension of these types of studies. Making quality judgements based upon these studies is therefore restraining, because they might only be able to demonstrate that an ICTs for education program has been a success for the sake of the program, and not necessarily for the educational system in its entirety.

As the concept of investment is included in this study, which connotes questions of whether it would be better to invest in something else in order to enhance the quality of Malawian education, randomized control studies do not provide sufficient information. Within the specific context of Malawian education, where the schools` resources are close to non-existent, it is likely that any educational intervention is inclined to yield results. Therefore, judgements of these types of projects need to include several of the embedded contexts that the intervention is placed within. Considering some of these contexts might reveal that other tools are more appropriate to enhance the quality of education within the country. Although this research will avoid looking into which other tools this might be, the study tries to argue that whichever tool is used, issues of autonomy should be addressed. By including issues of autonomy, not only does it make the sustainability of the program more likely, it helps ensure that a program does not do more harm to an educational system by reinforcing dependencies.

7.3.2 The Embedded Contexts of ICTs for Education

Applying the terminology of Ecological Systems Theory, as depicted by Bronfenbrenner (1979), the decision to invest in and the decision to deliver the UT-project as a standardized and ready-to-use program, happens in the more distant contexts to the teachers. Inquiring whether or not the UT-teachers agree with the decision that is made to invest in this exact project as a tool to enhance the quality of education, has enabled this study to recognize the impact the decisions made at more remote systems have on the UT-teachers` motivation and

well-being. As illustrated in chapter 3, certain connotations are associated with ICTs for education in relation to investment-rationales, and how they should be designed, taking into consideration regular teaching quality. These decisions are made distant to the UT-teachers, on the macrosystem and exosystem but still, as this research has illustrated, manages to have significant impact on their motivation.

Identifying these contexts the teachers are embedded in helps illuminate that although the intention behind the decision made at the more distal level is to help the Malawian teachers, by giving them a ready-to-use tool to release practice in a country with one of the highest student-teacher ratios in the world, it is repressing their feeling of autonomy. Repressing the feeling of autonomy ultimately compromises the success of the project. The teachers are less inclined to adopt the UT-project as their own and fully integrate the values and norms that comes with it, and be willing to sustain it independently.

A recognition to the fact that ICTs for education and the UT-project are in an experimentation phase should be emphasized, as the intention behind this study is not to paint a dystopic picture of the tools or bluntly dismiss any initiative. Piloting new means of providing children with a quality education are serving important purposes in educational development (Mtemang'ombe, 2017; Riddell & Niño-Zarazúa, 2016). Given the rationales discussed in chapter 3 for investing in ICTs for education, such as technology`s potential to be a wonder drug for educational challenges, it is understandable that one would like to try out the potential benefits of ICTs in education in developing countries. Even so, applying the investment lens that this study engages, the question becomes if it is necessary to experiment in such a fragile educational system that is the Malawian.

With so many fundamental necessities missing in the schools, it is difficult not to question whether the investment would have been better suited elsewhere. This phenomenon, which incorporates rooted issues within the field of development, resembles Eidhammer`s (2017) depiction of developmental aid running to Malawi. As addressed in chapter 2, Eidhammer (2017) argues that although the aid is bettering several elements of the lives of Malawian citizens, it is not making any significant improvements in relation to the basic services and structures within the country. As an example, and as previously referred to, Eidhammer (2017) uses a UN-funded program that is able to cut down the time it takes to test babies for HIV by

employing drones. Although there is not anything inherently wrong with the initiative, it happens all the while the most elementary drugs are lacking in Malawian hospitals.

In much the same manner, the UT-project could be argued not to be contributing to strengthening the Malawian educational system`s basic services, because it lacks considerations of the totality of the system in terms of teacher motivation and quality. As such, the UT-project risks remaining a short-term solution to patch up more fundamental problems in the Malawian educational system. As this research has investigated the relevance of teacher autonomy, it has been able to identify that although there is not necessarily anything wrong with the UT-project when evaluated separate from context (e.g. measuring short-term learning outcomes), considering some of the multileveled contexts that the project is situated in changes the answer to the question of whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education.

8 Summary and Conclusion

Malawi has a long way to go to reach goal 4 in the UN Sustainable Development Goals 2030 (United Nations Development Programme, 2015), on providing quality education for all. Whether ICTs are appropriate tools to help reach this goal has in this study been considered through a qualitative case-study of the project Malawi Unlocking Talent: Learning Through Technology. The themes of ICTs for education, aid to education, the sustainability of educational interventions and teacher autonomy have been applied in relation to the UT-project, in order to answer whether the investment in touch-screen tablets is an appropriate tool to enhance the quality of Malawian education.

The inspiration behind this study came from the Norwegian government`s involvement in the UT-project. Whether or not the Malawian UT-teachers agree with the decision that is made to invest in this exact project as a tool to enhance the quality of Malawian primary education spiralled the development of the research. This, in combination with the nature of qualitative case-studies and the inductive approach to theory, resulted in a comprehensive research-question and successive concepts. The extensiveness of the research-question and concepts under investigation were important in relation to remaining responsive during field-work as well as during the discussions within this study, where some of the multileveled and interdependent elements that influences teachers` perceptions of ICTs and ICTs appropriateness in the Malawian context are tried captured.

The research-question was considered taking into consideration the sustainability of the UT-project. With regards to issues of sustainability, teachers` perceptions were identified as significant. Some of the UT-teachers` perceptions of the project therefore constituted the data-material of this study, which was collected through semi-structured interviews and qualitative observation. As a tool to help understand, and as a tool to provide possible social contextual explanations as to why the teachers have the specific perceptions that they do, the Theory of Self-Determination (SDT) was applied as an analytical framework to help interpret the main themes identified in the thematic analysis of the data.

SDT was used to analyse the sustainability of the UT-project, by contemplating on the UT-teachers` relative autonomy. Feeling of autonomy is within SDT identified as a basic psychological need that is fundamental for the integration of extrinsic motivation, and as a

consequence the sustainment of behaviours. The UT-teachers` feeling of relative autonomy in connection to the themes identified was categorized along a scale that separates controlled types of behaviour from more autonomous behaviours. These categorizations were intended to help illuminate how this study has arrived at its findings, so to support issues of credibility. It was found that the UT-teachers` motivations are to a great extent controlled in relation to the UT-project, and a proposed reason why is the standardized design it inhabits. It was argued that although touch-screen tablets are able to deliver a quality lesson based on progressive child-centred philosophy, this solution to Malawian educational challenges can be viewed as patching up larger and more fundamental problems within the country`s educational system such as the quality of regular teaching.

SDT served a dual purpose within this research. The theory was not only used to analyse the UT-teachers` feeling of autonomy for the sake of the sustainability of the project. The theory was also used to contextualize the research`s findings through a politically aware and critical approach towards this research`s topics. It is my assumption within this study, in line with SDT, that autonomy is a universally relevant need that is significant for the UT-teachers` social development towards greater freedom, empowerment and human flourishing. I argue within this study that by including issues of autonomy, not only is the sustainability of the UT-project more likely, but it helps ensure that a program does not do more harm to an educational system by reinforcing dependencies. This study concludes that whether or not social circumstances and milieus support the feeling of autonomy creates the basis for determining the appropriateness of the UT-project within the Malawian context, and as such the answer to the research-question.

A premise within this qualitative study is that the analysis of the UT-teachers` perceptions are based on my subjective interpretations. Even so, I have tried as far as possible to let the findings be a reflection of the experiences of the informants, rather than a reflection of my characteristics and preferences. As this is a case-study, the findings are not generalizable. The research can however illustrate exemplifying issues in relation to the themes of ICTs for education, aid to education, the sustainability of educational interventions and teacher autonomy. Hopefully, I have provided thorough elaborations and justifications of how this study has arrived at its findings and reasonings, and as such provided the reader with a database for making judgements about the possible transferability of the findings to similar cases.

8.1 Suggestions for Future Research

The reader was advised to approach this study as a problem-posing analysis of the UT-project, in which concepts, theories and causations are proposed and questioned - but not answered. The intent was not to provide prescriptive answers with subsequent policy-implications. Nor was the intent to bluntly dismiss or accept the UT-initiative. The aim was to comprehensively explore, analyse and try to understand the case in question, in order to point to significant issues and theoretical constructs within the relevant research fields. The problems proposed creates a foundation for potential future studies.

Even though on occasions it has been implicitly addressed, this research has not captured issues such as long-term impact on learning, the cost-benefit or the added value of using touch-screen tablets as a tool to enhance educational quality, which are all relevant angles to answer the research-question, although not in line with this particular study`s methodology. It could in addition be interesting to know more about the rationales for investing in these types of projects, seen from the point of view of the donors. Furthermore, it could be interesting to gain information on how MoEST concern itself with these types of projects, in order to better comprehend the mechanisms impacting on the sustainability of educational ICT interventions, as well as to better understand how autonomy can be enabled and endorsed.

With regards to teacher autonomy, it would be particularly interesting to explore and compare other ICTs for education intervention programs that inhabits more or less the same design as the UT-project. Comparative case-studies on these types of programs, and contexts` impact on teachers` perceptions and motivations, might reveal significant similarities or differences that have an impact on the relevance of teacher autonomy in relation to ICTs for education, educational aid and the sustainability of educational interventions.

References

Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: Freeman.

Barret, A., Lowe, J., Chawla-Duggen, R., Nikel, J., & Ukpo, E. (2006). The Concept of Quality in Education. Review of `international` literature on the concept of quality in education. *EdQual Working Paper*, *3*, 1–18.

Baser, H., & Morgan, P. (2008). *Capacity, Change and Performance Study Report* (No. 59b). Retrieved from https://ecdpm.org/publications/capacity-change-performance-study-report/

Bhattacharyya, J. (2004). Theorizing Community Development. *Journal of the Community Development Society*, *34*(2), 5–34. https://doi.org/10.1080/15575330409490110

Bray, M., & Thomas, R. M. (1995). Levels of comparison in educational studies: Different insights from different literatures and the value of multilevel analyses. *Harvard Educational Review; Cambridge*, *65*(3), 472–490.

Bronfenbrenner, U. (1979). *The Ecology of Human Development*. Cambridge: Harvard University Press.

Bryman, A. (2012). *Social research methods* (4th ed.). Oxford: Oxford University Press.

Burrell, G., & Morgan, G. (1979). *Sociological paradigms and organisational analysis: elements of the sociology of corporate life*. England: Ashgate.

Chaskin, R. J. (2001). Building Community Capacity: A Definitional Framework and Case Studies from a Comprehensive Community Initiative. *Urban Affairs Review*, *36*, 291–323. https://doi.org/10.1177/10780870122184876

Chikasanda, V. K. M., Otrel-Cass, K., Williams, J., & Jones, A. (2013). Enhancing teachers' technological pedagogical knowledge and practices: a professional development model for technology teachers in Malawi. *International Journal of Technology and Design Education*, *23*(3), 597–622. https://doi.org/10.1007/s10798-012-9206-8

Chimombo, J. (2005). Quantity Versus Quality in Education: Case Studies in Malawi.

International Review of Education, *51*(2–3), 155–172. https://doi-org.ezproxy.uio.no/10.1007/s11159-005-1842-8

Chimombo, J. (2009). Changing patterns of access to basic education in Malawi: a story of a mixed bag? *Comparative Education*, *45*(2), 297–312. https://doi.org/10.1080/03050060902921003

Chr. Michelsen Institute. (2017). *Country Evaluation Brief: Malawi* (No. 4). Retrieved from Norad website: https://norad.no/en/toolspublications/publications/2017/country-evaluation-brief-malawi/

Communications and Development Initiatives. (2018). *End-line Study on Unlocking Talent through Technology project: Improving Learning Outcomes for Primary School Children in Malawi*. n.p.: Voluntary Service Overseas.

Cox, M., Preston, C., & Cox, K. (2000). *What Motivates Teachers to use ICT?* Presented at the British Educational Research Association Annual Conference, Brighton. Retrieved from http://www.leeds.ac.uk/educol/documents/00001329.htm

Eidhammer, A. (2005). *Malawi - eit lite land i Afrika (Malawi - a Small Country in Africa)*. Høvik: Kolofon.

Eidhammer, A. (2017). *Malawi A Place Apart*. Lilongwe: Logos.

Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: strategies for qualitative research*. New York: Aldine de Gruyter.

Gorozidis, G., & Papaioannou, A. G. (2014). Teachers' motivation to participate in training and to implement innovations. *Teaching and Teacher Education*, *39*, 1–11. https://doi.org/10.1016/j.tate.2013.12.001

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In *Handbook of qualitative research* (pp. 105–117). Thousand Oaks, CA, US: Sage Publications.

Haßler, B., Major, L., & Hennessy, S. (2016). Tablet use in schools: a critical review of the evidence for learning outcomes. *Journal of Computer Assisted Learning*, *32*(2), 139–

156. https://doi.org/10.1111/jcal.12123

Heystek, J., & Terhoven, R. (2015). Motivation as critical factor for teacher development in contextually challenging underperforming schools in South Africa. *Professional Development in Education*, *41*(4), 624–639. https://doi.org/10.1080/19415257.2014.940628

Hirsh-Pasek, K., Zosh, J., Golinkoff, R., H Gray, J., Robb, M., & Kaufman, J. (2015). Putting Education in "Educational" Apps: Lessons From the Science of Learning. *Psychological Science in the Public Interest*, *16*, 3–34. https://doi.org/10.1177/1529100615569721

Hollow, D., & Masperi, P. (2009). An evaluation of the use of ICT within primary education in Malawi. *2009 International Conference on Information and Communication Technologies and Development (ICTD)*, 27–34. https://doi.org/10.1109/ICTD.2009.5426707

Howard, J. L., Gagné, M., & Bureau, J. S. (2017). Testing a continuum structure of self-determined motivation: A meta-analysis. *Psychological Bulletin*, *143*(12), 13–46. https://doi.org/10.1037/bul0000125

Hubber, P. J., Outhwaite, L. A., Chigeda, A., McGrath, S., Hodgen, J., & Pitchford, N. (2016). Should Touch Screen Tablets Be Used to Improve Educational Outcomes in Primary School Children in Developing Countries? *Frontiers in Psychology*, *7*(839), 1–4. https://doi.org/10.3389/fpsyg.2016.00839

Idowu, O. E. (2016). Criticisms, Constraints and Constructions of Case Study Research Strategy. *Asian Journal of Business and Management*, *4*(5), 184–188.

Isbell, T., & Chunga, J. (2017). *Malawians increasingly cautious about exercising right to 'free' political speech* (No. 176). Retrieved from http://afrobarometer.org/sites/default/files/publications/Dispatches/ab_r7_dispatchno176_freedom_of_expression_in_malawi.pdf

Johannessen, B., & Leraand, D. (2017). Malawis historie (The History of Malawi). In *Store norske leksikon*. Retrieved from http://snl.no/Malawis_historie

Kadzamira, Z. D., Kalinga, O. J., Ingham, K., Phiri, K. G., & Mitchell, J. C. (2019). Malawi. In *Encyclopedia Britannica*. Retrieved from https://www.britannica.com/place/Malawi

Kirschner, P. A., Hendricks, M., Paas, F., Wopereis, I., & Cordewener, B. (2004). Determinants for Failure and Success of Innovation Projects: The Road to Sustainable Educational Innovation. *Association for Educational Communications and Technology*, *27*, 359–368.

Kucirkova, N. (2014). iPads in early education: separating assumptions and evidence. *Frontiers in Psychology*, *5*(715), 1–3. https://doi.org/10.3389/fpsyg.2014.00715

Lewin, K. M., & Sabates, R. (2012). Who gets what? Is improved access to basic education pro-poor in Sub-Saharan Africa? *International Journal of Educational Development*, *32*(4), 517–528. https://doi.org/10.1016/j.ijedudev.2012.02.013

Lubin, I. A. (2018). Global Forces, Local Needs, and ICT-Supported Innovations in Small Countries and developing Regions: Overcoming the Misalignment. An Editorial Introduction. In I. A. Lubin (Ed.), *ICT-Supported Innovations in Small Countries and Developing Regions* (pp. 3–26). Cham: Springer International Publishing.

Lucas, M. (2018). External barriers affecting the successful implementation of mobile educational interventions. *Computers in Human Behavior*, *in press*, 1–7. https://doi.org/10.1016/j.chb.2018.05.001

Manzon, M. (2014). Comparing Places. In M. Bray, B. Adamson, & M. Mason (Eds.), *Comparative Education Research: Approaches and Methods* (pp. 97–137). Cham: Springer International Publishing.

Mikre, F. (2011). The Roles of Information Communication Technologies in Education: Review Article with Emphasis to the Computer and Internet. *Ethiopian Journal of Education and Sciences*, *6*(2), 109-126.

Ministry of Education, Science and Technology. (2008). *Education Sector Plan 2008 – 2017. Malawi*. Retrieved from https://www.globalpartnership.org/content/malawi-education-sector-plan

Montrieux, H., Vanderlinde, R., Schellens, T., & De Marez, L. (2015). Teaching and

Learning with Mobile Technology: A Qualitative Explorative Study about the Introduction of Tablet Devices in Secondary Education. *PLoS ONE*, *10*(12), 1–17. https://doi.org/10.1371/journal.pone.0144008

Mtemang'ombe, F. A. (2017). *An Analysis of Processes and Contexts for ICT interventions in Malawian Primary School Education System* (Doctoral Thesis, University of Strathclyde). Retrieved from https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.750615

Neumann, M., & Neumann, D. (2014). Touch Screen Tablets and Emergent Literacy. *Early Childhood Education Journal*, *42*(4), 231–239. https://doi.org/10.1007/s10643-013-0608-3

Norad. (2017). *Rising to the challenge - Result of Norwegian education aid 2013-2016*. Retrieved from https://norad.no/om-bistand/publikasjon/2017/rising-to-the-challenge/

Norad. (2018, January 11). Malawi. Retrieved May 16, 2019, from https://norad.no/landsider/afrika/malawi/

OLPC Foundation. (2007). *Nicholas Negroponte Interview - One Laptop per Child (OLPC)*. Retrieved from https://www.youtube.com/watch?time_continue=47&v=o97UD78s6iM

Onebillion. (n.d.). *Onecourse Handbook*. Retrieved from https://onebillion.org/onecourse/app/

Østerud, Ø. (2007a). Kritisk teori (Critical theory). In *Statsvitenskapelig Leksikon*. Oslo: Universitetsforlaget.

Østerud, Ø. (2007b). Validitet (Validity). In *Statsvitenskapelig Leksikon*. Oslo: Universitetsforlaget.

Outhwaite, L. A., Gulliford, A., & Pitchford, N. (2017). Closing the gap: Efficacy of a tablet intervention to support the development of early mathematical skills in UK primary school children. *Computers & Education*, *108*, 43–58. https://doi.org/10.1016/j.compedu.2017.01.011

Papadakis, S., Kalogiannakis, M., & Zaranis, N. (2018). Educational apps from the Android Google Play for Greek preschoolers: A systematic review. *Computers & Education*, *116*, 139–160. https://doi.org/10.1016/j.compedu.2017.09.007

Pitchford, N. (2015). Development of early mathematical skills with a tablet intervention: a randomized control trial in Malawi. *Frontiers in Psychology*, *6*(485), 1–12. https://doi.org/10.3389/fpsyg.2015.00485

Pitchford, N., Hubber, P., & Chigeda, A. (2017). *Unlocking Talent through Technology: Improving Learning Outcomes of Primary School Children in Malawi. Long-term Learning Outcomes & Process Evaluation*. n.p.: The University of Nottingham.

Pitchford, N., Kamchedzera, E., Hubber, P. J., & Chigeda, A. L. (2018). Interactive Apps Promote Learning of Basic Mathematics in Children With Special Educational Needs and Disabilities. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.00262

Ravishankar, V. J., El-Kogali, S. E. T., Sankar, D., Tanaka, N., & Rakoto-Tiana, N. (2016). *Primary education in Malawi : expenditures, service delivery, and outcomes* (No. 104337). Retrieved from http://documents.worldbank.org/curated/en/340961468185650405/Primary-education-in-Malawi-expenditures-service-delivery-and-outcomes

Riddell, A., & Niño-Zarazúa, M. (2016). The effectiveness of foreign aid to education: What can be learned? *International Journal of Educational Development*, *48*, 23–36. https://doi.org/10.1016/j.ijedudev.2015.11.013

Rikala, J., Vesisenaho, M., & Mylläri, J. (2013). Actual and Potential Pedagogical Use of Tablets in Schools. *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments*, *9*, 113–131. https://doi.org/10.17011/ht/urn.201312042736

Robertson, A. (2018, April 16). OLPC's $100 laptop was going to change the world — then it all went wrong. Retrieved March 12, 2019, from https://www.theverge.com/2018/4/16/17233946/olpcs-100-laptop-education-where-is-it-now

Roca, J. C., & Gagné, M. (2008). Understanding e-learning continuance intention in the workplace: A self-determination theory perspective. *Computers in Human Behavior*,

24(4), 1585–1604. https://doi.org/10.1016/j.chb.2007.06.001

Rogers, E. M. (1995). *Diffusion of innovations* (Fourth edition.). New York: Free Press.

Royal Norwegian Embassy in Malawi. (2017, June 21). Unlocking Talent. Retrieved April 20, 2019, from https://www.norway.no/en/malawi/norway-malawi/news-events/news2/unlocking-talent/

Royal Norwegian Embassy in Malawi. (2018, May 30). Education. Retrieved April 29, 2019, from https://www.norway.no/en/malawi/norway-malawi/development-cooperation2/education/

Ryan, R. M., & Deci, E. L. (2012). Motivation, Personality, and Development Within Embedded Social Contexts: An Overview of Self-Determination Theory. In R. M. Ryan (Ed.), *The Oxford Handbook of Human Motivation* (p. n.pp.). Oxford: Oxford University Press.

Ryan, R. M., & Deci, E. L. (2017). *Self-Determination Theory : Basic Psychological Needs in Motivation, Development, and Wellness*. New York: The Guilford Press.

Searson, M. (2014). The Failure of Education´s First Mobile Device. In C. Miller & A. Doering (Eds.), *The New Landscape of Mobile Learning: Redesigning Education in an App-Based World* (p. n.pp.). New York: Routledge.

Selwyn, N. (2013). "Empowering the World's Poorest Children"? A Critical Examination of One Laptop per Child. In N. Selwyn & K. Facer (Eds.), *The politics of Education and Technology* (pp. 101–126). New York: Palgrave Macmillan.

Selwyn, N., & Facer, K. (2013). Introduction: The Need for a Politics of Education and Technology. In N. Selwyn & K. Facer (Eds.), *The politics of Education and Technology* (pp. 1–20). New York: Palgrave Macmillan.

Sen, A. (1999). *Development as freedom*. Oxford: Oxford University Press.

Shento, A. K. (2004). Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, *22*(2), 63–75. https://doi.org/10.3233/EFI-2004-22201

Smith, J., & Larkin, M. (2009). *Interpretative phenomenological analysis: theory, method*

and research. Los Angeles: SAGE.

Sørebø, Ø., Halvari, H., Gulli, V. F., & Kristiansen, R. (2009). The role of self-determination theory in explaining teachers' motivation to continue to use e-learning technology. *Computers & Education*, *53*(4), 1177–1187. https://doi.org/10.1016/j.compedu.2009.06.001

Tabulawa, R. (1997). Pedagogical classroom practice and the social context: The case of Botswana. *International Journal of Educational Development*, *17*(2), 189–204. https://doi.org/10.1016/S0738-0593(96)00049-1

Thagaard, T. (2013). *Systematikk og innlevelse: en innføring i kvalitativ metode (Systematics and Empathy: an introduction to qualitative method)* (4th ed.). Begren: Fagbokforlaget.

Thematic Analysis. (2010). In *Encyclopedia of Case Study Research*. https://doi.org/10.4135/9781412957397.n342

Theory. (n.d.). Retrieved April 23, 2019, from http://selfdeterminationtheory.org/theory/

Trucano, M. (2010, April 30). Worst practice in ICT use in education. Retrieved April 19, 2019, from http://blogs.worldbank.org/edutech/worst-practice

United Nation`s Educational, Scientific and Cultural Organization. (2005). *Education for all: the quality imperative; EFA global monitoring report*. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000137333

United Nation`s Educational, Scientific and Cultural Organization. (n.d.). *The Quality of primary education: some policy suggestions based on a survey of schools: Malawi*. Retrieved from International Institute for Educational Planning website: https://unesdoc.unesco.org/ark:/48223/pf0000123541

United Nations Development Programme. (2015). *Goal 4: Quality education*. Retrieved from http://www.sdgfund.org/goal-4-quality-education

Unwin, T. (2018, July 16). Why we don't really know very much about the influence of ICTs on learning and education. Retrieved March 14, 2019, from

https://unwin.wordpress.com/2018/07/16/why-we-dont-really-know-very-much-about-the-influence-of-icts-on-learning-and-education/

VSO. (n.d.). The Unlocking Talent Project. Retrieved April 20, 2019, from https://unlockingtalent.org/about

VSO. (2016, December 22). Unlocking Talent learning centres. Retrieved April 27, 2019, from https://www.vsointernational.org/fighting-poverty/where-we-fight-poverty/malawi/unlocking-talent-through-technology-malawi/unlocking-talent-learning-centre

VSO. (2018a). *Unlocking Talent through Technology in Malawi Phase II Full Proposal*. n.p.: Voluntary Service Overseas.

VSO. (2018b, May 30). Unlocking Talent learning materials. Retrieved April 27, 2019, from https://www.vsointernational.org/fighting-poverty/where-we-fight-poverty/malawi/unlocking-talent-through-technology-malawi/unlocking-talent-learning-materials

Wagner. (2018). Technology for Education in Low-Income Countries: Supporting the UN Sustainable Development Goals. In I. A. Lubin (Ed.) *ICT Supported Innovations in Small Countries and Developing Regions*. Cham: Springer.

Wagner, D. A., Day, B., & Sun, J. S. (2004). *Information Technologies and Education for the Poor in Africa: Recommendations for a Pro-Poor ICT4D Non-Formal Education Policy*. Pennsylvania: United Nation`s Educational, Scientific and Cultural Organization.

White, R. W. (1959). Motivation reconsidered: the concept of competence. *Psychological Review*, *66*, 297–333.

Xprize. (2019). Empowering Children to Take Control of Their Own Learning. Retrieved April 29, 2019, from https://www.xprize.org/prizes/global-learning

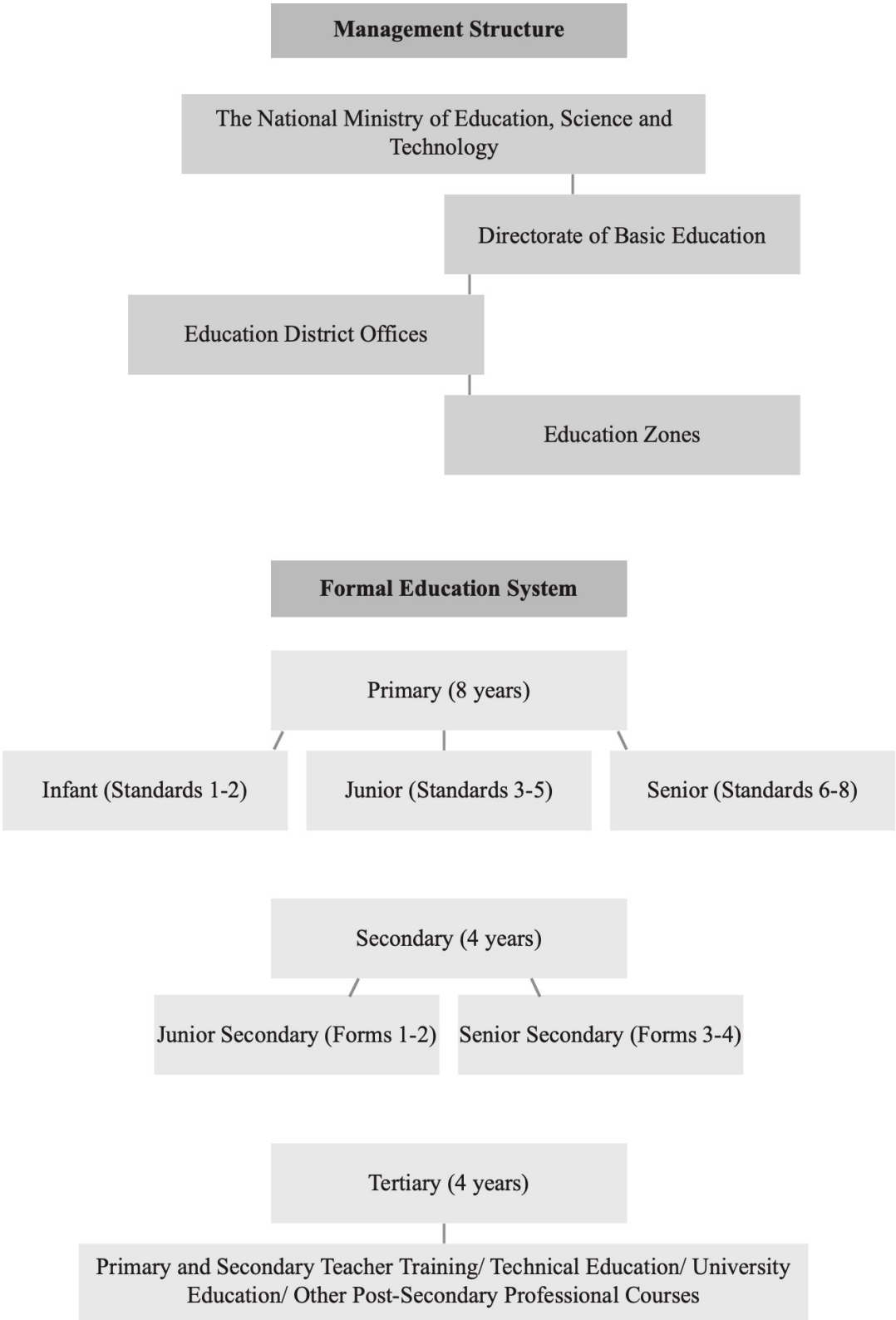
Yin, R. (2009). *Case study research: design and methods* (4th ed.). Calif: Sage.

Zhang, J., Yang, J., Maiga, C., & Chang, T. (2016). Towards a Critical Understanding to the

Best Practices of ICT in K-12 Education in Global Context. In J. Zhang, J. Yang, C. Maiga, & T. Chang (Eds.), *ICT in Education in Global Context* (pp. 1–18). Singapore: Springer International Publishing.

Appendices

Appendix 1 – Overview of the Malawian Educational System



Appendix 2 – Interview Guide for Teachers, Principals and Student-Centre Coordinators

(Checklist for the researcher:)

Date:	Time aspect:
Consent-form comprehended and signed:	Clarification of expectations, process, topics, purpose and assurance of anonymity:
Recorder on:	Questions for the researcher:

Interview Guide:

Concept under Investigation	**Question**	**Follow-up**
(Introduction)	1. For how long have you been a teacher? 2. Why did you choose to become a teacher? 3. What is most important to you as a teacher? 4. What is according to your opinion the most challenging part of being a teacher?	How long have you been at this school? Are you able to reach that goal? Why/why not?

Sustainability of Educational Interventions	5. What do you think of the UT-project on a general basis? 6. If you had to choose, what do you think is the most important success-factor of the UT-project? 7. What do you wish was done differently in relation to the UT-project?	Why? Why is that the most important success-factor? What other elements of the UT-project are you not pleased with?
ICTs for Education	8. How does learning from the touch-screen tablets differ from regular classes? 9. What can the touch-screen tablets not learn the children? 10. Does some children learn better from the touch-screen tablets than others?	
Aid to Education	11. Imagine you were the Minister of Education in Malawi and got to decide where money should be spent to raise the quality of Malawian primary education. What would be your top three priorities? 12. Do you find it appropriate that donors have	Why this exact order of priorities?

	chosen to invest in the UT-project as a tool to enhance the quality of Malawian education? 13. VSO is planning on handing the responsibility of the UT-project over to MoEST. What are your thoughts on that? 14. Is there anything you would like to add/ do you have any questions for me?	Why/why not? Why is it not a problem/ why is it a problem? What can you individually do to sustain this project?

Appendix 3 – Observation Guide for Regular Classes and UT-Classes

(Checklist for the researcher:)

School Name (Code):	Type of Class and Subject:
Date:	Start-time for observation: Ending-time for observation:
Consent-form comprehended and signed:	Clarification of expectations, process, topics, purpose and assurance of anonymity:

Observation-Guide:

Concepts under investigation	**Observation points**
(General Observation)	Immediate thoughts? How are the facilities of the school? What is the staff doing when they are not teaching? What are the main teaching-methods used?

Sustainability of Educational Interventions Aid to Education	What is the teacher or learning-centre coordinator doing during the UT-classes? How does the teachers interact with the learners during UT-classes? How does the teachers interact with the learner during regular classes? Is there any cooperation between what happens in the learning-centre and what happens in regular classes?
ICTs for Education	Does the children have trouble understanding the tasks on the touch-screen-tablet? In what ways is the UT-learning environment different from regular classes? How does the teachers interact with the teacher-tablet? How does the teachers monitor the children`s learning during UT-classes?  How does the teachers monitor children` s learning during regular classes?

Appendix 4 – Consent Form for Participation

UiO : University of Oslo

REQUEST OF PARTICIPATION IN RESEARCH PROJECT

This is a question for you to participate as an informant in the research-project: *A Qualitative Analysis of the project "Malawi Unlocking Talent (UT): learning through Technology" and Norad`s support to the program.* This project is part of the master`s program «*International and Comparative Education MA(Phil.)*» at the Faculty of Educational Sciences, University of Oslo - Norway 2018/2019.

WHAT IS THE PROJECT ABOUT?

The purpose of this master`s project is to research the following concepts; quality of education, educational aid and the potential of using technology in education. These concepts will be researched through an analysis of the UT-project and Norad`s (the Norwegian agency for development cooperation) support to it. You are asked to take part in this study because you are believed to be a key-informant in relation to the master`s thesis themes.

The data-collection method chosen for this research is the qualitative interview. The interview will be semi-structured and led by an interview-guide. The direction of the interview will to a great extent be led by what the informant choose to put forward in relation to the concepts that are being researched. The informant will not be asked to talk about themes that she/he feels uncomfortable with or which she/he does not have knowledge about. A priority is that the informant shares the knowledge she/he inhabits, and not that the pre-constructed questions are answered.

VOLUNTARY PARTICIPATION AND POSSIBILITY TO RETRIEVE CONSENT

Participation in this research is voluntary. You will not be given compensation for your participation. If you wish to participate you sign the declaration of consent on the last page. You can at any time and without giving a reason withdraw your consent. The information provided by the participant will only be used as presented in the description of the project. You have the right to access the information collected about you and to demand alterations of potential incorrect or misunderstood depictions. All of the information will be processed without name or other identifiable personal details. Audio-recordings and notes connected to the interview will be safely stored.

CONTACT-INFORMATION

If you have any questions in relation to the project, please contact:

Elisabeth Vestvik Kleiberg

Phone number: 0047 954 02 917 / 00265 99 239 0648

E-mail: elisabethkleiberg@gmail.com

DECLARATION OF CONSENT

1. I have read and understood the above information about the research-project.

2. I have been given the chance to ask questions about the project and my participation in it.

3. I understand that taking part in the study will include being interviewed and audio recorded.

4. I have been given adequate time to consider my decision and I agree to take part in the study.

5. I understand that my personal details will not be exposed and that my identity will not be revealed to anyone else than the scientist.

6. I understand that my words might be quoted in the research project and thus could be published, but that my identity will remain anonymous.

7. I understand that at any time I can withdraw from the study and I will not be asked any questions about why I no longer want to take part.

I agree to participate in the research-project:

Place and date

Participants signature

Participants name in printed letters

Appendix 5 – Clearance from the Norwegian Data Protection Official

Camilla Bakke
Postboks 1092 Blindern
0317 OSLO

Vår dato: 27.06.2018 Vår ref: 61193 / 3 / BGH Deres dato: Deres ref:

Forenklet vurdering fra NSD Personvernombudet for forskning

Vi viser til melding om behandling av personopplysninger, mottatt 19.06.2018.
Meldingen gjelder prosjektet:

61193	*Educational Aid and Quality Development in Malawi*
Behandlingsansvarlig	*Universitetet i Oslo, ved institusjonens øverste leder*
Daglig ansvarlig	*Camilla Bakke*
Student	*Elisabeth Vestvik Kleiberg*

Vurdering

Etter gjennomgang av opplysningene i meldeskjemaet med vedlegg, vurderer vi at prosjektet er omfattet av personopplysningsloven § 31. Personopplysningene som blir samlet inn er ikke sensitive, prosjektet er samtykkebasert og har lav personvernulempe. Prosjektet har derfor fått en forenklet vurdering. Du kan gå i gang med prosjektet. Du har selvstendig ansvar for å følge vilkårene under og sette deg inn i veiledningen i dette brevet.

Vilkår for vår vurdering

Vår anbefaling forutsetter at du gjennomfører prosjektet i tråd med:

- opplysningene gitt i meldeskjemaet
- krav til informert samtykke
- at du ikke innhenter sensitive opplysninger
- veiledning i dette brevet
- Universitetet i Oslo sine retningslinjer for datasikkerhet

Veiledning

Krav til informert samtykke

Utvalget skal få skriftlig og/eller muntlig informasjon om prosjektet og samtykke til deltakelse.
Informasjon må minst omfatte:

- at Universitetet i Oslo er behandlingsansvarlig institusjon for prosjektet
- daglig ansvarlig (eventuelt student og veileders) sine kontaktopplysninger
- prosjektets formål og hva opplysningene skal brukes til
- hvilke opplysninger som skal innhentes og hvordan opplysningene innhentes

Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

- når prosjektet skal avsluttes og når personopplysningene skal anonymiseres/slettes

På nettsidene våre finner du mer informasjon og en veiledende mal for informasjonsskriv.

Forskningsetiske retningslinjer
Sett deg inn i forskningsetiske retningslinjer.

Meld fra hvis du gjør vesentlige endringer i prosjektet
Dersom prosjektet endrer seg, kan det være nødvendig å sende inn endringsmelding. På våre nettsider finner du svar på hvilke endringer du må melde, samt endringsskjema.

Opplysninger om prosjektet blir lagt ut på våre nettsider og i Meldingsarkivet
Vi har lagt ut opplysninger om prosjektet på nettsidene våre. Alle våre institusjoner har også tilgang til egne prosjekter i Meldingsarkivet.

Vi tar kontakt om status for behandling av personopplysninger ved prosjektslutt
Ved prosjektslutt 30.11.2018 vil vi ta kontakt for å avklare status for behandlingen av personopplysninger.

Gjelder dette ditt prosjekt?

Dersom du skal bruke databehandler
Dersom du skal bruke databehandler (ekstern transkriberingsassistent/spørreskjemaleverandør) må du inngå en databehandleravtale med vedkommende. For råd om hva databehandleravtalen bør inneholde, se Datatilsynets veileder.

Hvis utvalget har taushetsplikt
Vi minner om at noen grupper (f.eks. opplærings- og helsepersonell/forvaltningsansatte) har taushetsplikt. De kan derfor ikke gi deg identifiserende opplysninger om andre, med mindre de får samtykke fra den det gjelder.

Dersom du forsker på egen arbeidsplass
Vi minner om at når du forsker på egen arbeidsplass må du være bevisst din dobbeltrolle som både forsker og ansatt. Ved rekruttering er det spesielt viktig at forespørsel rettes på en slik måte at frivilligheten ved deltakelse ivaretas.

Se våre nettsider eller ta kontakt med oss dersom du har spørsmål. Vi ønsker lykke til med prosjektet!

Vennlig hilsen

Marianne Høgetveit Myhren

Belinda Gloppen Helle

Kontaktperson: Belinda Gloppen Helle tlf: 55 58 28 74 / belinda.helle@nsd.no