MIND THE GAP!

HOW DISCOURSES SHAPE THE DIGITAL GENDER DIVIDE

A critical case study examining discourses on gender and ICT in the Kenyan education system

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Abstract

The speed of digitalization has generated disparities in access and use of information and communication technologies (ICTs) between men and women in Sub-Saharan Africa. This gap is known as the digital gender divide. This qualitative, exploratory case study seeks to explain how discourses on gender in relation to ICT shape the digital gender divide in Kenya's education system. The study is theoretically and methodologically founded in the school of critical discourse analysis and stresses how gendered associations of technology are created, sustained or challenged through language. The paper analyzes how discourses on gender in relation to ICT in Kenyan national education policies are consumed, understood and conveyed by teachers and principals in Kenyan schools. The primary data consists of national policy documents and semi-structured interviews with teachers and principals. The findings illustrate a discursive shift in Kenyan education policies towards promoting girls' access and use of ICT. However, the transmission of discourses on gender and ICT from policy to schools was found to be disrupted due to fragmentations in the ties between the government and the schools. Teachers and principals demonstrated an awareness of how patriarchal ideologies inhibit girls' engagement with ICT in schools, but the majority did not actively address the disparities. This study concludes that since altered policy discourses were not transferred and traditional gender roles in relation to technology remained unchallenged, the impact on reducing the digital gender divide is limited.

Keywords: *Gender, ICT, digital gender divide, education, discourse, Kenya.*

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1 Introduction

Throughout the past four decades, the world has witnessed unprecedented technological changes. The diffusion of information and communication technologies (ICTs) such as the internet, computers and smartphones, and the rise of the 'fourth industrial revolution' have brought irreversible transformations in several domains of human life (Gruber & Koutrompis 2011; Schwab 2017; Cabeza-Garcia et al. 2018). Alongside a growing recognition of enhancing human capabilities for national development, individuals' access and use of ICTs have been identified as crucial tools for realizing economic growth and sustainable development in contemporary societies (Jin & Cheong 2008; Kaur et al. 2017; Sein & Harindranath 2004; UN-OHRLLS 2018). ICTs give people access to information, knowledge, employment and empowerment and have the capacity to drive long-term economic prosperity in both developed and developing countries (Bresnahan & Trajtenberg 1995; Avgerou 2003; Kaur et al. 2017; Lechman 2015).

However, research shows that ICTs might not be the force that pushes all societal groups forward at an equal pace. The new digital era also come with discriminatory effects as it generates a gap between individuals who have the ability to access and use ICTs, and individuals who do not (Hafkin & Taggart 2001; Kaur et al. 2017; Norris & Conceicao 2004). Scholars have termed this gap the digital divide (Hafkin & Taggart 2001; Milakovich 2012). One of the most enduring digital divides in developing countries is the digital *gender* divide, meaning the disparities in the accessibility and use of ICTs between men and women. Women has shown to lag behind men both in terms of ownership of technology and in the development of technological skills (Dixon et al. 2014; Wilson et al. 2003; Lui 2006; Cooper 2006; Correa 2010; Fallows 2005; Livingstone & Helsper 2007). Reducing the digital gender divide has consequently earned a role in the academic development debate (Sen 1983:748; Mankiw et al. 1992). Scholars have argued that instead of addressing *outcomes* of unequal wealth creation, the attention should instead be on the persistent gender inequalities in ICT adoption that lead to unequal distribution of assets and opportunities, which ultimately shape the *inputs* to wealth creation in the first place (Ngepah 2017:53; Huyer & Sikoska 2003:4; Hafkin & Taggart 2001).

Women in Sub Saharan Africa (SSA) are considered to be in the deepest part of the digital gender divide. They are found to be more informationally marginalized than their male counterparts, while residing in a region that is historically known for its high prevalence of poverty and structural gender inequalities (Fuchs & Horak 2008:100; Hafkin & Taggart 2001; Raheem et al. 2018:32; Mills et al. 2017:6; UNDP 2001). While research shows that ICTs have helped in overcoming some social and economic barriers for women in this region (Sorgner & Krieger-Boden 2017; Milakovich 2012; Kaur et al. 2017), a persistent digital gender divide still exists (Antonio & Tuffley 2014; Alozie et al. 2017). This has resulted in a growing academic focus on how men and women in SSA can be included in the digital revolution on equal terms (Igun 2011; Kaur et al. 2017; Fuchs & Horak 2008; Carr & Huyer 2002).

Several quantitative studies have analyzed the digital gender divide by examining the *first* and *second order divide* in terms of (1) women's lack of direct access to ICTs and (2) the lack of usage amongst women who do have access (Hoffman et al. 2001; Norris 2001; Van Dijk 2006b). In these studies, ICTs are commonly treated as monolithic and homogenous entities such as computers, cell phones and the internet (Sein & Harindranath 2004). However, research positioned within the constructivist school treat ICTs as highly fragmented, social phenomena that undergo constant change (Orlikowski & Iacono 2001). This has spurred a third analytical entry point to the digital gender divide, where descriptions and perceptions of gender in relation to technology are said to influence how and by whom ICTs are adopted and used (Hafkin & Huyer 2006:2; Van Dijk & Hacker 2003; Van Dijk 2006b:178; Jin & Cheong 2008; Dixon et al. 2014). It is within this realm of research that this paper is positioned.

Constructivist scholars point to the role of language in shaping men and women's relationship to ICT, and stress how technology has historically been described, perceived and positioned within the 'male domain' (Alozie 2017:141; Brännström 2012:61; Bawa 2012; Badagliacco 1990). It is argued that this has led to gendered associations, whereby technology is considered 'a male activity' corresponding with masculinity, which have put women on the sidelines of ICT adoption (Kelan 2007:360; Dlodlo 2009:170). The digital gender divide can therefore be seen as a consequence of how gender and technology are socially constructed

and co-produced through discourses that manifest gendered divisions in relation to technology (ibid.). Thus, the use of language that is embedded in social behavior and structures arguably has an impact on the digital gender divide (Dixon et al. 2014; Fairclough 1993).

Across SSA, education is considered to be the most important social structure to bridge the digital gender divide and improve the ability for women and girls to take advantage of the opportunities offered by ICTs (Hafkin & Taggart 2001). However, research shows that this ability is hindered since the gendered discourses on technology are found to start already in school. Subjects on technology, science, engineering and math (STEM) have been presented as something boys 'do' and associations between STEM and masculinity are therefore found to impede girls and women's identification with ICTs (Alozie et al. 2017:142; Abagi et al. 2009; Ngware 2012; Walkerdine 1990).

Since schools are central institutions in the provision of knowledge and the shaping of attitudes and values of the next generation, teachers and principals have a particularly influential role in producing, or challenging, gendered discourses on ICT (Milligan 2014). This is because, in their authoritative position vis-à-vis the students, teachers' and principals' narrations with regard to boys, girls and technology are believed to shape students' perceptions and engagement with ICTs (ibid.; Pearse & Connell 2016; Abagi et al. 2005). However, teachers and principals are not shaping discourses on gender and ICT in isolation. Schools are guided by governments who regulate their operations through education policies; directing course content, curricula and educational targets. This implies that discourses on gender in relation to ICT, as featured in education policies also shape the digital gender divide, since these influence both teachers' and principals' understandings and narrations when conveying and implementing policies on the ground.

This thesis will therefore zoom in on the education system and conduct a case study of how discourses on gender, in relation to ICT, in education policies and teaching narrations, shape the digital gender divide. Both units merit attention in order to understand what discourses on gender and ICT are dominating within (1) the policies that guide the operations of schools, and (2) the narrations of the individuals who interact with the students and implement the policies. In this paper, education policies are defined as government publications. Teaching narrations refer to how teachers and principals interpret policies and talk about the

relationship between gender and ICT. Thus, this paper does not examine how teachers communicate directly to students in the classroom setting, but rather aims to uncover how teachers and principals consume, understand and convey discourses on gender and ICT from policy to practice.

This study is theoretically underpinned by critical discourse analysis (CDA) which is commonly applied in studies that analyze how unequal social arrangements, such as the digital gender divide, are sustained through language (Van Dijk 2001:96; Gungor 2010:170; Lazar 2007; Garnsey & Rees 1996; Kvasny & Trauth 2003). We define discourse as both *what* is being said in spoken and written language, and *how* something is said within a certain social context. This definition is derived from Norman Fairclough's (1993) three-dimensional framework which outlines how discourse can be understood as an interaction of three separate dimensions. The dimension are (1) 'textual practices' – the vocabulary, grammar and structure of text; (2) 'discursive practices' – the actions behind writing, speaking and listening and (3) 'social practices' – the societal elements and ideologies that shape conditions for production and consumption of text. This framework helps to identify the common forms of social behavior that are embedded in language, the dialectical relationship between the written and spoken word and the social environment that give discourse meaning (Wodak 2013; Fairclough & Wodak 1997:260). Discourses thus function as frames for individuals' understanding of the world, their consciousness, agency, personality and conceptions of truth (Alvesson & Karreman 2000:1131). These frames shape socially recognizable identities such as 'woman'; 'man' or 'masculine'; 'feminine' (Gee 2005:21) and their relation to other objects, such as ICT. This also implies that discourse is subject to change when people raise critical consciousness about ideological assumptions embedded in language (Fairclough 2001:124). CDA can therefore unveil discourses on gender and ICT that either carry meanings of patriarchal gender roles, or discourses that challenge these roles and promote increased use and access of ICT for women and girls.

While constructivist explanations of gender disparities in ICT adoption have gained traction in the academic literature of the developed world (cf. Dixon et al. 2014), case studies within this realm in the SSA context are still few (Alozie et al. 2017). Some studies have examined the interrelation between persistent patriarchal norms and issues with gender equality in SSA (Walton 2013; Olowu 2012; Stoppler 2008), but analyzes of the relationship between socially

constructed gender roles, ICT and the digital gender divide are scarce. This paper will focus on Kenya, which serves as an illustrative example of a country that has undergone rapid technological change over the past 15 years, generating societal value to both men and women (cf. Ngugi & Komo 2017; Kaur et al. 2017), but where the digital gender divide persists (Osiakwan 2017; Igun 2011; Noor Mohammed 2015). Within this 'Silicon Savannah', men are 15.6% more likely to use the internet than women (Bright & Hruby 2015; Alozie et al. 2017) and in Nairobi's poorer areas, the digital gender divide is particularly articulated. Here, men are 50% more likely than women to be online, use gadgets and own technological hardware, while women face difficulties in becoming both digitally literate and gaining ownership to their own ICT equipment (A4AI 2017; GSMA 2015; Milakovich 2012).

Although Kenya has been historically slow in ratifying treaties and conventions that promote gender equality, the country made significant amendments to its constitution in 2010 to increase female participation and enhance gender diversity across all sectors in society (Noor Mohammed 2015:458; Falola & Amponsah 2012). This progress was an assertion of the country's long-term development plan, 'Vision 2030' from 2008. The plan emphasized that gender equality is a crucial component for national economic development and laid out strategies to increase female empowerment (Kibui & Mwaniki 2014). The growing commitment in state directives for increased enhancement of women's rights can be seen as signaling a shift towards increased focus on gender equality in Kenya (ibid.:27). This shift is arguably reflected in discourses of gender and technology, both in national educational policies and in the speech acts and attitudes of the implementers of these policies; the teachers and principals.

Hence, our theoretical argument is that discourses on gender in relation to ICT in social structures with authority, such as governments or schools, influence men's and women's ability to access and use ICTs. This relationship is summarized in a theoretical model in our theoretical framework. Thus, when equal access and use of ICTs are being promoted, this will arguably have a positive effect on reducing the digital gender divide. In light of the development trajectory on gender and ICT in Kenya, we expect that this progress on a state level will be reflected, both in national education policies as well as in the school environment. This will arguably promote women's engagement with ICTs and thereby reduce the digital gender divide in Kenya in the long term.

Finally, we have identified that the relationship between gendered associations of technology and the digital gender divide is an understudied phenomenon, especially in the context of SSA. The purpose of this paper is to address this research gap by providing an in-depth exploratory case study of how discourses on gender in relation to ICT shape the digital gender divide in Kenya. Kenya's progressive position in the digital revolution, paired with its recent policy advancements for gender equality makes a critical case for analyzing discourses on gender and ICT, as it has potential to generate insights that would be less likely to trace in other SSA countries that lack similar political and institutional infrastructures.

1.1 Research Objective and Research Question

This paper aims to detect how discourses on gender and ICT in the Kenyan education system shape the digital gender divide by either promoting, or limiting women's access and use of ICT. It will examine how education policies are formulated and how teachers and principals are influenced by, and translate policies into practice. The following overarching research question will guide the thesis:

- *How do discourses on gender in relation to ICT in the Kenyan education system shape the digital gender divide?*

The following sub-questions will help to connect policy descriptions to teachers' interpretations and facilitate a focused examination of the dominant discourses across both policy documents and in schools:

- *What are the dominant discourses on gender and ICT in Kenyan education policies?*
- *How are national education policies influencing primary and secondary schools in Kenya?*
- *What are the dominant discourses on gender and ICT in narrations from Kenyan teachers and principals?*

This paper is a qualitative, exploratory case study. Through the conduction of a CDA, we aim to detect the dominant discourse on gender and ICT within Kenyan education policies and in Kenyan primary and secondary schools. Primary data in the form of national education policy documents and semi-structured interviews with teachers and principals from schools in different socio-demographic areas in Nairobi will provide the empirical basis.

When combined with secondary data, it will advance the understanding of how discourses on gender and ICT shape the digital gender divide.

1.2 Relevance of the study

The innovation and diffusion of ICTs have resulted in irrevocable transformations in how we communicate and coordinate activities worldwide. Consequently, scholars have argued that citizens' access and ability to use ICTs are prerequisites for sustainable democratic and national economic development since technology generates both knowledge and power in modern societies. In fact, after violence and poverty, insufficient access to information and means of communication is deemed to be the third largest challenge for women in SSA (cf. Chowdury 2006; Fletschner & Mesbah 2011; Van Dijk 2006b). Structural barriers to women's access and use of ICTs have gained traction both in the academic literature and policy fora as their participation in social and economic activities contributes to sustainable economic development. However, little attention has been paid to the social co-construction of gender and technology and the role of discourse in influencing how men and women engage with ICTs. Thus, it is relevant to provide new data to shed light on underlying discursive practices of gender and ICT in order to detect and address the digital gender divide.

1.3 Academic contribution

In spite of the growing recognition of the digital gender divide in SSA there is still little consensus on underlying causes and practical strategies for bridging the gap between men and women in the region. Like many similar endemic puzzles in the African context, systematic scholarly treatment has not kept pace, primarily due to data limitations (Alozie et al. 2017). Through this case study in the Kenyan education system, we aim to contribute with new insights on how, and why, language about gender and technology in education policies and in schools bear importance for the extent of the digital gender divide.

Furthermore, the question is relevant as there is a need for developing both theoretical and methodological tools that can uncover the complex ways in which digital technologies permeate social practices, altering or reinforcing the fabric of society itself (cf. Barad 2007; Leonardi et al. 2012; Wajcman 2004). Therefore, there is a need of drawing on different fields of research and to be appreciative of intersectionality in analyses of digital gender constructions (Foka & Arvidsson 2014; Daniels 2009). This thesis draws on the constructivist school

of thought, international political economy, development studies and gender studies to contribute to the understanding of the role of discourses in shaping the digital gender divide.

1.4 Structure of the thesis

This thesis will be structured as follows. The next chapter presents the literature review that will position the study in the academic debate. The review highlights the relevance of studying the impact of discourse on the digital gender divide and constitutes the backbone of the theoretical framework that is presented in chapter 3. Chapter 4 presents the methodology of the study and explains how critical discourse analysis will be applied to analyze the collected data. In chapter 5, we present the findings from the analysis of policy documents from the Ministry of Education, Science and Technology and the interviews with teachers and principals in Kenyan primary and secondary schools. The implications of the findings are then discussed in chapter 6. After a summary of our research contribution and proposed directions for future academic research, chapter 7 presents the concluding remarks.

2 Literature Review

This chapter will review studies that contribute to towards enhancing our understanding of the digital gender divide, why it is important for national development and how social mechanisms, such as language and attitudes can explain the appropriation and division of technology. As authors have called for a conceptual clarification of the digital gender divide due to its shortcomings in theoretical framework, definition, interdisciplinary approach and qualitative research (Van Dijk 2006a:221; Corrocher & Ordanini 2002:10), we aim to systematize common arguments and clarify the conceptualization. The first part of the review will draw on works that have contributed to defining the 'digital divide' and show how the expression has emerged to incorporate gender, hence leading to the 'digital *gender* divide'. This section is followed by an explanation of how the digital gender divide is connected to gender equality and economic growth, and why the divide impairs sustainable development. The third part will discuss the emerging scholarly attention to constructivist explanations to the digital gender divide and how gendered discourses of technology shape men and women's relationship to ICTs. Finally, we will look at political and educational settings that shape discourses, and have the authoritative power to shape the digital gender divide through the use of language.

2.1 The digital divide

As the digital era has permeated social and economic life with varying speed in developed and developing countries, structural digital inequalities have become a focus of academic attention. The term '*digital divide'* works to illustrate the regional, national and individual disparities between those who are able to access and use ICTs, and those who lack this ability (Bimber 2000; DiMaggio & Hargittai 2001; Dewan & Riggins 2005; Van Dijk 2006a; Jin & Cheong 2008). While scholars have varied in their conceptual definition of the digital divide (Van Dijk & Hacker 2003; Hawkins 2005; Guillen & Suarez 2005; Jin & Cheong 2008). Dewan and Riggin's (2005) systematic review found that the majority of the literature focuses on two distinguished, yet interrelated types of inequalities, that constitute the divide; the lack of direct access to ICTs and the lack of use of ICTs among them who already have access (Hoffman et al. 2001; Norris 2001; Van Dijk 2006b). These two types of digital inequalities have gained conceptual currency in the literature known as the 'first and second order digital divide' (cf. Jin & Cheong 2008).

The first order divide is defined as a lack of direct access to ICTs. Van Dijk (2003), Hacker (2003) as well as Hawkins (2005) pinpoint that in developing countries, this divide commonly depends on levels of motivational, material and/or physical access. Motivational access is related to the motivation to appropriate ICTs and while some individuals might actively choose not to acquire new technologies, barriers to motivational access is often due to a lack of money or insufficient knowledge of the applicability or usefulness of ICTs (Van Dijk 2006b:180). Material access is often inhibited by a lack of financial or educational resources and the gap in physical access is normally explained by persistent low poverty levels and unfavorable geographical locations (Van Dijk 2005). Thus, financial resources, social and educational factors, geography and proximity to access points are factors that restrict people to acquire cell phones, computers and reach internet connections.

The second order divide is the lack of use of ICTs among those who already have access. It is determined by factors that influence the ability to acquire the necessary knowledge and skills to use technologies (Van Dijk 2006b:180). This ability varies both with positional factors of education levels, household standard, employment and geographical location, as well as personal factors of age, race, sex, personality and intelligence. Thus, reducing inequalities in regard to use of ICTs requires attention to social and mental capabilities and educational

and social resources that are needed to become digitally literate (Van Dijk 2006b:181-183; Van Dijk 2005; Kularski et al. 2012).

This implies that both the first and the second order of the digital divide are affected by persistent structural inequalities that exist in the broader social, economic, political and cultural context (Van Dijk 2006b:183; Cullen 2001; Hilbert 2011; Mossberger et al. 2003). This finding is of importance to this paper since existing socioeconomic circumstances, such as poverty levels, gender inequalities and educational marginalization are factors that affect individuals' ability and opportunity to access and use ICTs. This avenue of research has allowed scholars to investigate how the adoption of ICTs might not push all societal groups forward at an equal pace. One of the most enduring technological inequalities is the digital *gender* divide where research has in a variety of ways investigated how and why women lag behind men in the ownership of technology and the development of technological skills (Dixon et al. 2014; Bimber 2000; DiMaggio & Hargittai 2001; Hoffman et al. 2001; Antonio & Tuffley 2014).

2.1.1 The digital gender divide

Studies on the digital gender divide have found that men historically have owned and used computers and the internet more than women, spent more time online, taken more ICT-related school subjects and shown more motivation to learn digital skills (Cooper 2006; Correa 2010; Fallows 2005; Livingstone & Helsper 2007). Antonio & Tuffley's (2014) findings show that while women's' internet usage often exceeds that of men's' in developed countries, there is still a persistent gender divide in the developing world.

Bawa (2012), Mbarika et al. (2006) and Hilbert (2011:479) argue from a historical perspective, stating that women in SSA are the most marginalized societal group due to the multiple levels of inequalities they both have been, and still are being subjected to. These inequalities range from global distributional and economic differences, to regional patriarchal systems and cultural norms that favor male domination, but also unfavorable structural conditions for women in terms of employment, education and income levels. Bawa's analysis shows that while all citizens are affected by failed national and regional macroeconomic policies, women suffer to a higher degree than men, due to gender-based discriminatory practices in terms of

access to land and equity, social welfare, health and reproduction care, education, employment and political rights (Bawa 2012:91; Olowu 2006). In light of the unequal appropriation and use of ICTs between men and women, the authors argue that these structural inequalities are reflected in the digital gender divide in SSA. This argument is supported by other development researchers (cf. Dixon et al. 2014; Cullen 2001; Hilbert 2011; Mossberger et al. 2003) and Alozie et al.'s (2017) quantitative study strengthens the argument empirically. Their systematic review on the digital gender divide in six SSA countries shows that the disadvantaged position of women in terms of lack of education, lower socioeconomic status and higher levels of domesticity have a negative effect on their ability to access and use ICTs (2017:156). Overall, men are more likely than women to both own cell phones (+9.4%) and use the internet (+13.6) (ibid.:137). The study however also shows that the women that use ICTs are more active users than their male counterparts (ibid.:481). Thus, the authors conclude that while being a woman in SSA is negatively correlated with employment, education and income, it is positively correlated with ICT usage. This implies that the digital gender divide correlates with structural barriers that put women in a disadvantaged position in terms of education, socioeconomic status and domesticity.

The importance of addressing structural gender inequalities in terms of education specifically, is echoed in Hafkin and Huyer's (2008) quantitative study of six countries in West Africa. While the authors found that a digital gender divide in terms of access and use of ICTs existed across all countries overall, this was not the case among the educated youth (2008:31). Rather, young women with a secondary level school diploma and beyond were more likely to have access to and use computers than their male counterparts. Still, few women were found to use technology in more advanced manners, such as creating systems and building software (ibid.). This highlights the importance of not just looking at *if* women are accessing and using ICTs, but to what extent and *how* they are using technology in order to improve their standings (Hilbert 2011:487). Similarly, Antonio and Tuffley (2014) stress the importance of looking beyond merely giving more women access to ICTs as the solution to the digital gender divide. They argue that since an increase in access alone does not imply that women will be fluent in using technologies effectively, it must be paired with education and digital literacy skills to generate empowering and lasting impact (2014:675).

Over the past decade, scholars within the realm of the digital gender divide have started to move beyond just investigating the structural gender inequalities in education and employment that inhibit women's access and use of digital technologies to more multifaceted analyses of how cognitive and social access is formed by cultural norms and social resources embedded in language and the broader social context (DiMaggio & Hargittai 2001; Van Dijk 2006a;). For instance, Dixon et al. (2014) discusses the relationship between the structural gender inequalities that maintain the digital gender divide and individuals' ability to enact change despite these barriers. Their analysis establishes that even when women have the agency to pursue their own desires, social structures influence their behavior and the way they think about technology. This shows the conspicuous relationship between mental, sociological, historical, and economic inequalities and how it affects women and men's different perceptions of gender and technology, which shapes their subsequent interaction with ICTs (cf. Fuchs & Horak 2007; Hafkin & Taggart 2001; Alozie et al. 2017:141). This implies that there is a need to dive deeper and investigate why ICTs carry a gender bias in and of itself, and how it may be rooted in the social structures, norms and social identities that demarcate gendered spaces of technology that in turn shape the digital gender divide. Before examining how unequal ICT access and use are related to a gendered discourses of technology, we will position our paper in the broader development debate.

2.2 The digital gender divide and the economy

In the fourth industrial revolution, ICTs have come to be recognized as important catalysts for economic growth as they have brought on unprecedented change in how the social, political and economic realms are coordinated and socially organized (Hilbert 2011; Freeman & Louça 2001; Kaur et al. 2017; Van Dijk 2006). However, research shows that persistent gender inequalities, especially in developing countries, impair the full potential of these new technologies to enhance human capabilities. Thus, the digital gender divide has gained academic attention since failing to enhance the benefits of ICTs for both men and women, inevitably have negative consequences from an economic and human development standpoint (cf. Erdil et al. 2010; Kaur et al. 2017; Sein & Harindranath 2004). This section will explain the link between ICT adoption, gender equality and national economic development, and thereby justify the relevance of addressing factors that shape the digital gender divide.

2.2.1 The relationship between ICT and economic development

Across academic literature, ICTs are widely considered as a general-purpose technology much like the steam engine and electricity, since the adoption and implementation of ICTs have resulted in irreversible transformations throughout all levels of society (Bresnahan & Trajtenberg 1995; Erdil et al. 2010; Hilbert 2011:479; Sein & Harindranath 2004:17). In light of this, the role of ICTs as drivers for national development and economic growth have been subject to academic attention over the past two decades (cf. Kaur et al. 2017; Sein & Harindranath 2004; Van Dijk 2006a).

In their analysis, Erdil et al. (2010) identify two important areas in which ICT may have real effects on the economy: (1) through the production of ICTs and (2) through the use of ICTs in other industries and parts of social life (2010:148). They stress how, first, the ICT sector has become an important industry in and of itself and second, how the revolution in ICTs has contributed to raising the productivity of the economy altogether by increasing productivity of both labor and physical capital (cf. Matteucci et al. 2005; Van Ark & McGuckin 2003). In relation to the latter, both Malone and Rockhart (1991), and later Sein and Harindranath (2004) have been influential in explaining how ICT access and use has increased national productivity. They have also spoken to how the overall impact of ICT in society can be illustrated by the increased use and application of new technologies as well as how this lead to new ways of doing things, a change of social interactions and disruption of business processes (Sein & Harindranath 2004:19).

ICTs role as an enabler of human capabilities has come under increased academic scrutiny over the past two decades as the development debate has evolved to emphasize the role of inclusivity and human development for achieving sustainable economic growth (Nederveen Pieterse 2010). Scholars have come to argue that the main focus for national development should be "*what people can or cannot do*" and that the ultimate goal of an economy is therefore to expand the capabilities of its people (Sen 1983:755). From this human development perspective, ICTs are viewed as 'enabling mechanisms' for improving human capabilities as they can foster democratic societies by transmitting information, increasing civil participation and enhancing transparency (Sen 2001). Andrew and Petkov (2003) as well as Cairncross (2001) echo this view and stress how ICTs can play an important role for inclusive national development both as knowledge enablers since they offer new opportunities for skills and training

as well as through their ability to overcome geographical distance for people to engage in economic activities.

Kaur et al. (2017) also stress the 'beyond geography'-argument in the process of ICT-diffusion, especially in developing countries. The authors state that through the rapid increase of online social networks, multiple members of society can now connect despite geographical limitations (Castells et al. 2009; Shapiro & Varian 2013). In this sense, ICTs are enabling access to both information, knowledge and employment opportunities (Bresnahan & Trajtenberg 1995), which are recognized factors for fostering long-term economic prosperity in both developed and developing countries (Avgerou 2003; Kaur et al. 2017; Lechman 2015).

However, Sein and Harindranath (2004) emphasize how the positive impact of ICTs can be impeded by competing economic and developmental policy objectives, and that the link between ICT adoption and sustainable economic development should not be taken for granted (2004:20). Erdil et al. (2010) also raise the challenge for developing countries to fully enhance the role of ICTs in promoting human capabilities as these countries may not have the necessary human and physical capital to reap the benefits of the ICT revolution (ibid.). Thus, the authors point out the importance of policy makers to focus on resources, such as quality education and infrastructure that can enhance ICT access and use to unleash the developmental aspects of ICTs (Sein & Harindranath 2004:20; Erdil et al. 2010:148).

2.2.2 The relationship between gender equality and economic development

As stated above, the development debate has evolved over the past two decades from considering economic growth as a goal in and of itself, to emphasizing the impact of inclusivity and the reduction of structural inequalities to enhance sustainable economic development (Mitra et al. 2015:110; Moorhouse 2017:350; Nederveen Pieterse 2010; Sen 1999). In light of this, the academic literature within the realm of sustainable development has grown to cover a range of social and environmental issues and objectives (cf. Sachs & Ki-moon 2015). This paper place an explicit focus on the relationship between the social issue of gender inequality and sustainable economic development.

There is a growing consensus both within the research community and among policy makers that increased gender equality contributes to improved economic development. These scholars explain how striving for gender equality is both a logical and smart choice, given the overall economic benefits that follow when everyone has an equal opportunity to participate in economic activities (Moorhouse 2017:351, 363; Hafkin & Taggart 2001; Mbarika et al. 2006; Liu & Wilson 2001). However, Mitra et al. (2015) states that the relationship between gender equality and economic development is context dependent and that the level of impact is sensitive to the choice of indicators used to conceptualize and measure gender equality (2015:111). The Nobel laureate development economist, Amartya Sen (2001), demonstrates how studies within the development realm commonly conceptualize gender equality and evaluate its impact on economic development by looking at one or all of the following three variables: women's ability to access quality education, employment possibilities and economic and political rights (2001:191).

Inequality in education is widely acknowledged as an impediment to economic growth as it reduces the quality of human capital in an economy (Hill & King 1995; Klasen 2002; Knowles et al. 2002; Klasen & Lamanna 2009). The argument is relatively straightforward: since educational attainment is linked to improvements in human capital and subsequent labor force participation, productivity and earnings, an increase in the proportion of the population that receive access to education have an increasingly positive impact on the development of the economy (Mitra et al. 2015:112). However, some studies find that for this relationship to generate significant improvements in economic growth, equality must be achieved in *quality* education since it hinges on women's ability to engage in qualified labor (Barro & Lee 1994; Waseem 2015).

With regard to employment, Manda and Mwakubo (2014) emphasize how gender equality enhances economic development due to the removal of barriers that prevent women from accessing employment opportunities and productive inputs. This results in broader economic productivity (2013:16). While some studies show that economic growth is triggered only when women are awarded with low salaries (Cabeza-Garcia et al. 2018:4; Seguino 2000), the majority of the research on the gender labor gap and economic development shows a positive relationship between greater access of women to the labor market and economic

growth (cf. Baliamoune-Lutz & McGillivray 2007; Moorhouse 2017; Pervaiz et al. 2011; Kabeer 2016:295).

In terms of gender equality in economic and political rights, studies show that states which actively protect women's rights in terms of equal pay for equal work and secure employment, have higher levels of economic growth since these actions promote labor force participation by women (Doepke et al. 2011; Moorhouse 2017). Manda and Mwakubo (2014:16) further stress how ensuring economic and political rights of women also improves the relative and absolute status of women in society which increases their decision-making power and participation in both private and public life. This impacts economic development since empowered women are found to have an instrumental role in poverty alleviation and inequality reduction for future generations. This is because they, to a higher extent than men, spend their income on the household and thus provide a critical foundation for the future development of both boys and girls (Mbarika et al. 2006:115, Liu & Wilson 2001).

In relation to state initiatives for enhancing gender equality, Mitra et al. (2015:126) found in their extensive study of 101 countries over different time periods between 1990 and 2000, that both gender equality with regard to economic *opportunities* and economic and political *outcomes* increased economic growth. They found that while developed countries experienced positive economic growth resulting from improvements in gender equality outcomes, such as percentage of women in positions of power and labor force participation, developing countries experienced larger positive effects from improved equality in economic opportunities in terms of access to quality education and skill enhancing activities (ibid.). This finding is echoed by both Huyer and Sikoska (2003) and Ngepah (2017) who argue that since female empowerment is crucial in realizing national capacity building capabilities, the center of attention in developing countries should not be on addressing the outcomes of unequal wealth creation but rather on the persistent gender inequalities, in terms of assets and opportunities that shape the *inputs* of wealth creation in the first place (Ngepah 2017:53; Huyer & Sikoska 2003:4). This is where the link between ICT, gender equality and economic development becomes conspicuous.

Having established that both ICT adoption and gender equality are positively linked to economic development, we can argue that barriers to this relationship, such as the digital gender divide, impedes economic development. Marcelle (2017:31) emphasizes the need to align economic development objectives of gender equality with regard to improving women's access and use of ICTs. It is argued that while ICT offers tools that can facilitate improvements for women's access to education and employment, the full potential will not be fulfilled until development and decision-making processes reflect the interdisciplinary nature of ICTs and how it is entrenched in broader societal structures (ibid.:32; Erdil et al. 2010; Kaur et al. 2017; Sein & Harindranath 2004). Failing to address how the digital gender divide and improvements for gender equality is linked to women's participation in the development, implementation and adoption of ICTs will ultimately impact social and economic development (Hafkin & Taggart 2001:7). Therefore, in order to enhance the development possibilities harnessed by the fourth industrial revolution, development scholars emphasize the necessity for a gender dimension to be incorporated in all discussions regarding ICT access and use (ibid.).

Finally, the literature has emphasized the importance of considering the underlying processes that influence the inequalities of assets and opportunities that contribute to wealth creation, such as the digital gender divide (Mitra et al. 2015:126; Ngepah 2017:53; Huyer & Sikoska 2003:4). Therefore, this paper will not look at the effects and impact of the digital gender divide per se, but rather the factors that are part of shaping the digital gender divide in the first place. The next section will elaborate on the growing academic attention towards one of these factors, namely how gendered discourses on technology influence men and women's ability and opportunity to access and use ICTs.

2.3 The gendered discourse of technology

In the past sections, we have established how the digital gender divide is affected by structural factors such as lack of education, employment and political and economic rights that negatively affect women's abilities to access and use ICTs. Alongside this avenue of research, an emerging explanation, founded in the social constructivist school of thought, detects how language, norms and narratives produce a gendered discourse of technology that also affects and shapes the digital gender divide (cf. Dixon et al. 2014; Fuchs & Horak 2008; Hafkin & Huyer 2006). Henwood et al. (2000:8) outline how the social constructivist understanding of

the relationship between technology and society challenges two other prominent perspectives in the academic literature. The first, 'technological determinism' views technologies as emerging from nowhere, free of social influences, and then transforming the environments into which they are introduced. The second perspective, 'technology as neutral', also views technologies as emerging independently, but that people have the freedom to choose how they want to interact with them. In this paper, we argue with the social constructivist perspective that technology is embedded and shaped by prevalent social structures since scholars argue that digital technologies are not only isolated neutral instruments, but integral parts of broader cultural, political and socioeconomic systems (Huyer and Sikoska 2003; Hafkin and Huyer 2006; Fuchs and Horak 2008). Hafkin & Huyer (2006) argue that it is not technology in and of itself, but how it is described, perceived and positioned by actors in society that determines how and by whom technologies are used.

Scholars within the constructivist camp emphasize that ICTs, in and of themselves, carry a gender bias that favors men since the creation and implementation of technologies are rooted in social, political and economic systems that have embedded patriarchal norms and values (Fuchs and Horak 2008). This has led to a symbolic association between technology and gender in how technology has come to be perceived as a male domain (Alozie 2017:141; Brännström 2012:61; Bawa 2012; Badagliacco 1990). Existing structural gender inequalities and traditional gender norms therefore shape how and where ICTs are developed and introduced, which impedes the accessibility and usability of ICTs by women (Alozie et al. 2017). As such, both gender and technology can be seen as social constructs which are co-produced through discourse that manifest gendered divisions in relation to technology, since gender is something that individuals *do* rather than what they *are* (Kelan 2007:360). Gender norms, in terms of what is feminine and what is masculine therefore shape our social positions, which has led to an understanding of ICTs as more suited for boys and men (ibid.).

This has led to the advancement of understanding technology as 'gendered', which is founded on the realization that the development of ICTs in terms of leadership, decision-making and content has been, and still is, dominated by men and a pro-male discourse (Alozie 2017:141). While limited access and use of ICTs by women inhibit their ability to contribute to a country's political and socio-economic development, so does a worldview that furthers a patriarchal discourse of technology as it constrains women to the sidelines as

mere spectators and consumers of ICT, away from the boardrooms and tech hubs where ICTs are created and developed (Fuchs & Horak 2008:106). In this light, Dixon et al. (2014:994) emphasize how "*perceiving technology as a gendered space illuminates the ways women and men are socialized to develop different relationships with technology from childhood, at home and in school*". Thus, discourses about gender and technology deserve increased attention as altering them can potentially increase female access and use of ICTs (ibid.).

However, some scholars have argued that the male domination within technology is rather a consequence of technophobia amongst women and that men have a greater interest in technology than women (Fallows 2005; Hilbert 2011). These findings have been challenged and criticized since they arguably fail to recognize and account for the history of structural discrimination that have existed against women and girls (cf. Hilbert 2011:481; Bimber 2000). For instance, Mbarika et al.'s (2006) study of women in ICT programs and ICT related employment, highlights how the female respondents were generally optimistic and embraced ICT as a mechanism for self-empowerment and improved employment possibilities (ibid.:114). However, gender biased discourse, gender stereotypes and discrimination against women were part of the informants' daily lives. Mbarika et al. (2006:118) further points out that structural barriers such as discriminatory practices and ineffective government regulations hinder women from advancing within the ICT sector. They emphasize the importance of attitudinal support for improving women's participation in ICT education and how policies must be targeted to "*empower young girls from an early age to change their mindset about careers and employment*" (Abagi et al. 2009:180).

In the SSA context, it is argued that the discourses related to the digital gender divide is influenced by persistent patriarchal norms as social structures influence society and lead to a distinction of gendered spaces (Alozie et al. 2017). While academic studies on the relationship between the gendered nature of technology and the digital gender divide in the SSA context are scarce, a number of studies have highlighted the interrelation between the persistent patriarchy and issues with gender equality in the region (Walton 2013; Olowu 2012; Noor Mohammed 2015; Stoppler 2008). For instance, Noor Mohammed's (2015) study of constitutional developments for increasing gender diversity and reducing patriarchal structures in Somalia and Kenya describes patriarchy as *"the manifestation and institutionalization of male dominance over women in the society*" (2015:469). She mentions how individuals in patriarchal societies

are socialized to act in certain ways based on societal expectations and narratives that describe the man as the provider and the women as the "*homemaker*" (ibid.).

Based on this discussion, we can conclude that dissecting dominant discourses on gender in relation to ICT is important to further understand and reduce the digital gender divide. Academic examinations of the role of discourse in shaping perceptions of gender is common within feminist and gender studies (Gungor & Prins 2010; Lazar 2007; Kvasny & Trauth 2003; Trauth 2002). The aim of these examinations is to advance nuanced discourse analyses of the complex relationship between language and society in general and the role of discourse in sustaining gendered social orders in particular. Specifically, a critical approach to discourse analysis is commonly applied when analyzing how unequal social and political arrangements, such as gender inequalities, are manifested in language (cf. Lazar 2005; Garnsey & Rees 1996; Oleksy et al. 2014). For instance, Lazar (2007:142) argues that critical discourse analysis (CDA) has the ability to shed light on the subtle, and sometimes not so subtle, ways in which taken-for-granted gendered assumptions and power relations are produced, sustained and challenged through language. Thus, these critical perspectives help illuminate the way men and women are discursively portrayed and how this affects social problems, since language produces, reproduces or challenges relations of power that affect the various interests that are represented or marginalized in society (ibid.).

Moreover, the critical discourse literature emphasizes that language in the hands of the powerful and authoritarian becomes a 'power mechanism', determining who takes the floor, who controls and who defines common behavior (Wodak et al. 1986). In this context, institutions are of special concern within the critical school because of their disproportionate power to produce and distribute discourse and because they promote dominant interests (Holmes & Meyerhoff 2004). The next section will therefore examine how actors and structures transfer perceptions of reality into society through the use of discourse.

2.4 Actors and structures shaping the digital gender divide

This section will demonstrate why governments and schools are central institutions in transmitting discourses on gender and technology (Abagi et al. 2005; Milligan 2014; Hope 2012; Cullen 2001). It will highlight how policy and teachers hold authority and therefore can shape, preserve or change discourses on gender in relation to ICT. This is important in order

to understand how equal access and use of ICTs is communicated and understood on a political level, as well as on the ground through language (Milligan 2014:476). We will first shed light on the role of policy. Then, the role of teachers and principals will be examined.

2.4.1 The role of policy

The relationship between language and power and language and politics has been extensively examined by rhetorics and stylistics alike, but has also evolved as a point of analysis in critical linguistics and critical discourse analysis (Chilton 1985; Kress 1985; Seidel 1985). Jacobs and Shapiro (2000) argue that public opinion is not propelling policy decisions as it did in the past, but that politicians' own policy goals are increasingly driving opinion through their language, symbols and arguments to win public support and influence public perception. In light of this, scholars have examined how political issues are socially constructed and that politics decide who gets what through the distribution of power and collective decision making (Broome 2014). For instance, Fuchs & Horak (2008:101) argue that the political system is one of the major subsystems in society in which meaning and values are produced and Wodak (2011) found in her analysis of language of politicians that changes in political language triggers social change because of the power position that politicians hold. In relation to the digital gender divide, this implies that social identities, gender roles and power relations are embedded in political discourses (Van Dijk 2009). These are then transferred and expressed through communicative events such as policies and speech acts (Wodak 2011) and can therefore affect the digital gender divide in different directions depending on the dominant political discourses on gender and ICT.

Since the digital gender divide is both a political and economic concern (Kaur et al. 2017; Hope 2012; Moorhouse 2017) the issue has gained traction within governmental settings (Cullen 2001). Studies argue that the unequal distribution of access and use of ICTs is a result of policy failure or lack of policy attention (Isaacs 2002; Kvasny 2005; Meso et al. 2006). Hilbert (2011) argues that policy making in governments regarding women's use of ICT have been inhibited by arguments that 'women are technophobic' and claims that a discursive rethinking of the female relation to ICT is necessary in settings where policy making takes place. According to Hilbert, a small change in political mindsets can make a large difference for gender equality in relation to ICT (2011). Mbarika et al.'s (2007) study about female IT-

education and workforce participation in Kenya illustrates this claim, where the female informants remarked that government regulations regarding ICTs and gender were both vaguely articulated and unclear. They stated that this was arguably due to the result of policymakers' lack of appreciation for women's access and use of ICTs (2007:10).

Nonetheless, as much as gender issues are a political concern with a need to be articulated in national policies, scholars have argued that the digital gender divide is also a highly practical issue (Alozie et al. 2017; Hilbert 2011; Olatokun 2008). Hafkin and Taggart (2001) and Hafkin and Huyer (2006) highlight the importance of policy articulation, but demonstrate that gender issues also need to be identified from the early stages of technology diffusion where people interact with technology, such as in the home environment and in school (2001:8). Gillwald et al. (2010) support this view and posits that structural barriers, norms and practices that shape the digital gender divide cannot be "legislated away" by policy, but that promoting for instance the use of ICT within STEM for girls in school can change perceptions about women's relationship to technology. To change this pattern, Pearse and Connell (2016:37) argue that education is the transmission of existing cultural values from one generation to the next. It is therefore widely viewed as the crucial mechanism that goes beyond policy when reproducing gender norms and discourses (ibid.).

2.4.2 The role of education and teaching

Several studies have pointed out how the oversight on gender and technology begins in school in terms of how technologies are taught and learned (cf. Abagi et al. 2009; Abagi et al. 2005; Milligan 2014; Ngware 2012). Abagi et al. (2009) and Milligan (2014) demonstrate how the underrepresentation of women and girls' in school across SSA is reflected both in the curricula, learning materials and in classroom settings (2009:175). Alozie et al. (2017) bring attention to how technology, science and math have historically been presented as something boys 'do' (2017:157) and Dlodlo's (2009) study of female access to ICT education in rural South Africa shows that the cultural understanding of technology as "*a masculine activity*" is impeding girls' abilities to take on ICT related subjects in school (2009:172). The findings recognize that persistent patriarchal gender norms in the local community are reproduced in school settings. These inhibit girls in becoming educationally empowered to the same extent as boys, which ultimately leads to a lack of ICT educated role models for younger girls. Mbarika et al. (2006) further points out that in SSA the educational system itself is an

underlying cause to the unequal access and use of ICTs since under colonial rule, many Africans were restricted to little or no education. While schooling was mainly reserved for the imperialists, some tribal chiefs and their sons were also given access which established the education system in SSA as a 'boy's privilege' (2006:115). Even in post-colonial rule, path dependencies persist and boys have been given priority to schooling, confining women as second-class citizens (2006:115; Bawa 2012:93).

These findings are important, since they shed light on how perceptions driven by discourses about gender and ICT in the education system also ingrains the notion of ICTs belonging to the male domain (Alozie et al. 2017; Dlodlo 2009; Mbarika et al. 2006; Bawa 2012). In light of this, Andreotti and Pashby (2013:423) argue that a lack of attention to power relations and knowledge production often results in educational practices that unintentionally repeat historical patterns and thus arguably maintains conditions of gender inequality and engendered injustice. This implies that the teachers own perceptions of gender in relation to ICT are transmitted to students during educational practices. Buzzelli and Johnston (2001) make a similar argument by presenting two fundamental assumptions about the authority of teachers. Firstly, they argue that the authority of teachers is constant in education and that this is the case in all forms of pedagogy when the teacher holds authority vis-à-vis the students. Second, teaching is never value-free since a teacher's authority is enacted in the classroom. This argument builds on Oyler (1996) and Peters (1966) conceptualization of teachers as being both *in* authority and *an* authority. Both are coexistent and make up a bond with each other: the former refers to the teacher's ability to direct actions within the classroom, while the latter refers to the status as a transmitter of knowledge. This in turn, relates to the Foucauldian concept of power and knowledge. Foucault (1980) argues that legitimate forms of knowledge and power are part of the same regulatory mechanism. Within education, Hoskin (1990) draws on the same idea and shows how 'discipline' is the formal exercise of regulatory power by managing a class in a classroom, and the legitimate knowledge that forms the substance of education by teaching a lesson and develop learning objectives and curricula. Here, the concept of authority in teaching is evident in the sense of teachers having the power to direct students in the classroom, and to transmit knowledge, perceptions and attitudes to students (Buzzelli & Johnston 2001).

In relation to the digital gender divide, Milligan's (2014) case study of gender issues in secondary schools in rural Kenya shows that gender inequities were influenced by the teachers' awareness, or unawareness, of traditional gender norms and new ideas of gender equality (2014:476). The author stresses the importance for educational institutions to actively consider teachers' pedagogical role in communicating prejudices and attitudes since they are able to either preserve or challenge current gender norms. This is an important finding in relation to how teachers construct meaning and knowledge about gender and ICT that arguably affect the digital gender divide. Other studies have shown how gendered discourses influence how children identify themselves with subjects in school (Calabrese Barton & Tan 2009; Caleon & Subramaniam 2008; Farenga & Joyce 1999; Mendick 2005). Ngware et al.'s (2012) examination of classroom differences in mathematics performance in Kenyan primary schools shows that the main source for girls falling behind was an ignorance of gender stereotypes both at home and in school (Ngware et al. 2012:70; Guiso et al. 2008). Archer et al. (2012) and Francis et al. (2017) support this finding and show that young people tend to associate most science careers with masculinity with children perceiving science as being "*for boys*" (Francis et al. 2017:157).

This is also illustrated in feminist research where scholars have asserted that STEM disciplines are constructed upon, and perpetuate, longstanding constructions of reason, intellect and competition that are historically associated with masculinity (Hardin 1991; Walkerdine 1990). Scholars have investigated how such associations between STEM and masculinity impede girls and women's identification with technology and ICTs (Walkerdine 1990) and/or necessitate those engaged with STEM to adopt particular strategies to bridge this identification challenge (Francis et al. 2017). Pronin et al. (2004) found that women interested in mathematics often adopted 'bifurcation'; disassociating themselves from feminine stereotypes in relation to math. Similarly, Archer and DeWitt (2015) found that young women in physics tended to describe themselves as unfeminine, critiquing the masculine discourses that maintain such associations between technology and masculinity, and exclude femininity.

To conclude, this shows that schools central institutions for transferring knowledge, attitudes and values of the next generation. Teachers and principals have a particularly influential role in maintaining or challenging, gendered discourses of ICT (Milligan 2014). This is because, in their authoritative position vis-à-vis the students, teachers and principals' narrations in

regard to boys and girls and technology are believed to shape boys and girls' perceptions and engagement with ICTs.

2.5 Research contribution

The literature review shows how the digital gender divide is a problem of unequal access and use of ICTs between men and women. When these gender disparities occur, it slows sustainable economic development and instills prevailing gender inequalities in society. Scholars further argue that structural inequalities such as income level, education level and political and economic rights magnify the digital gender divide. Alongside this avenue of research, scholars from the social constructivist field have shed light on how these structural inequalities are manifested in language, which opens up for examinations on how gendered discourses of technology and ICT carry a male bias which ultimately shape the digital gender divide. It has been found that policy articulation is important for increasing women's access and use of ICTs, but that the digital gender divide cannot simply be legislated away. In light of this, schools are highlighted due to their role as implementers of education policies and as transmitters of attitudes from one generation to the next. Teachers and principals bear an important role since perceptions of gender roles, and how they relate to technology affect women and men's access and use of ICTs, are shaped already in school.

Lastly, while quantitative studies have shed light on how structural inequalities, such as the lack of education, employment and political and economic rights impedes women's access and use of ICTs, the role of the gendered discourse of technology is still a rather understudied phenomenon, particularly within SSA. Therefore, we aim to conduct a qualitative case study that sheds light on how discourses on gender and ICT in education policies and teaching narrations impact men and women's relationship to ICT and shape the digital gender divide.

3 Theoretical framework

The literature on the digital gender divide shows that language manifested in spoken and written text known as 'discourse' includes ideals that shape social identities and gender roles. These ideals reinforce or challenge individual's understanding of women and men's relationship to ICT. In the following four sections we will outline the theoretical framework of this

paper that aims to explain how discourses shape the digital gender divide. First, we will describe how we define discourse and motivate the case of using CDA as a theoretical foundation of this paper. The second section will show how we incorporate Norman Fairclough's three-dimensional framework to study discourse. The third section will first describe how discourses of gender and ICT can be traced in a CDA, and thereafter present the theoretical model that will be used to analyze how discourses in the Kenyan education system shape the digital gender divide. Lastly, we will address the theoretical limitations of this thesis.

3.1 Critical Discourse Analysis (CDA)

This section will outline how we define discourse and why a CDA is suitable to this kind of study. This study emphasizes that the way we talk and write about a subject influences the way we view that subject. Constructivist scholars argue that language creates opinions and characterizes attitudes and is never value-neutral (Broome 2014). Therefore, language can be a powerful tool that changes behavior and social cognitions. CDA is rooted in this critical school of thought (Fairclough 2005; Foucault 1972; Wodak & Meyer 2009). What makes discourse '*critical*' is the focus on how manifestations of language can both reproduce or challenge abuse of power, injustice and different types of inequalities. Within CDA, discourse is conceptualized as both *"the language in use"* and *"the patterns and commonalities of knowledge and structures"* that shape language (Wodak 2011:39) and thereby connects texts to their social context (Fairclough 2005). This paper is theoretically underpinned by this conceptualization of discourse and therefore defines it as both *what* is being said in spoken and written language, and *how* something is said within a social context. As such, discourse is both linguistics and the social, political and economic circumstances that shape the use and interpretation of linguistics. Discourses thus function as frames for individuals' understandings of the world, their consciousness, agency, personality and conceptions of truth (Alvesson & Karreman 2000:1131).

CDA is frequently adopted in feminist and gender studies to examine how unequal social arrangements, such as gender inequalities are sustained through language (Van Dijk 2001:96; Gungor & Prins 2010:170; Lazar 2007; Garnsey & Rees 1996; Kvasny & Trauth 2003). This is important, since language produces, reproduces or challenges relations of power that affect which interests are either represented or marginalized in society. This in turn influences what gender roles, identities and positions are encouraged or discouraged and who gets access to

what (Van Dijk 2001:96; Gungor & Prins 2010:170). For the purpose of this study, CDA is considered an important tool because by dissecting discourses, we can detect how language can produce, maintain and challenge gender inequalities with regard to ICT as they influence people's perceptions about gender roles and identities. For instance, if education policies change due to a constitutional amendment or an international policy directive which either encourage or restrict the focus on gender equality in relation to ICT, it will ultimately have an impact on how schools are required to place an increased focus on gender equality as well.

Since CDA is founded on the presumption that discourse have both textual and social elements, we will not focus on linguistic characteristics in isolation, but rather on the broader textual and social context that gives linguistics its semiotic dimension (Wodak & Meyer 2009). Semiotics refers to the meaning-making processes that take place in language (ibid.). This view on discourse is conceptualized in Fairclough's three-dimensional approach that defines discourse as (1) text (2) discursive practices and (3) social practices. These three dimensions will now be introduced in the following section.

3.2 Fairclough's three-dimensional approach

Fairclough's three-dimensional framework outlines how discourse can be understood as an interaction of three separate dimensions of analysis. With these three dimensions, Fairclough provides a conceptualization of discourse that combines micro (text), meso (discursive practice) and macro (social practice) levels of interpretation.

The first dimension, 'discourse as text', refers to the linguistic characteristics of spoken and written text, such as vocabulary, grammar, cohesion and text structure. Analyzing conjunctions and disjunctions as well as how words are communicated in an affirmative, negative or argumentative manner are central to being able to dissect discourse. In this study, the textual dimension helps us to identify keywords in texts and speeches that relate to gender and ICT and to investigate distinctive patterns of co-occurrence or collocation between the keywords and other words. Such findings are of value, although insufficient on their own, and therefore need to be complemented by the two other dimensions in Fairclough's framework to fully detect dominant discourses.

The second dimension is discourse as 'discursive practice' and relates to the meso-level in terms of the production, distribution and interpretation of text and speech acts. It refers to textual coherence, how words are presented, by whom, and other interdiscursive elements. This dimension also pays attention to intertextuality, i.e. how other texts are explicitly manifested in the text through citations or references which can be used to reproduce or challenge dominant discourses on gender equality for instance. Discursive practice is important since texts both make, and are subject to, hidden assumptions. Hence, explicit statements in a text should always be understood against the background of implicit taken-for-granted assumptions about the world (Fairclough 2003). By uncovering recurring or missing themes in education policies and teaching narrations, we aim to illuminate common assumptions of gender and ICT in the school system that are part of shaping dominant discourses on gender in relation to technology.

The third dimension, discourse as 'social practice', refers to the social conditions that shape the production and interpretation of text such as political circumstances or socio-economic conditions (Fairclough 1989:25). Social practices can be predictable forms of social activities, such as a lecture in a classroom and the format of political speech acts. The predictability of these social practices is maintained since the semiotic elements of the language used in these activities are mutually recognized among the participants (Wodak & Meyer 2009:27). A practical example of this is the authoritarian role of the lecturer in the classroom which enhances his or her role as a knowledge provider. Social practices can also be external circumstances, such as the election of a new government which might change political direction and policy focus. Thus, the semiotic elements of text are what gives meaning to language. These semiotic elements have in turn a dialectical relationship to other elements of social practices, such as social relations, social identities and cultural values (ibid.).

Fairclough's three-dimensional conceptualization of discourse helps us to clarify how discourse is comprised by different socially constitutive properties. When combining textual, discursive and social elements, it is possible to analyze meaning-making in text, discursive themes and the social conditions that shape the process of meaning-making (Fairclough 2001:124). Since this paper aims to trace the dominant discourses on gender and ICT in education policies and teaching narrations, we need to define what makes a discourse 'dominant'. According to Fairclough, this is when a discourse is frequently used and widely

acknowledged by individuals of society. He introduces 'ideologies', 'hegemony' and 'power' as central concepts when tracing the level of dominance of a discourse. These concepts will now be explicitly outlined below with examples of how they apply to this study.

3.2.1 Ideologies and hegemony

According to Fairclough (200), there are so called 'common-sense assumptions' embedded in discourses which treat hierarchical social relationships of authority, identities and gender roles as the 'natural' state of being (Morley 2004). These 'common-sense assumptions' are termed *ideologies*. In their familiar, taken-for-granted nature they legitimize existing relations of power and social interaction. By recognizing that "*ideology is pervasively present in language*" (Fairclough 2001:2), Fairclough's incorporation of ideology can be seen as the glue between linguistics and the social environment. The way people speak is normatively connected with the position they occupy, because it is from this position that they acquire a way of seeing and a way of talking that is shaped by ideological norms. Thus, ideology interpellates individuals as social subjects, or in other words, gives individuals their identity within the ideological frame. For example, patriarchal ideology interpellates men as being more powerful than women (Dremel & Matíc 2014). As such, ideology is understood as a central element in power struggles since power rests not only on coercive force but on the Gramscian concept of *hegemony;* the organizing principle through which dominant groups gain consent for their ideologies without force (Heywood 2013). It is when ideologies become "neutral" and largely accepted, sometimes to the extent that alternatives to the status quo is forgotten, that one arrives at the state of hegemony (Wodak 2013). Discourse is the tool that legitimizes, challenges or changes the state of hegemony. This implies that the order of discourse on for instance gender and ICT is not a closed and rigid system but subject to change when critical consciousness is raised about the ideological assumptions embedded in language (Fairclough 2001:124).

3.2.2 Power and language

Since ideologies legitimize power relations, there is a need to define what is meant by *power* as a theoretical concept within the critical school. Fairclough draws on Michel Foucault's notion of power as a social construction of how texts are representing sites of struggle where differing discourses and ideologies are competing and contending for dominance (Wodak & Meyer 2009; Eagleton 1997; Fairclough 1994). Discourses are argued to be producers and

reproducers of power and knowledge, which lead to the construction of taken-for-granted rules and ideologies of inclusion and exclusion (Foucault 2003). In contrast to the Marxist concept of power as material imbalances between the oppressor and the oppressed, power is not something that actors can be in possession of, nor something that is inherently destructive or negative (Howarth 2010:315). Power is productive and creative and at the core of all social relations. The productive quality of power comes from its close relationship with knowledge. Knowledge is never neutral since it plays an influential role in individuals' understanding of the world and produces, or challenges, relations of power. Thus, 'knowledge as power' holds true in the critical school of discourse, illustrating a constant interplay between how power and knowledge are manifested in language and create different 'regimes of truth' that guide what we consider as normal or abnormal, right or wrong and true or false (Foucault 1972:22; Foucault 2003:209). Therefore, ideologies of, for instance, masculinity and femininity are products of a social construction that can be used, maintained or challenged in social interactions and how we talk and write about gender and technology. This is of importance to this study, because by questioning power and ideology in language about gender and ICT, one can detect underlying problems and address gender inequalities, such as the digital gender divide.

3.3 Tracing discourses on gender and ICT

In the previous section, we described how discourse is constituted by the three dimensions of text, discursive practices and social practices. We also explained how the levels of discursive dominance can be analyzed through the concepts of ideologies, hegemony and power. Now, we will explain how we will theoretically incorporate Fairclough's framework to explore how discourses on gender and ICT shape the digital gender divide. First, we will describe how we use it to trace discourses on gender and ICT in the analysis of education policies and teacher narrations. Thereafter, we will introduce our theoretical model which outlines how discourses on gender and ICT in education policy and teachers and principals' narrations shape the digital gender divide.

We have delimited our scope to look at discourses on gender and ICT in the Kenyan education system since both political power through policies and the transfer of knowledge through teaching narrations shape perceptions of men and women's relationship to technology. Thus, our theoretical argument is that discourses on gender in relation to ICT in social

structures with authority, such as governments or schools, influence men's and women's ability to access and use ICTs. On the one hand, if access and use of ICTs on equal terms is being promoted, it will have a positive effect on reducing the digital gender divide. On the other hand, if the patriarchal ideologies that preserve the hegemonic discourse of 'technology as a male domain' remain unchallenged, the digital gender divide will arguable remain in a status quo. In order to locate the ideologies and hegemonic processes that shape discourses on gender in relation to ICT, we first have to define the semiotic elements of gender and ICT that make them traceable in a CDA.

This papers' conceptualization of gender goes beyond biological sex, since gender is also something individuals *do* and that they *become* men and women through social interaction (Kelan 2007:360). Hence, definitions of masculinity and femininity is not predisposed by characteristics of the physical body, but constantly formed by the social environment and negotiated through interactions which lead individuals to enact particular socially recognizable characteristics such as 'masculine' and 'feminine' (Gee 2005:21). Discourses on gender are therefore not limited to references of 'men' and 'women', since gender is also a symbolic system that correlates sex to cultural contents according to social values and power relations. For example, discourses on gender in patriarchal societies are influenced by persistent patriarchal ideologies that shape social identities and lead to a distinction of gendered spaces (Alozie et al. 2017). Thus, individuals are socialized to act in ways based on societal expectations and discourses on gender that, for instance, describe the man as the provider and the women as the homemaker, or technology as a *"male activity"* (Dlodlo 2009:170; Noor Mohammed 2015).

In turn, we refer to ICTs as both physical objects such as computer hardware and IT-software, as well as socio-technical networks and knowledge enablers, such as the internet, whose impact is shaped by social interaction and practice (Kling 2000). ICTs are commonly treated as monolithic and homogenous entities such as computers, cell phones and the internet (Sein & Harindranath 2004), but the constructivist school sees them as something highly fragmented that undergoes constant change (Orlikowski & Iacono 2001). Thus, how ICTs are framed in discourse influences how they will be perceived and used. For instance, if ICT is described as belonging to the masculine domain (Kelan 2007:360) it arguably stems from patriarchal ideology that men are more suited to operate with technology. On the other hand,

if descriptions of ICT in policy is presented in the context of gender equality as 'enabling mechanisms' for men's and women's success in the labor market, this might lead to a larger focus on promoting ICT-related education for both girls and boys in schools.

Putting this together in relation to the digital gender divide, means that socially constructed gender roles, shaped through text, discursive practice and social practice, influence how men and women access and use ICTs. By critically analyzing the discursive impact on the digital gender divide, this thesis will shed light on the interlinks between both the biological and the social aspects of gender. This creates an opening for the ability to identify the subtle, and sometimes not so subtle, ways in which taken-for-granted gendered assumptions in relation to technology are produced, sustained and challenged through language (Lazar 2007:142).

The literature on social constructions of gender highlight how ICTs carry a gender bias that favors men since technology has historically been positioned within the male domain (Alozie 2017:141; Brännström 2012:61; Bawa 2012; Badagliacco 1990). Within the education system, this bias is seen in how subjects on technology, science and math have been presented as something boys 'do' and how associations between STEM and masculinity impede girls and women's identification with technology and ICTs (Alozie et al. 2017:142; Walkerdine 1990). Thus, by asking questions such as: "What words are used in conjunction with gender and ICT?", "Are they used in a positive, negative or argumentative manner?", "How is the text positioned to other texts?", "Whose interests are served or neglected by this positioning?" and "How have recent changes in political decisions influenced the view on gender in relation to ICT?" we can trace the links between linguistic descriptions of gender and technology to the structural conditions in which the texts have been produced. Hegemonic processes and prevalent ideologies on gender and ICT can thus be traced in a CDA by looking at how words such as 'equality', 'ICT' and 'gender' are put in conjunction with each other in an argumentative or negative manner (text); if the text is part of a policy document aimed at promoting ICT adoption in education (discursive practice), and if this document is established after the event of a government ratification of an international convention on women's rights (social practice). When this analysis is done on texts that have been produced over time and compared across multiple data sources in the education system, such as policies and teaching narrations, it will be possible to identify recurring ideologies of gender and ICT and whether these show signs of a dominant discourse.

Lastly, the academic literature has highlighted how the digital gender divide is a division both in terms of access (first order divide) and use of ICTs (second order divide). While the first and second order divide are interlinked, they can also be affected differently by discourse. The literature has pointed out that inequalities of access are related to motivational, material and physical barriers. Therefore, discourses on gender in relation to, for instance, ensuring access to education for all or equipping schools with ICT equipment are expected to reduce the first order gap of the digital gender divide. In terms of barriers to use of ICTs among those who already have access, the literature has stressed the ability to acquire the necessary knowledge and skills to use technologies (Van Dijk 2006b:180). Thus, discourses on gender in relation to factors that influence quality of education or knowledge enhancement are expected to reduce the second order gap of the digital gender divide.

3.3.1 Theoretical model

The theoretical model below illustrates the relationship between education policy, teachers and principals in schools and the digital gender divide. The model is derived from the literature review and is theoretically informed by CDA to highlight how discursive constructions of gender and technology in education policies and teaching narrations influence men and women's access and use of ICTs. Education policies are defined as government publications. Teaching narrations refer to how teachers and principals interpret policies and understand and talk about the relationship between gender and ICT in school settings. Thus, this paper does not examine the direct interaction between teacher and student, but rather how teachers and principals in their role as authoritative transmitters of knowledge, consume, understand and convey discourses on gender and ICT from policy to practice.

The government has been identified as one of the main social structures in society where meanings and values are produced and established, with policy and legislation being a central form of communication (Fuchs & Horak 2008:101). However, while the political arena is a powerful platform to address persistent inequalities such as the digital gender divide, the policy discourse has to be successfully transmitted to effectively target the problem of unequal access and use to ICTs between men and women in practice. Schools have therefore been identified as another subsystem with an instrumental role in shaping and transferring attitudes and values from one generation to the next. This is important since principals and

teachers are guided and regulated by education policies set by the government. These policies influence course curricula and teachers' pedagogical approaches to subjects related to ICT. Both subsystems are furthermore argued to hold authority as the government has the right to exercise power in society, and educators are both *in* authority by the academic knowledge they hold and *an* authority as managers of the students (Buzzelli & Johnston 2001).

Since discourses on gender in relation to ICT influence perceptions on boys' and girls' relationship to technology, the linguistic manifestation of these discourses influence the magnitude of the digital gender divide. This can for instance be conjunctions of words such as 'gender' and 'ICT' in the government's policy documents, and in social practices where communication of these policies takes place, such as in the design of curricula and classroom settings (Hafkin & Taggart 2001; Pearse & Connell 2016; Abagi et al. 2005). The theoretical model below describes this relationship and motivates our data collection that includes policy documents and interviews with teachers and principals. The following sections will explain the model in detail and how these sources of information are useful to answer our research question.

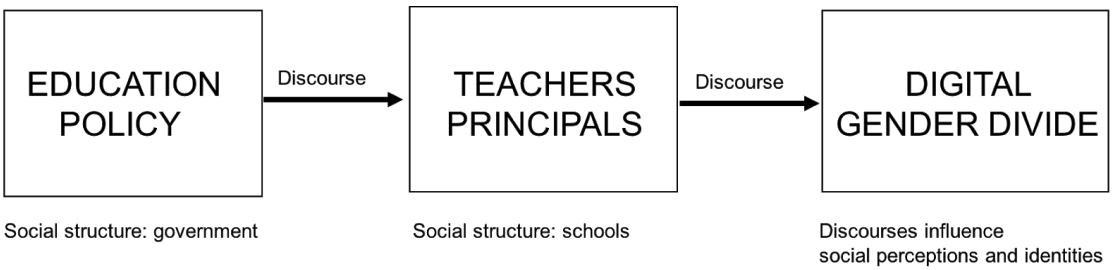

Figure 1. How discourses in the education system shape the digital gender divide.

3.3.1.1 Transfer of discourses from policy to teaching

The first link in the model demonstrates the relationship between policy and teaching narrations. Government policy is defined as a set system of principles that guide decision making, where education policy specifically consists of the principles, laws and rules that govern the operation of the education system (Sharkansky & Hofferbert 1969). This matters because discourses on gender and ICT can be both reproduced, or challenged, through government policy. This is because the language used in the policies come from the government, which

is a central social structure holding authority and power in society. CDA allows us to identify the overall dominating ideologies in discourses on gender and ICT in education policies, as it helps us to detect both patterns and shifts in discourses taking place over time, and how these relate to other events in the social environment. These events can for instance be national elections, constitutional changes and international policy goals and directives that influence national policy directives.

Furthermore, the government is the symbolic elite that transfers control and delegates authority to schools in terms of guiding the operationalization of course content, curricula and teaching practices (Van Dijk 2015). As such, schools become the direct implementers of education policies. We therefore expect to see that dominant discourses on gender and ICT in education policies affect schools in how they design their curricula and teach certain subjects in order to comply with said policies. However, we also expect to see divergences in terms of implementation that depends on whether the government has loose or strong ties to schools. Loose ties can for instance be more evident in private schools that are less connected to the government since they are independently financed and run by private actors. Stronger ties are for instance more visible in public schools since these are both guided and financed by the government.

By establishing this link in our theoretical model, we aim to answer the first sub-research question: *What are the dominant discourses on gender and ICT in Kenyan education policies?* and provide a theoretically informed answer to our second sub-question: *How are national education policies influencing primary and secondary schools in Kenya?*

3.3.1.2 How teaching narrations shape the digital gender divide

The second relationship in the model illustrates how policy discourse influences teaching narrations and plays out in how teachers and principals consume, understand and convey discourses on gender and ICT from policy to practice. Since policies are mediated by teachers and principals that read and implement them into teaching practices, policy discourses are arguably then also visible in teachers' narrations of gender and ICT. Teachers in turn, influence personal social cognition among students since they hold authority as the provider of knowledge. Teaching as a social practice is therefore the event where dominant ideologies, of for instance patriarchal gender roles, play out in teachers and principals descriptions.

These descriptions are then believed to be reflected in the teaching environment in how teachers talk about and address boys' and girls' relationship with technology. For instance, we expect that if policies are ideologically interpellated by patriarchal gender roles, teachers will convey these discourses when they talk about gender and ICT. In the same manner, we expect to see that teachers will be guided by these ideologies and transfer them into their communications to the students. This relationship can therefore help us to fully answer the second sub-question *How are national education policies influencing primary and secondary schools in Kenya?* and our third sub-question: *What are the dominant discourses on gender and ICT in narrations from Kenyan teachers and principals?*

Based on this theoretical model and in light of political and social changes with regard to legislation of gender and ICT in Kenya over the past two decades, we expect that progressions on gender equality on a state level should be reflected, both in national education policies as well as in school environments. This will arguably promote women's engagement with ICTs and thereby reduce the digital gender divide in Kenya in the long run. This is because gender discourses related to increasing girls' enrolment in school and their participation in STEM subjects will most likely lead to decreasing the first order gap - i.e. the direct access to ICTs when more girls are exposed to gadgets and ICT solutions in school. It will also arguably decrease the second order gap, i.e. the use of ICT, when girls are encouraged to learn and improve their knowledge of ICT and participation in STEM subjects.

However, we do not expect, or aim, to find one dominant discourse of gender and ICT in the Kenyan education system, but rather to uncover this progression in the dialectical relationship between different, and maybe contrasting, discourses that shape the digital gender divide. Following our theoretical model and by critically analyzing text, discursive practice and social practice in policy documents and teaching narrations, we will aim to shed light on how dominant discourses of gender and ICT shape girls and boys access and use of ICT. This influences whether the digital gender divide will be bridged to equalize access and use of ICT among men and women, or maintained in a status quo where women are falling behind. The model thus helps us to answer our overarching research question: *How do discourses on gender in relation to ICT in the Kenyan education system shape the digital gender divide?*

3.4 Theoretical limitations and considerations

Despite the strengths of CDA and the theoretical framework, it also comes with theoretical shortcomings and analytical doubts. A frequently raised critique among scholars is that discourse sometimes comes close to standing for everything, and thus nothing (Alvesson & Karreman 2000). While some approaches to CDA clearly distinguish the difference between discourse and meaning (cf. Van Dijk 2008; Potter & Wetherell 1987) and even emphasize the danger with describing people as 'discourse-driven subjects' (Newton 1998), authors on the other end of the scale argue for the inseparability of the two (cf. Foucault 1972).

In the realm of CDA, discourse and meaning are often seen as co-constitutive and overlapping (Wodak 2013). Language is argued to define both the possibilities and restrictions of a meaningful existence (Clegg 1989:151). It is through language and practices of writing, talking, argumentation and representation that subjectivity is constructed. As such, discourse drives subjectivity; our consciousness, agency, personality, reality and ideas of truth, and therefore have meaning (ibid.; Alvesson & Karreman 2000:1131). However, how language is related to these practices must be clearly elaborated in a CDA and therefore put much hope to the researchers' ability in addressing how discourse can be overlapping, tightly coupled, loosely coupled or uncoupled to different forms of meaning (ibid.:1128). We address this critique by building a theoretical model that outlines the power of certain social structures in setting discourse such as the government and schools, and by drawing on previous academic literature in describing how discourse on gender in relation to ICT can be identified in text, discursive practice and social practice. We use both primary and secondary data to gain a better understanding of the social conditions and circumstances in which discourse takes place. This helps us in the interpretation of how discourse structures society, modes of thought and individual subjectivity, and therefore, can be coupled to meaning (ibid.:86; Weedon 1987:41).

However, we do also acknowledge that discourse can be non-relational or agnostic. This means that we need to be careful with assumptions and not ascribe power to all discourses (Newton 1998). Alvesson & Karreman (2000:1132) put it accurately when they state that the way people relate to discourse may be 'teflon-like'; the text they are exposed to may not always 'stick'. As an answer to this argument, we emphasize the multidimensional nature of discourse in how it constitutes both text, discursive practice and social practice. This means

that while a text in itself might not 'stick' to a particular individual, it acquires meaning through its relation to other texts and under which social conditions it has been produced. The 'stickability' of a text is arguably also related to the individuals' experience and previous exposure to similar texts (such as policy documents) and if the text is challenging previous perceptions of reality or merely confirming them. Thus, just because a text does not 'stick' does not mean that it is not part of shaping a discourse.

Consequently, when the meaning of a discourse is more apparent, the relationship between language and power such as political struggle, inequalities and dominance has been put under scrutiny (Weiss & Wodak 2002:12). Scholars have criticized what is really meant by terms such as 'power', 'ideology" and 'discourse' and shed light on how the meaning of these concepts may include biases from researchers who interpret them (Cameron 2001; Breeze 2011). Widdowson (1998; 2004) argues that a solution to this problem is to include discussions with either the producers, or the consumers of texts, since researchers using CDA often tend to overlook the readers in the interpretation of selected material (Van Noppen 2004). This thesis will address this critique by including interview data. The teachers and principals that read and are guided by policies are important for us as researchers to interact with, as they interpret and consume the policies we refer to. As such, we can triangulate our data and make our conclusions about dominant discourses in the education system more reliable.

Lastly, our theoretical model cannot fully enhance the complexities of social reality in practice, since discourses can be difficult to trace. There are for example multiple factors that might affect teachers' attitudes and perceptions regarding gender and ICT. In their daily lives, teachers are subject to other influences retrieved from, for instance their home environment and historical events, rather than national education policies, that consciously or unconsciously shape their perceptions of boys and girls and their relation to ICTs. Inevitably, this might also influence how teachers and principals address, or do not address, gender as a factor that impacts students' opportunities and their self-perceptions to perform in STEM or ICT related subjects. Due to the scope of this study, we cannot fully trace the variety of discourses that teachers are subject to outside of school. However, by asking teachers in specific schools about the influence of national education policies versus the influence of other guidelines or ideas in their teaching environment we aim to reduce some of this complexity.

4 Methodology

This chapter presents the research design of our study. The first part outlines the motivations to why we conducted a qualitative exploratory case study and justifies Kenya as a critical case example. The second part explains the methods and procedures of data collection, namely policy documents and semi-structured interviews. The third part describes the methodological application of Fairclough's three-dimensional framework as an analysis procedure, and how the key variables in our study; gender, ICT and the digital gender divide were operationalized. Finally, we will provide a quality assessment of our study and address its methodological limitations.

4.1 Research design

This study is founded in a constructivist worldview, which claims that all social phenomena have meaning and that reality is constructed through social interactions and discourses (Broome 2014). This epistemology and ontology facilitate an exploration of how the digital gender divide is shaped by social constructions of gender and ICT as manifested in discourses. Since the impact of discourse on the digital gender divide is found to be a rather understudied phenomenon, we have conducted a qualitative exploratory case study to provide greater academic insights on the matter.

The exploratory case study approach is proposed by Yin (1994) who defines a case study as "*an empirical inquiry about a contemporary phenomenon (…), set within its real-world context when the boundaries between phenomenon and context are not clearly evident"*. The aim with exploratory case studies are thus to explore research phenomena which are either understudied or subject to a status quo in terms of scientific inquiry. Yin's approach to exploratory research is based on the constructivist paradigm by recognizing that humans create meaning and that norms, values and subjective understandings of the world play a role in shaping social structures (Crabtree & Miller 1999). This is important for our paper, since an exploratory case study on the digital gender divide opens up for new academic understandings through the analysis of multiple sources of empirical data.

The collaboration between different data sources, such as policy documents and interviews in this study, enabled our interview participants to tell their personal stories, and the policy documents to reveal discursive patterns. These stories and patterns reflected individual and

governmental perceptions of reality, which enabled us as researchers to better understand prevailing discourses on gender and ICT (Baxter & Jack, 2008:545). This was particularly relevant for this study, since gender and ICT can have different meanings and entail multiple definitions depending on the social context. The exploratory case study approach was therefore helpful in order to compare and contrast different empirical contexts and conditions, such as education policies and teaching narrations, that shape social problems such as the digital gender divide (Flyvbjerg 2006). Furthermore, since a majority of the research in the field on the digital gender divide have previously been conducted with quantitative methods, few studies have brought forward the mechanisms that explain the appropriation and division of technology from a constructivist approach grounded in qualitative methods (Van Dijk 2006a:232). Thus, the qualitative exploratory case study method was suitable also in this respect, as it allowed us to examine how ideological assumptions on gender roles and technology, embedded in discourse, shape men and women's appropriation and engagement with ICTs (Alozie et al. 2017; Hafkin & Huyer 2008).

Our research process started by defining the research problem. This was done through a combination of deductive and inductive reasoning which allowed us as researchers to move between theory and empirical data to identify a relevant research problem. Thus, our aim was not to *"prove something true or false"* but rather *"to say something about the world that reveals new or unknown phenomena"* and then systematically test this against theoretical material (Egholm 2014:173). Thus, we identified a social problem, the digital gender divide in Kenya, and reviewed the academic literature that presented the different properties of this problem. We included eclectic use of theories (development theory, international political economic theory, constructivist theory and gender theory) and combined it with studies that contributed with unique insights to the case of Kenya (gender inequalities in SSA; the economic, social and political context in Kenya and the disparities in use and access of ICTs). This, as well as the theoretical underpinnings of CDA, guided the development of our theoretical model. Then we did our data collection. Here, the analysis was done through deductive reasoning where we were guided by our theoretical framework in arranging the data and presenting the findings (ibid.:219). We identified factors that were individually important and together influential (discourses on gender and ICT in policy documents and in teaching) to explain the impact of discourse on the digital gender divide.

4.2 Case selection

This thesis has zoomed in on the education system in Kenya as the case of analysis. This case was chosen based on its relevance for both academic and empirical development. Women in SSA are considered to be in the deepest part of the digital gender divide, since they are found to be more informationally marginalized than their male counterparts, while residing in a region that is historically known for its high prevalence of poverty and structural gender inequalities (Fuchs & Horak 2008:100; Hafkin & Taggart 2001; Raheem et al. 2018:32; Mills et al. 2017:6; UNDP 2001). While research has shown that ICTs have helped overcoming some social and economic barriers for women in these countries (Sorgner & Krieger-Boden 2017; Milakovich 2012; Kaur et al. 2017), a persistent digital gender divide still exist (Antonio & Tuffley 2014; Alozie et al. 2017). In Kenya, despite being called 'Silicon Savannah' due to its technological advancements, men are 15.6% more likely to use the internet than women (Bright & Hruby 2015; Alozie et al. 2017) and in Nairobi's poorer areas women face difficulties to become digitally literate and access their own ICT equipment (A4AI 2017; GSMA 2015; Milakovich 2012). This, paired with the fact that the discursive impact on the digital gender divide is an understudied phenomena merit more academic attention to the SSA region.

Kenya is recognized as the leader of the digital revolution in East Africa and is the forerunner for technological developments on a continental level in Africa (Ndemo & Weiss 2016; Ngugi & Komo 2017; Kaur et al. 2017). The country is experiencing a rapid digital boom thanks to a favorable entrepreneurship environment and tech-friendly policies. For instance, Kenya have disrupted the system for money transfers through the use of mobile technology already in 2007 when they introduced mobile payments for all cell phones. This meant that financial services was extended to large segments of poor, unbanked people and the mobile money transfer 'M-Pesa' is today used by over 40% of the Kenyan population (World Bank 2013). Since 2004, the country has a state department with a specific focus on ICT and innovation and their long-term development plan 'Vision 2030', established in 2008, envisions *"a Kenya that is advanced in technology, where other countries look up to us for technology solutions."* (Kenya Vision 2030 2018). This goal have resulted in the advancement of ICT policies across several sectors and state departments, including the Ministry of Education, Science and Technology and the department that handles gender issues; the Ministry of Public Service, Youth and Gender Affairs (Ministry of Information, Communication and Technology 2013; 2014).

At the same time, Kenya has made significant legal amendments to promote investments in education, female labor market participation and equality across all sectors in society (Noor Mohammed 2015:458; Falola & Amponsah 2012). Findings from research on gender equality in the SSA context have also indicate that Kenya has started to recognize the importance of putting gender equality on the national agenda (Alozie et al. 2017). The development program Vision 2030 emphasizes that gender equality is crucial for economic development and spells out strategies for mainstreaming gender issues in national development (Kibui & Mwaniki 2014). This ambition was asserted in 2010 when Kenya ratified the Protocol to the African Charter on Human and Peoples Rights on the Rights of Women in Africa (African Commission 2003) created by the African Union in 2003, to promote gender equality in SSA. The same year, Kenya made amendments to its constitution, enumerating several specific gains for women's rights in areas of citizenship, political positions, marriage and land ownership (Noor Mohammed 2015:458; Falola & Amponsah 2012; Constitution of Kenya 2010). However, these progressions should be viewed in relative terms, since Kenya has a history of cultural values that favor patriarchal structures and where women still lag behind in terms of access and use of ICT (Walton 2013; Olowu 2012; Noor Mohammed 2015; Stoppler 2008). Still, these progressions signal a shift that deserves more academic attention.

Finally, due to Kenya's prominent position with regard to technological advancements and recent government efforts to put gender equality on the policy agenda, Kenya is considered to be a critical case when exploring the relationship between discourses on gender in relation to ICT and the digital gender divide. The findings can be considered to have strategic importance since they can be utilized to advance or alter existing theories on the impact of discourse on the digital gender divide in the SSA context (Flyvbjerg 2006:233). This is because if one can not detect that the political and social changes in Kenya are reflected in discourses on gender in relation to ICT in national education policies and in schools, then it is less likely that similar reflections in discourse will occur in other SSA countries. This is due to slower progressions in terms of gender equality and technological advancements in these countries.

4.2.1 The Kenyan education system

We have delimited our scope to look at discourses on gender and ICT in Kenya's education system. This delimitation was done since the literature emphasized how both education policies, principals and teachers transmit knowledge and attitudes that produce practices, influence social relations and shape people's understanding of social problems such as the digital gender divide (Howarth 2010). In order to identify and interpret the meaning of those discourses, we needed to have an understanding of the social environment in which they take place, namely the Kenyan education system. This will be explained below.

The education activities in Kenya have historically been controlled by two government ministries, working together on drafting policies and setting regulative guidelines. These are the Ministry of Education (MoE) and the Ministry of Higher Education Science and Technology (MoHEST). Some of the functions of the MoE sub-sector include primary and secondary school education policies; quality assurance, teacher education management and training; curriculum development and school equipment (Aderibigbe et al. 2015:235). Some of the functions in the MoHEST sub-sector include the provision of quality assurance services to technical education institutions and universities; higher education policy; science technology and innovation policy; registration for technical training institutes and institutes of technology; management of research; science and technology and research authorization (Aderibigbe et al. 2015:235). In light of the launch of Vision 2030 and the promulgation of the new constitution in 2010, the education sector in Kenya have undergone several reforms including the merging of the two above mentioned education ministries to one in 2013 (MoEST 2013:10). The new ministry, the Ministry of Education, Science and Technology (MoEST) is now responsible for the whole education, training, science and technology sector. In our data analysis, policy documents from all three ministries have been included.

Kenya has both private, public and alternative education providers of basic education in which over 8 290 000 children are enrolled (World Bank 2016). Basic education refers to the levels of education preceding tertiary education, and thus include both primary (grade 1 to 8) and secondary (grade 9 to 12) school. In 2010, the Ministry of Education registered the total number of public primary and secondary schools to 24 355 and total number of private primary and secondary schools to 10 442 (MoE 2012:251). In 2003, the government carried out a free primary public school reform and made education compulsory for all children.

However, a recent study of school choices in Kenya shows that more than half of primary school students in Nairobi attend private, fee-charging schools due to a common belief among Kenyan parents that private schools offer better quality education than public schools (Zuilkowski et al. 2018). Due to a lack of government funding, the public primary schools have been criticized for not living up to set quality standards as well as not being geographically distributed to accommodate all children (ibid.:259).

In light of the geographical shortage of public schools, alternative education providers, formally called Alternative Provision to Basic Education and Training (APBET), have been established by independent education providers. These schools play a crucial role in organizing and improving access to basic education in informal settlements and marginalized areas in Kenya. Typically, they operate in rural areas or areas struck by poverty, such as the slum area Kibera in Nairobi, where there is an under-provision of public schools. Before 2015, the APBET programs were not legally recognized by the Kenyan government, however since the establishment of the Basic Education Regulations under the Basic Education Act in 2016 they are now officially acknowledged (MyGov 2016). Official records on the number of students enrolled in APBET programs do not exist, however it is estimated to be between 1-2 million (Wamalwa 2017).

In order to account for the diversity of the Kenyan school system, we have attained a sample for the interviews that include representatives from both private, public and APBET schools. Since Nairobi is the capital city of Kenya, and the hub for the countries technological advancements, we have chosen to zoom in on schools in the Nairobi area.

4.3 Data collection: methods and procedures

The following section will outline the data collection methods and the data collection procedures that have been used in this study. The aim with our research was to explain how discourses on gender in relation to ICT in the Kenyan education system shape the digital gender divide. This question was divided into three different sub-questions that addressed the link between education policy as an authoritative mean of communication and teachers and principals as important transmitters of gender perceptions to future generations. This relationship was outlined in detail in our theoretical model. To answer our overarching research

question, we used document analysis of education policies from the Kenyan Ministry of Education, Science and Technology, and semi-structured interviews with teachers and principals at primary and secondary schools in the Nairobi area as data collection methods. While some scholars within CDA do not consider data collection as a specific phase that must be completed before the analysis, but rather a process of the researcher moving back and forth between theory, data collection and analysis (Glaser & Strauss 1967; Wodak & Meyer 2009:28), we had a clearly defined data collection procedure done prior to the analysis. This was done because we wanted to limit research bias and cherry-picking of the data. The motivation for the data collection methods will be presented below.

4.3.1 Policy documents

In Kenya, the Ministry of Education, Science and Technology has the main responsibility for designing and developing national education policies. Therefore, in order to answer the first sub-question in our study: *What are the dominant discourses on gender and ICT in Kenyan education policies?* and give a theoretically informed answer to our second sub-question: *How are national education policies influencing primary and secondary schools in Kenya?*, we limited the scope of analysis to policies from this Ministry. The document analysis was done since we aimed to identify how ideologies of gender and ICT were manifested in policy language and how governments guide teachers and principals through policy.

We retrieved data from the Kenyan Ministry of Education, Science and Technology, accessed through the official documentation database on their official website. We downloaded all 28 documents that were available in the folders 'Policy Documents' and 'Parliament Acts'. The documents varied in length and scope, however, in order to limit selection bias all documents were subject to analysis. In total we analyzed 1624 pages of policy documents. The earliest publication dated back to April 2005 and the most recent to May 2017. This time frame allowed us to look at changes over time. This was of interest due to the establishment of the 'Kenya Vision 2030' in 2008 and the amendments to the constitution in 2010, which we expected to be reflected in the policies developed after the revision. For a full list of analyzed documents, please see appendix 1.

4.3.2 Semi-structured interviews

Informed by findings from previous academic studies, our theoretical model was designed to incorporate teachers' and principals' role as transmitters of discourses of gender and ICT due to their authoritative standing in school settings. Thus, in order to fully answer the second sub-question: *How are national education policies influencing primary and secondary schools in Kenya?* and our third sub-question: *What are the dominant discourses on gender and ICT in narrations from Kenyan teachers and principals?* we collected data through the semi-structured interviews with primary and secondary school teachers and principals in the Nairobi area. We interviewed both principals and teachers, since principals are responsible for the educational administration of schools and need to comply with policies first hand. The teachers are in turn the major transmitters of discourses on gender and ICT to students. Collecting data through semi-structured interviews was helpful since it created an interview setting where we could set the focus of the interview while still giving the respondents room to speak freely over the course of the interview session, change direction and ask follow-up questions (Kvale & Brinkmann 2009:150). The interviews with teachers and principals in primary and secondary schools included respondents from public, private and APBET schools to constitute a representative sample.

We used Cresswell's (2007) snowball sampling method to find relevant interview participants for the purpose of our study. Snowball sampling is when the initial respondents link researchers to other respondents. It is suitable in situations where potential participants may be hard to come in contact with, or where particular traits are preferred. In contrary to random sampling, this technique is a non-probability sampling method where the researchers initially use their own judgment to choose participants. As such, our first nodes of contact were with two teachers in Nairobi. Later, they put us in touch with other teachers and principals in Nairobi. The advantage with this approach is that it allows studies to take place where it otherwise may be difficult to conduct research due to a lack of direct access to the participants. For example, we managed to interview teachers in the slum area Kibera in Nairobi since we got access to them through the network of other teachers. A disadvantage with snowball sampling is the difficulty in ensuring a representative sample or to make inferences about the overall population. However, since the purpose of our is not to make generalizations about the overall population in Kenya, but to gain an in-depth understanding of the education system, we found this disadvantage as a minor parenthesis to the overall sampling

process. Also, within the boundaries of snowball sampling we were determined to have a sample representation of both public, private and APBET schools to reflect the socioeconomic disparities and segregation in the Kenyan school system.

In total, the sampling process led to contact with 6 teachers and 5 principals. We conducted a total of 9 interviews. Each interview lasted for about 40-50 minutes. Four interviews were conducted with representatives from two different private schools. Two interviews were conducted with representatives from two different public schools. Two interviews were conducted with representatives from two different APBET schools and one interview was conducted with a teacher trainer professional. The interviews contained both open and specific questions that enabled us to capture essential information and commonize themes from each interviewee. For example, teachers of ICT-related courses were asked questions in relation to their teaching practices and student groups. Principals responsible for the implementation of government policies were asked about their interpretation of the policies, how they communicate them to teachers and practically implement them. For the full interview guide, please see appendix 2.

All interviewees were guaranteed confidentiality and the interviews were recorded on a phonograph to guarantee scientific security. These records were transcribed and analyzed in relation to the research question and the sub-questions. The transcription process has been divided between the two researchers and swapped after first draft of transcription to reduce any potential misunderstandings (Kvale & Brinkmann 2009:184-185). For the full transcript of all the interviews, please see appendix 3.

4.3.3 Secondary data sources

This paper has also used a range of secondary sources, such as textbooks, articles and academic journals to gain an understanding of the social conditions in which the education policies and teaching narrations have been produced and consumed. Keywords used to locate relevant secondary literature were primarily: 'gender', 'ICT", 'digital gender divide', 'digital equality', 'economic growth', 'inclusive economic growth', 'sustainable development', 'Kenya', 'SSA', education systems', 'policy', 'technology', 'critical discourse analysis' and 'discourse'. Through Kenyan newspapers such as *The Standard, Daily Nation* and *Kenya Today* and literature about Kenya such as *Digital Kenya* (Ndemo & Weiss 2016) and *Making Africa Work:*

a handbook for economic success (Mills et al. 2017), we retrieved access to information about the overall social, economic and political context in Kenya. Through academic journal articles, retrieved from library databases, we were able to get empirical and theoretical data and analyses from previous researchers within the field. In terms of these journals, the paper has looked at a range of issues from among others Development Policy Review, International Journal of Science Education, African Development Review, Gender, Technology and Development and Contemporary Sociological Theory. Statistical data have been found through Research ICT Africa that conducts public-interest research on ICT policy and regulation and the World Bank. We also reviewed the long-term development plan 'Vision 2030' and the 2010 Constitution of Kenya, to gain a better understanding of the legal context in which the education policy documents and schools exist (Kenya Vision 20130 2018; Constitution of Kenya 2010).

In sum, our 28 government publications, 9 interviews and extensive review of secondary data comprised an appropriate research sample for the purpose of this study. The question: 'what is an appropriate research sample?' is common across the social sciences disciplines. However, sample sizes in qualitative studies can only be evaluated by reference to the specific aims and the methods of a study. Our motivation to sample selection emerged from our framework of stated aims, methods, and objectives to explore a relatively understudied phenomenon, and was conditioned by the availability of researchers and economic resources. It was then guided by questions concerning 'what to observe?' and 'how many observations or cases are needed to assure that the findings will contribute useful information?' (Luborsky & Rubinstein 1995). With our data at hand, we can conclude that the sample was appropriate to answer our sub-questions and our overarching research question: *How do discourses on gender in relation to ICT in the Kenyan education system shape the digital gender divide?* since the data entailed both rich and specific information for the purpose and aim with our study.

4.4 Data analysis procedure

The next section will describe in detail how we used Fairclough's three-dimensional framework as a data analysis method to trace discourses on gender and ICT in the education policies and interview data. Before we started the analysis we organized the data from the transcribed interviews and specifically selected quotes that were related to our second and third

sub-questions and thereby subject to analysis. The education policy documents were analyzed in full. The three-dimensional framework is commonly applied by separately analyzing the three levels text, discursive practice and social practice as illustrated:

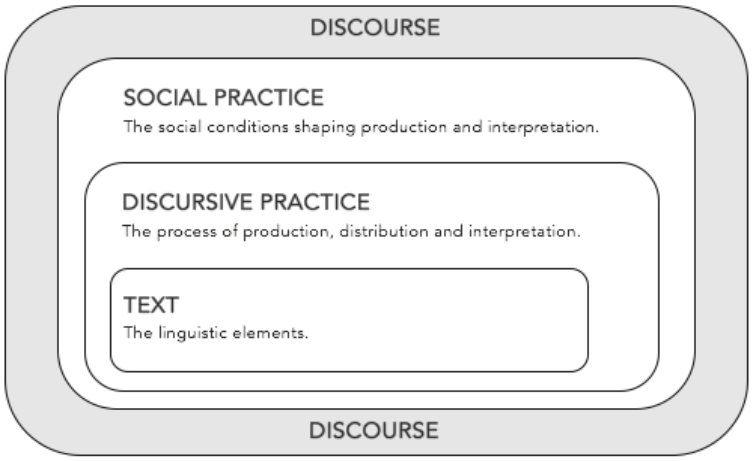

Figure 2. Fairclough's three dimensions of discourse.

Before we present the procedures for textual, discursive and social analysis we will explain how we operationalized our key variables; gender, ICT and the digital gender divide based on their theoretical conceptualizations. This was done to trace and interpret the meaning of discourse on gender and ICT in the subsequent analysis of the data.

4.4.1 Operationalization of key variables

In contrast to quantitative research, where key concepts are fully operationalized before the data collection starts, the operationalization process in qualitative studies can be more fluid and take place both before and during the collection of data (Neuman 2007:110). While we aimed to keep an open mind in the analysis process we found that operationalization prior to data gathering was helpful in order to better organize the data. The following operationalizations of our conceptual definitions thus guided our data collection, discourse tracing and analysis in terms of what can be seen as indicators of gender, ICT and the digital gender divide.

4.4.1.1 Gender

Historically, 'gender' has been conceptualized in binary terms of 'man' and 'woman' in statistics and census data which to some extent have forced researchers to use the same definition in quantitative research (Hilbert 2011:480). However, since this paper is founded in a social constructivist ontology, we conceptualized gender both in terms of its biological and social aspects. This is because the biological sex is only partly shaping conceptions on gender, but can not be reduced to it since gender also is something individuals' do and become through social interaction (Kelan 2007:360). Since the digital gender divide is defined as the difference in access and use of ICTs between men and women, we used the perceptions around this gender binary and the subsequent relation to technology as an analytical focus. Therefore, to trace discourses on gender in text we used indicators such as: 'gender' 'man', 'woman', 'boy', 'girl', 'male', 'female', 'masculine' and 'feminine'.

4.4.1.2 ICT

As previously mentioned, ICT is a broad term since it includes everything from social networks to stationary computers. In the literature on the digital gender divide, ICT is however most commonly defined from a user centered perspective in terms of how ICT is a tool for human development (Hilbert 2011; Freeman & Louçã 2001; Kaur et al. 2017). Therefore, we acknowledged the many understandings of ICT that might feature in policy documents and teacher narrations, rather than evaluating one element of ICT in isolation, such as how cell phone use is related to gender for instance. Still, to maintain a systematic analysis procedure we used indicators for ICT that have been applied in previous works of the digital gender divide. These indicators were: 'information', 'technology', 'communication', 'cell phone', 'smart phone', 'internet', 'laptop', 'computer', 'tablet', 'gadget', 'device', 'software' and 'hardware'. Since our study is positioned within the realm of the Kenyan education system we also used indicators applied in the reviewed literature of gender and technology in education. These were: 'STEM', 'science', 'technology', 'engineering' and 'mathematics'.

4.4.1.3 The digital gender divide

Since we aimed to analyze how discourses on gender in relation to ICT shape the digital gender divide, an operationalization of 'the digital divide' helped us trace the theoretical relationship in practice. The digital gender divide has previously been conceptualized in the academic literature as the gap in access and use of ICTs between men and women. By 'access'

the literature refers to the first order divide that is caused by motivational, material and physical barriers to access of ICTs (Van Dijk 2006b:180). By 'use' the literature refers to the second order divide, which is caused by factors such as education, socioeconomic status and domesticity which influence the ability to use ICTs once access is acquired (Alozie et al. 2017). Based on these conceptualizations in the literature we used the following indicators to trace potential manifestations of the digital gender divide in the analyzed material: 'digital', 'divide', 'gap', 'inequality', 'equality', 'equity', 'parity', 'access' and 'use'.

4.4.2 Textual analysis

After operationalizing our variables, we used them to trace discourse by following Fairclough's three dimensions. First, in the analysis of text we did a linguistic analysis, known as *"the analysis of the way propositions are structured and the way propositions are combined and sequenced"* (Fairclough 1995). We organized the textual analysis into four different categories, going from smaller linguistic elements to larger ones; vocabulary, grammar, cohesion and text structure.

Textual analysis			
Vocabulary	**Grammar**	**Cohesion**	**Text structure**
Focus on individual words: word choice, word meaning, wording and metaphors. E.g. gender, women, technology.	Focus on the combination of words into sentences: transitivity* and modality**. E.g. look at whether a sentence is argumentative/affirmative/ negative/neutral.	Focus put on how sentences and clauses are linked together: conjunctions and argumentation.	Focus put on the large scale properties of the text: sentence length, complexity and interactional control.

Figure 3. Textual analysis (Fairclough 2003).

* Michael Halliday's (Halliday 2008) framework for transitivity analysis aims to examine: who (or what) did what to whom (or what) where, when, how and why.

** Modality is the writers' or speaker's attitude towards the world as expressed in text. It can be found in the use of words and expressions that signal a speaker's intentions, certainty, willingness, obligation and necessity (ibid.).

- **Example**

Through the textual analysis, we found what concepts, themes and events that were correlating with our operationalized key variables. By coding the text and highlighting in the documents and transcriptions where our variables were found, it was possible to determine conceptual themes in both interviews and policy documents. This allowed for retrieval and examination of the different data units. The linguistic elements such as sentence structure, use of metaphors, synonyms and potential argumentation in the text helped to give meaning to themes. To reveal linguistics elements, we asked for instance: is 'girl' and 'technology' used in the same sentence? What other words are used to combine the sentence? Is the sentence argumentative? Positive/negative/neutral? How long is the sentence and are there other adjectives such as 'critical' or 'necessary' used to describe the meaning of the sentence?

4.4.3 Discursive analysis

With the discursive analysis, we aimed to analyze the second level of discourse namely the discursive practice and the processes of texts' (re)production and interpretation. Both text production and consumption are subject to the specific societal context and since texts can "travel" it can be produced and consumed in many different social contexts. Production and consumption of text can be individual and/or collective. We used three main aspects that linked texts to the broader social context:

Discursive analysis		
Force of utterances	**Coherence of texts**	**Intertextuality of texts**
Focus on the speech acts to analyze the functions of the utterances = *"what the speaker actually wants to achieve in functional, communicative terms"* (Nunan 1999:131). E.g. what is the goal with production/ consumption/distribution?	Denotes relations between types of discourses, also known as interdiscursivity. Relates to implicit or explicit relations that a discourse has to other discourses and detect genres and themes. Answer questions on e.g. 'what are the overall and most common themes?'	Focus on intertextual elements as locus of struggle and contestation between different discourses. Aims to shed light on the process of text production*, text distribution**, text consumption*** and intertextuality****.

Figure 4. Discursive analysis (Fairclough 2003).

***Text production:** focus on the historicity of text and how it constitutes addition to existing texts to which they respond.

****Text distribution:** Focus on the distribution and potential transformation of texts. For instance, a policy document that is transformed into a public statement. How does this affect the content?

*****Text consumption:** Highlight that it is not just the text that shapes interpretation but also the interpreters' preconceptions and worldview. Who are the main consumers of the text?

******Intertextuality**: Ways in which other texts are explicitly manifested in the text such as citation, presupposition, negation, parody and irony. Can be used to hide implicit ideological meanings.

- **Example**

In this part, we looked at where a text had been published, who wrote it and for what audience it had been written. We also reviewed its interdiscursive elements in terms of common themes and how the text was related to other texts that could have meaning for interpretation. For instance, the Kenya Vision 2030 and the 2010 Constitution explicitly played out as references in policies designed to transform Kenya into a knowledge-based economy and the need to raise productivity and efficiency through education.

4.4.4 Social analysis

In the third dimension, social analysis, we focused on the social and external conditions that shape the production, distribution and consumption of text. Here, we put spoken and written texts in relation to what type of authority that has produced it, in what type of institution it has been created and under what external circumstances.

Social analysis			
Authority	**Institution**	**Institutional character**	**External circumstances**
Focus on individual positions. Who is the agent of communication? What position does he/she hold in society?	In which social practice is the language being communicated? E.g. government, school, doctor's appointment.	Nature of institution: e.g. is something said in a public/private/alternative schools; in a parliament or specific government department.	When was something said? Text placed in relation to other events such as political and social circumstances; e.g. elections, demonstrations, new legislation.

Figure 5. Social analysis (Fairclough 2003).

- **Example**

For instance, we looked at whether a policy document had been published in relation to other political events, such as constitutional changes. In terms of the teaching narrations, we looked at for instance whether the school had strong or loose ties to the government depending on its institutional character (public, private or APBET school) and its financial resources.

4.4.5 Comparison of the three dimensions

When we had analyzed all three dimensions of discourse, we grouped the data together under similar themes and looked at what kind of conjunctions and disjunctions that were prevailing across the data. In this process, we detected the major themes that had become accepted across both policies and teaching narrations. This helped us understand what ideologies that were recurring and how these could be interpreted as signs of hegemonic processes. This in turn allowed us to determine the level of dominance of discourses on gender and ICT in both the policy documents and teaching narrations. Please find the textual, discursive and social analysis procedure for the policy documents in appendix 4, 5 and 6. For an example of the analysis procedure for the interviews, please see appendix 7.

4.5 Quality assessment of the study

The epistemological assumption of social constructivism and critical theory is that knowledge never can be value-neutral as it is always contextual and shaped by time and place. As a consequence, it is argued that science can never be value-free (Egholm 2014:145). Rather, the purpose of scientific inquiry is to attain a deeper understanding of the process of how meaning is ascribed to phenomena via subjective interpretations (ibid.:229). This idiographic perspective has been fundamental to our study and should be set in contrast to the nomothetic approach of establishing general laws and explaining relationships which often is the aim of quantitative research. In light of this, scholars have stressed that the concepts of validity and reliability for assessing research is, to a large extent, shaped by a quantitative research paradigm and not necessarily suitable for reviewing the trustworthiness of qualitative research studies (Lincoln & Guba 1985; Denzin & Lincoln 1994). Thus, in reviewing the validity and reliability of our research we have applied tests for trustworthy qualitative research created by Lincoln and Guba (1985); credibility, transferability, dependability and confirmability.

4.5.1 Credibility

Credibility can be seen as the corresponding concept of internal validity of quantitative research and refers to the validity of the internal research process. In qualitative research this means to establish the research phenomenon in a credible manner. The following techniques are suggested to ensure a high level of credibility: triangulation, presenting the findings to respondents, peer debriefing of data and ensuring cohesion between theory and method (Lincoln & Guba 1985; Hirschman 1986; Merriam 1988; Riege 2003).

Guided by our theory, we used triangulation to assure credibility by using different samples and methods of data collection. By combining the methods of document analysis and semi-structured interviews, we aimed to generate comprehensive and well-developed conclusions that account for the complexity of discourse. We have for instance used the 'consumers' of education policy (teachers and principals) to limit bias in interpretations of policies. In an optimal scenario, we would also have included the 'producers' of policies as well i.e. the policy makers. However, this was not possible due to the time frame and difficulties in getting in touch with government professionals.

We also reported the findings to our interview respondents, both in terms of their individual accounts and the broader conclusions, to reduce the risk of misinterpretations. Due to time and resource constraints, we were unable to have other peers review our data collection process and subsequent analysis. We were however guided by our supervisor who reviewed different stages of the process throughout the study. In terms of ensuring cohesion between theory and method we were informed by previous academic work on the digital gender divide, which directed our choice of theory and subsequent choice of method. CDA is recognized as both a theoretical framework and a method of analysis in qualitative research studies in general and within the social constructivist paradigm in particular. However, one of the most common criticisms for adopting CDA as a research method is (1) that it often has vague analytical concepts and models (Widdowson 2004) and (2) that texts for analysis are arbitrarily selected and limited in length, which ultimately impairs the researchers' ability to draw credible conclusions of the analysis (Stubbs 1997; Verschueren 2001). We made efforts to overcome these criticisms by explicitly outlining the development of our theoretical model, the procedures for operationalization of the central variables and the selection, collection and analysis of text materials.

4.5.2 Transferability

Transferability is the corresponding concept of external validity in quantitative research referring to the level of generalizability of the findings of our study. It is debated whether qualitative research can, or even should, aim for generalization of its findings as most qualitative research is highly context dependent (Yin 1994; Lincoln & Guba 1985). This is especially the case in qualitative case studies. Still, researchers should pay attention to the relevance of their findings and how congruent they are with similar studies or prior theory. Due to our thorough review of existing literature on the digital gender divide, the development of a tailor-made theoretical model and the specific nature of the collected data, we argue that our findings are generalizable within the boundaries of how discourse shape the digital gender divide in the Kenyan education system. However, they can and should not be generalized to explain the dominant discourses of gender in relation to ICT in Kenyan society as a whole.

In addition to this, it is suggested that researchers should develop a case study database and explicit data analysis procedures to enhance transferability (Lincoln & Guba 1985; Miles & Huberman 1994; Yin 1994). We did not establish a database as such but followed a systematic procedure both in the data collection and the data analysis procedure, as outlined above. Here we used specific procedures for both sampling of material and coding in the analysis which, according to Yin (1994) helps increase the transferability of one's study.

4.5.3 Dependability

Dependability is linked to the notion of reliability in quantitative research which relates to the replicability of the study. The purpose is to ensure consistency and stability of the techniques and procedures applied in the research process. Key here is transparency and to make sure that the research problem, research question and research design is clear and that the process can be followed by other researchers (Lincoln & Guba 1985; Hirschman 1986). By being explicit in our explanations of how we derived our theoretical framework, choice of methodology and analysis procedure we hope to make our research process easy to follow. We also aim to be transparent by enclosing the interview guide, transcriptions, document archive records and analysis procedures (Appendix 1-7).

4.5.4 Confirmability

Confirmability refers to the notion of objectivity and neutrality in positivism and is related to the potential issue of subjectivity bias. Since it has been argued that knowledge never is value-free and that meaning is constructed through discourse, a separation between the researcher and the object of study is not feasible in this kind of study (Riege 2003:77). Still, the nature of the data and the logic of interpretation needs to be assessed to determine if the conclusions drawn from the data are reasonable (Miles & Huberman 1994:278).

The type of data collected for this study was motivated by the theoretical framework as it stressed the role of national education policies and teachers' and principals' narrations in shaping discourse on gender and ICT. While some level of subjectivity in terms of interpretation is inevitable, we want to highlight the fact that the content of the policy documents was produced independently by third parties and therefore not created for the specific purpose of this study. Also, as the respondents were guaranteed full confidentiality we are confident that they expressed their own views and opinions. Furthermore, the strength of Fairclough's three-dimensional framework is that it, by including both text, discursive practice and social practice, challenges the researchers' interpretation process since it requires us to look at more than only linguistic elements. This method has forced us to cross-check both findings from the different levels of analysis with each other, and with our own assumptions. Therefore, we see this as a technique for reducing subjectivity bias. Lastly, to increase the level of confirmability we have included and referenced raw data from the data collection process such as transcriptions and documents in order for other researchers to review and assess the quality of the findings.

4.6 Limitations

This section will address the methodological limitations to our study in terms of number of interviews conducted, the collection of policy documents, the choice of data collection methods and risks of conducting research on marginalized groups.

- **Number of interviews**

When locating interview respondents, we focused primarily on finding the right representation of data, rather than a lot of data. Due to difficulties in coming in contact with teachers

and principals in both public and APBET schools this generated a smaller sample than expected. This could be raised as a limitation of our study. While our aim was not to draw generalizing conclusions based on a large data set we still acknowledge that some rules of thumb exist in terms of how much data that is "enough" in qualitative studies. These stem from traditions within social science research about how many interviews are enough, and practical concerns about how many people can be interviewed and analyzed in light of the purpose of a study (Luborsky & Rubinstein 1995). According to these traditions, from 12 to 26 people in each study seem "right" to most authors with a propensity to define bigger as better and smaller as inferior (ibid.). However, it should be noted that depending on geographical location, theory and methodology this assumption can vary. Quantitative researchers, often question small sample sizes, however sample sizes of less than 10 are more common in qualitative studies (ibid.) Thus, the sample size is always individual to each study and depend on academic scope, as well as financial resources and personnel.

- **Collection of policy documents**

We came across some difficulties in the data collection process of policy documents from the online database at the Kenyan Ministry of Education, Science and Technology. First, of the 36 available documents only 28 were unique documents since some of them were duplicates and uploaded twice with different titles. Second, when conducting the analysis, it became clear that some policy documents were missing from the Ministry's own database. For example, one document referred to a gender policy in education of 2007 and a national ICT strategy for education and training of 2006, which were not published on the database (MoEST 2014a:35). Drafts of these documents were available from other sources. However, since the reliability of the data source was crucial to us we decided to only analyze the documents that were made readily available by the Ministry. Lastly, the documents in the 'Policy document' folder varied in nature and included both parliament acts, sessional papers, strategic plans and policy frameworks. The different type of documents inevitably influenced their content and structure. This have been included in the reflections of the findings in the analysis.

- **Data collection methods**

While the interviews allowed us to collect data on teachers and principals' narrations on gender, ICT and the digital gender divide, they could not fully capture how these perceptions

were translated in teaching practices. To see this, we would have needed to conduct observations of the teachers in their classroom settings. This would have added a valuable dimension to our findings, however, it was not feasible due to financial and time constraints. Still, our aim was not to examine the direct interaction between teacher and student. Rather, we aimed to see how teachers and principals in their role as authoritative transmitters of knowledge consume, understand and convey discourses on gender and ICT. Therefore, we consider their narrations as presented in the interviews as sufficient.

- **Research about gender and marginalized groups**

According to Herring (1996), a particular danger associated with research on disadvantaged groups, such as women, is that the researchers themselves may contribute unwittingly to the oppression of the group by making statements which could be interpreted to support popular prejudices. We mitigate this risk by confirming the theoretical links between theory, research design and empirics.

5 Findings

This chapter will present the findings from the data collection. First, we will outline the findings from the policy documents and parliament acts. Second, we will present the findings from the interviews with teachers and principals at the public, private and APBET schools in our sample. This section will be followed by a discussion where we compare, contrast and analyze the findings in relation to our theoretical model.

5.1 Policy documents and parliament acts

Figure 7 below shows an overview of the 28 education policy documents and parliament acts that have been analyzed in this study. When conducting the textual, discursive and social analysis, we were guided by the first and second sub-research questions to trace discourses on gender and ICT across the policy documents. The full three-dimensional analysis can be found in Appendix 4, 5 and 6. All 28 documents were analyzed, however due to their varying focus on gender and/or ICT 11 documents were selected for an in-depth analysis. These documents are marked in bold in the figure below. The findings will be explained in chronological order, starting with the oldest.

Document name	Year	No. of pages	Word count: gender	Word count: ICT
Sessional Paper No. 1 2005: a Policy Framework for Education, Training and Research	**2005**	**110 pages**	**27**	**48**
Early Childhood Development Service Standard Guidelines for Kenya 2006	2006	72 pages	10	2
Safety Standards Manual for Schools in Kenya	2008	78 pages	3	0
The Biosafety Act	2009	46 pages	1	0
The National Special Needs Education Policy Framework	2009	65 pages	24	11
TIVET Institution Guidance Counseling Policy and Operational Guidelines 2011	2011	25 pages	1	0
Education Sector Report 2013/14- 2015/16 Medium Term Expenditure framework	**2012**	**118 pages**	**16**	**47**
Sessional Paper No. 14 of 2012.: A Policy Framework for Science, Technology and Innovation. Revitalizing and harnessing Science, Technology and Innovation in Kenya	**2012**	**37 pages**	**2**	**4**
The Universities Act No. 42 of 2012	2012	65 pages	6	0
The Kenya Qualifications Framework Bill of 2013	2013	14 pages	2	0
The Science, Technology and Innovation Act, 2013 No. 28 of 2013	**2013**	**37 pages**	**1**	**0**
The Technical and Vocational Education And Training Act No. 29 of 2013	2013	45 pages	6	0
The Basic Education Act, No. 14 of 2013	**2013**	**93 pages**	**9**	**2**
The Second Medium Term Plan for Vision 2030, 2013 - 2017	**2013**	**72 pages**	**3**	**42**
Strategic Plan 2013-2017: Towards a Globally Competitive and Prosperous Kenya	**2013**	**85 pages**	**17**	**109**
National Education Sector Plan. Volume one: Basic Education Programme Rationale and Approach 2013-2018	**2014**	**251 pages**	**122**	**118**
National Education Sector Plan. Volume two: Operational Plan 2013-2018	**2014**	**105 pages**	**58**	**46**
Draft Technical and Vocational Education and Training (TVET) Policy	2014	35 pages	3	6
National Curriculum Policy	**2015**	**33 pages**	**8**	**3**

Education and Training Gender Policy	**2015**	**46 pages**	**357**	**2**
Draft: The Basic Education Regulations	2015	16 pages	4	0
The Basic Education Regulations	2015	16 pages	4	0
Revised Policy Framework on Nomadic Education in Kenya	2015	31 pages	6	0
The National Council for Nomadic Education in Kenya: Strategic plan 2015-2016 - 2019-2020	2015	38 pages	6	0
Kenya School Readiness Assessment Tool (KSRAT) Launching Programme	2015	16 pages	0	1
Kenya School Readiness Assessment Tool (KSRAT) for children transitioning to primary one	2015	15 pages	0	1
Education for Sustainable Development Policy for the Education Sector	2017	58 pages	9	10
Documents Required for Registration of your Institution	No date	1 page	0	0
Electroic Messages	No date	1 page	0	0

Figure 7. Overview of policy documents and parliament acts.

- **2005 – Sessional Paper No. 1 2005: A Policy Framework for Education, Training and Research**

The social analysis showed that this sessional paper was produced in relation to Kenya's commitment to the UN Millennium Development Goals. It was created both as a new guideline for the Kenyan government to deliver policies that would meet the international agreements, and as a reform framework for Kenya's education sector (Nzomo 2005). The expressed aim of production was therefore twofold: to meet the '*challenges of the 21st century*', and to '*provide relevant education for all*'.

The discursive analysis showed that '*inclusiveness'* was a recurrent theme in the text and that education for all Kenyans should be possible "*no matter socio-economic status"* (MoEST 2005:14). The challenges of the 21st century were furthermore described as *"access, equity, quality, relevance, efficiency in the management of educational resources, cost and financing of education, gender and regional disparities, and teacher quality and teacher utilization"* (ibid.:4), which shows the focus on gender. Gender was portrayed as an issue that requires *"...affirmative action to compensate for historical and emerging inequalities and disparities in all areas of our national life"* (ibid.:25). Gender

disparities were explicitly addressed in goal statements and although gender issues were described as '*serious'* problems, the goals for combatting them were rather visionary outlined. The goals were not accompanied with strategies for practical implementation and had unrealistic time frames. For instance, the government aimed to "*eliminate gender and regional disparities in primary and secondary education by 2005"* (ibid.:29); the same year as the sessional paper was published. This shows an underestimation of what is practically required to address gender disparities effectively. Gender equality in education was moreover discursively defined as *"ensure that all children, including girls," (...) "have access to and complete free and compulsory primary education by 2010"* (ibid.:29). From a linguistic perspective, the word choices "all children, *including girls"* signal that girls have previously been either absent or excluded.

With regard to ICT, the textual analysis showed how focus was put on technology as a *'critical'* form of wealth and that ICT "w*ill form one of the key pillars of education and training"* (ibid.:27). The goal was described as to '*popularize*' ICT in education by 2008. The connection between technology, education and sustainable development was clearly spelled out as *"the Government will make education the natural platform for equipping the nation with ICT skills in order to create a dynamic and sustainable economic growth."* (ibid.:79). However, gender and ICT were only mentioned once in conjunction where the gendered association of technology was portrayed as a problem since "*there exists serious gender disparities in terms of overall enrolment in science and technology related professions"* (ibid.:9). The inclusion of the word '*serious'* shows the government's awareness of the digital gender disparities. Still, no plan was presented on how to address them. Rather, as the discursive analysis unveiled, focus was put on how the overall quality of ICT education will be improved '*for all*'.

- **2012 – Education Sector Report 2013/14-2015/16 Medium Term Expenditure Framework**

After the sessional paper in 2005, Kenya adopted the long-term development plan Vision 2030 in 2008 and promulgated the new Constitution in 2010. The social analysis of this sector report showed that these changes put new demands on the quality of the education system to achieve the goals of turning Kenya into a knowledge based economy. These were signaled in the report, which served as a combined performance report and progress statement. *'ICT'* was frequently used and the textual analysis showed how ICT was described as a *'prerequisite'* for national development. Furthermore, the discursive analysis disclosed how ICT was

needed *"at all levels of education and training"* (MoEST 2012a:13). Thus, actionable strategies for equipping schools with skilled ICT teachers were presented, as well as the need to establish stable network connectivity in all schools. It was also highlighted how the full potential of ICT had not been exploited and that *"ICT has to be tapped to ensure increased access in education for all"* (ibid.:111). The discursive theme '*for all*' was again visible throughout the text, but the focus on gender was sporadic.

With regard to gender in relation to ICT, there was an expressed willingness to address gender issues since the government would *"invest, diversify and accelerate adoption of technological application in training institutions run and managed by the gender and youth ministries, contributing to affirmative action for women in science and technology and encouraging pursuit of knowledge transformation"* (ibid.:111). Other gender equality goals were predominantly mentioned in conjunction to disability measures, such as enhancing *"Gender and Disability mainstreaming in education"* and *"Negative stereotype, misconceptions and beliefs about the causes and consequences of disability as well as high levels of poverty and gender discrimination are barriers within society that prevent learners with special needs from participating in education."* (ibid.: 25,113). As such, this report held a future-looking perspective, but the discursive analysis showed how strategies to address gender challenges in relation to ICT were vaguely articulated, or mentioned in conjunction with other special needs.

- **2012 – Sessional Paper No. 14 of 2012: A Policy Framework for Science, Technology and Innovation. Revitalizing and harnessing Science, Technology and Innovation in Kenya**

The social analysis showed that this document was created to support Kenya Vision 2030 and to *"build critical capacity and capability in ST&I*[1] *that will create change and transform Kenya into a newly industrialized country (NIC) through the utilization of knowledge as the driving force."* (MoHEST 2012:vii). In terms of intertextual elements, it was found that the government described the need to put human capital development in line with the new constitutional amendments. They stressed how Sessional Paper No. 1 of 2005 did not provide an adequate foundation to develop the competencies that the Vision 2030 and the Constitution required. The aim of production of this policy was therefore to improve the competitiveness of Kenya globally through the promotion of science, technology and innovation through all sectors of

[1] Abbreviation for Science, Technology and Innovation, commonly used by the Ministry of Higher Education, Science and Innovation in this Sessional paper.

knowledge production. The aim of consumption was not merely targeted towards educational actors, but also businesses, other government departments and other intermediary organizations that work with implementation of science, technology and innovation capacities in Kenya (ibid.:vi).

With regard to the education sector and ICT, the policy described a need to *"establish and sustain national integrated advocacy programs such as encouraging Science, Mathematics and Technology in Schools."* (ibid.:23). It was however not specified how this would be done in practice. Since the statement was presented in conjunction with the need to *"link knowledge creation to actual opportunities aimed at enhancing productivity and creating employment opportunities"* (ibid.), it was not clear who would be responsible for implementation. The analysis of interdiscursivity also pointed towards a broad agenda where technological advancements and sustainable economic development often were mentioned in conjunction. For instance, Kenya's vision was expressed in the policy as: *"To be a nation that harnesses science, technology and innovation to foster global competitiveness for wealth creation, national prosperity and a high quality of life for its people"* (ibid.:10).

'ICT' figured only four times in the text, described as a sub-sector of the broader science, technology and innovation program. On the other hand, the term *'technology'* was frequently used and described as a *'solution'* and *'key component'* and used in conjunction with adjectives such as *'essential'* and *'critical'* (ibid.:v, 1, 3). There was a recurring focus on how science, technology and innovation could generate economic gains on a national level, but it was also mentioned how these three areas were crucial for social integration and poverty eradication (ibid.:1). However, despite the use of terms such as *'social integration'*, *'freedom'*, *'equity'* and *'justice'* in conjunction with *'science'*, *'technology'* and *'innovation'* these connections were scarce in the text and figured in more visionary statements. *'Gender'* was only mentioned twice in relation to promoting gender parity in leadership bodies of public science, technology and innovation institutions (ibid.:11, 20).

This document echoed the voice of reports that were published after 2008, in terms of harnessing the role of science, technology and innovation for national development. While ICT was mentioned in the text, the focus was rather put on how science, technology and innovation in the broader sense were seen as solutions to Kenya's social and economic problems.

A focus on gender was close to non existent. The plan took the form of a guiding framework for the science, technology and innovation sector as a whole, rather than specifically for the education sector.

- **2013 – The Science, Technology and Innovation Act, 2013 No. 28 of 2013**

As a purely legal document, this act had a different text structure than previous documents. It contained less visionary statements and focused more on the legal framework of the national development of science, technology and innovation. The government assented to *"assign priority to the development of science, technology and innovation; to entrench science, technology and innovation into the national production system and for connected purposes."* (Parliament of Kenya 2013:800). *'ICT'* was not mentioned explicitly, but *'technology'* was featured 85 times. This is likely to be a consequence of the wide-encompassing nature of the act, since it did not specify any of the other sub-sectors or areas that exist within the science, technology and innovation sector. Neither the words *'gender'* or '*inequality'* were used in the document. This might be due to the aim of production, since the text followed a standardized format as a legal document. This implies less freedom of structuring the text, than in for instance a sessional paper.

Nonetheless, being a regulation enforceable by law, the act strengthened the role and importance of the science, technology and innovation sector in Kenya. The social analysis showed that the act was enacted alongside several other regulative amendments for education in 2012 and 2013 that worked to solidify the focus on development of the science, technology and innovation sector as outlined in Vision 2030 (cf. the Universities Act No. 42 of 2012; the Basic Education Act No. 14 of 2013). By legislating the framework for the sector, these acts further established the discourse on science, technology and innovation by making them central areas for development in Kenya.

- **2013 – The Basic Education Act, No. 14 of 2013**

The Basic Education Act was another legal effort to realign the education sector with the new Constitution. The legislation was produced to restructure the management of education in Kenya. Most importantly, it anchored free and compulsory primary education into law for '*all Kenyan citizens'*. In terms of modality, the text expressed an obligation of enforcement since it imposed penalties and punishments for parents who negate rights of children to access education. As such, the text is interdiscurively connected to the notion '*education for*

all', since the government signaled that the gap between those who do, and do not have access to education can be bridged by legal force. This document is therefore important, also from an intertextual perspective, since it related to previous and forthcoming policy documents that draw on the notion of the legal right to education.

- **2013 – The Second Medium Term Plan for Vision 2030, 2013 - 2017**[2]

This document was produced to lay out the plan of implementation of the Vision 2030 during the period of 2013-2017. Both the textual and discursive analysis showed a deepening of the discourse of science, technology and innovation as *'determinants for competitiveness'* and *'promoters'* of economic and social benefits. The growing recognition of the role of ICT was visible in statements that described ICT as: *"...the principal motor of national growth and competitiveness"* and *"a driver of efficiency and effectiveness in all sectors of the national economy."* (MoHEST 2013:22). However, the textual analysis also uncovered sentences that described challenges for ICT adoption, such as the need to *"comprehensively identify existing knowledge and skills gaps"* in regard to ICT capacity and infrastructure (ibid.:34). As an answer to this, the MTP expressed a prioritization of science, technology and innovation programs implemented between 2013-2017. The discursive analysis showed how the promotion of STEM disciplines was recurring as a priority theme in the document (ibid.:16). Improving STEM education in Kenya was described as a *'critical concern'* (ibid.:35), needed to be repackaged into education *"to promote the generation of knowledge and its application in ST&I"* (ibid.:36). For this *'repackaging'* of education, the document emphasized the role of teachers and how the ICT curricula needed to be reviewed *"to ensure effective ICT response to current and future market needs."* (ibid.:34).

Thus, there was a prominent focus on the link between education, ICT, STEM and the long-term national development of the science, technology and innovation sector. With regard to gender, the plan expressed the need for *"setting affirmative gender actions for STEM programs"* (ibid.:25) and how the efforts for improving STEM education in Kenya were *"hoped to facilitate (...) mainstreaming of gender in national development."* (ibid.:23). The conjunction of gender and STEM showed a level of willingness in the text to address gender disparities in STEM education. However, the document did not outline how these '*actions'* were meant to play out in

[2] The first Medium Term Plan 2008-2012 has not been published in the document database of the Ministry of Education, Science and Technology.

practice. Still, this document was the first to frequently refer to, and connect the links between gender, technology and national development and the pedagogical role of teachers.

- **2013 – Strategic Plan 2013-2017: Towards a Globally Competitive and Prosperous Kenya**

In light of the 2010 Constitution, the Ministry of Education and the Ministry of Higher Education, Science and Technology merged to become the Ministry of Education, Science and Technology. The aim with production of this strategic plan was therefore to align the objectives of the two former Ministries and to lay out strategies for *"the realization of the aspirations for affordable and equitable access to quality education, training, science & technology"* (MoEST 2013.:1).

In terms of intertextuality, the plan repeatedly referred to previous policy documents including Vision 2030, the Constitution and Sessional Paper No.14. The textual analysis showed that *'ICT'* was used 109 times throughout the document and '*ICT integration*' was included as a central objective for the strategic development of the science, technology and innovation sector. It was stated that *"The Government recognizes that an ICT literate workforce is the foundation on which Kenya can acquire the status of a knowledge economy by the 2030."* (ibid.:24) and therefore that *"the Government shall make education the natural platform for equipping the nation with ICT skills in order to create dynamic and knowledge based economy."* (ibid.).

The discursive analysis also revealed the recurring theme of linking education, science, technology, innovation to the overall development and prosperity of Kenya. The plan specifically emphasized the importance of providing quality education to all Kenyans as it contributes to *"the building of a just and cohesive society that enjoys equitable social development."* (ibid.:21). This was emphasized by the use of terms such as *'equity'*, *'equitable'* and *'just'* in conjunction with *"education"* and *'development'*. Descriptions of the relationship between equity and social development were also visible in statements regarding ICT where it was stated that the science, innovation and technology sector strengthen the link between education and the world of work (ibid.:3). However, no practical outline of implementation was mentioned.

Gender inequality in education was explicitly addressed in the plan, described as one of *"the chief challenges in primary education"* (ibid.:22) and as a *"cross cutting issue that affect education, science*

and technology" (ibid.:29). As such, gender disparities in conjunction with technology were problematized for the first time in the analyzed material. The document outlined strategies for achieving *'quality education'* by combating gender inequality, such as *"operationalization of the gender policy"* (ibid.:29). However, these strategies were only focused on addressing disparities in enrollment and barriers to accessing education, not the content or practices of teaching.

- **2014 – National Education Sector Plan. Volume one: Basic Education Programme Rationale and Approach 2013-2018**

The main aim of production of this document was to create a sector-wide plan with *"quality education for Kenya's sustainable development"*. The National Education Sector Plan (NESP) was divided into two volumes and was developed as an all-inclusive stakeholder initiative, led by the Ministry of Education, Science and Technology. The NESP suggested reforms that *"cut across the entire education sector"* and included strategies for addressing the organization and financing of education, the curriculum, teacher training development and strategies for *"bringing technology within the reach of every Kenyan child."* (MoEST 2014a:24-25). It was a comprehensive report, covering six priority areas ranging from 'Sector Governance and Accountability' to 'Education Quality' and 'Equity and Inclusion'. There was a prominent focus on both gender and ICT throughout volume one, with word counts of 122 and 118 respectively.

The focus on gender was noticeable in comparison with earlier documents created by the Ministry. It was stated in the plan that the *"lack of satisfactory progress in addressing these issues calls for new approaches and mechanisms to enhance gender parity in the education sector."* (ibid.:103), which suggests that previous strategies had not been sufficient nor correctly targeted. Of all the documents reviewed in this study, the NESP was the first to provide a definition of the term gender. It was stated that gender roles are created by society and that the responsibilities and behaviors that society assign to boys and girls are socially constructed roles *"learned from one generation to the next."* (ibid.:101). It was emphasized that *"because gender roles are socially learned, they can be changed to achieve equity and equality for boys, girls, men and women."* (ibid.:101). As such, the discursive analysis showed a new interdiscursive element where gender roles are not predetermined, but subjects to change.

In light of this, there was a whole section on 'Gender in Education' in the plan which addresses both disparities in access to, and quality of, education for girls and boys. The plan

did not only address disparities in enrolment but also specifically problematized the fact that girls were falling behind in STEM subjects. It expressed the need to *"encouraging the study of Science, Math and Technology, especially in the case of girls."* (ibid.:102). The discursive analysis also disclosed the theme on connecting teaching practices (skills, pedagogy, curriculum) to gender disparities in education. The pedagogical role of the teacher was emphasized, especially in terms of promoting gender equality, conducting gender sensitive teaching practices and being able to integrate ICT by having the *"requisite skills for science, technology and innovation."* (ibid.:92). As such, the social constructivist idea of how social roles perpetuate gendered behavior was visible for the first time in the reflections and proposed strategies.

With regard to ICT, the NESP defined the term as an infrastructure and a capability tool that can be used to enhance teaching, learning opportunities and pedagogy (ibid.:xxiii). The textual analysis showed how ICT literacy was listed in the document as one of the key 21st century learning skills and it was emphasized that ICTs *"are expected to be seamlessly integrated in teaching and learning across all levels of education"* (ibid.:96). The role of the teacher as they main provider of ICT literacy through pedagogical practices was pointed out as a crucial factor to achieve a high quality of learning. Thus, while the plan promoted *"integrating ICT into every aspect of teaching, learning and management"* (ibid.:3) and *"establishes the place of technology as a powerful support to pedagogy"* (ibid.:2) it also stated that it is not *"not the determinant of pedagogy"* (ibid.:2).

While the importance of integrating ICT was forcefully promoted throughout the document, it also acknowledged problems with inadequate access to ICTs which creates barriers for ICT adoption in education. The textual analysis showed how neither *'quality education for all',* nor the *'potential of ICT'* have been realized *"due to lack of ICT equipment and skills."* (ibid.:129) which points to issues with the first order digital divide. Thus, the text expressed willingness to ensure material access and implementation of ICT monitoring which *"will include the use of computers by both teachers and pupils, assessment of teachers' ICT skills and the impact on learning achievements."* (ibid.:143). To address this, the social analysis unveiled that the Ministry had established a separate ICT for education unit (ICT4E) to facilitate and oversee the pedagogical *"coordination and harmonization of ICT integration in education"* (ibid.:97).

- **2014 – National Education Sector Plan. Volume two: Operational Plan 2013-2018**

The second part of the NESP focused on the operationalization of the objectives presented in the first volume. This volume focused on turning the six priority areas into specific investment programs (MoEST 2014b:vii). Two of these programs were 'Gender in Education' and 'Information Communication Technology (ICT) for Education and Training'.

As seen in the discursive analysis of the first volume, there was a notable discursive shift in the NESP compared to previous documents in how gender disparities were discussed. This was not just in relation to enrolment, but also in terms of learning outcomes and socio-cultural attitudes (ibid.:56). It was stated how national laws and policies were needed to address these type of disparities and that all national education policies should include approaches and strategies to support gender equality (ibid.). The interdiscursive elements showed how national legislative frameworks were aligned with international conventions on human rights and goals for education such as UNESCO. These have arguably contributed to the increased focus on gender (ibid.:56).

Therefore, one of the goals with the 'Gender in Education' program was to create *"an up-to-date policy framework of gender education that will guide existing policies, strategies and interventions with the commitment necessary to achieve national goals by 2018."* (ibid.:55). The social analysis showed that this type of gender mainstreaming in policies was new in the Kenyan context. This signals a growing awareness from the government of the importance to address gender inequalities in education. It was also found that the financial summary of the 'Gender in Education' program included a doubling of government spending on gender initiatives in education between 2013 and 2018, from 671 KSH million to 1267 KSH million (ibid.:57). Bringing financial measurements into the plan can be seen as a manifestation of the growing acknowledgement of issues with gender equality in education in Kenya.

Regarding ICT, the plan outlined the need to create *"a national policy and institutional framework for the integration of ICT tools in education administration, management and pedagogy at all levels."* (ibid.:51). In the textual analysis, there was a clear emphasis on *'ICT integration'* and '*ICT literacy'* as factors that influence learning opportunities and educational outcomes. The plan also expressed a goal to establish a new national curriculum policy that will include guidelines

"to support the promotion of information literacy as an educational outcome and the use of ICT tools to enhance pedagogy and learning opportunities". (ibid.:52). Still, while it was mentioned that the new curriculum policy had to be *'inclusive'* it did not directly address gender disparities in conjunction with ICT integration.

- **2015 – National Curriculum Policy**

The social analysis showed that after the creation of the NESP, the Kenyan government embarked on a process of curriculum reform. Despite progress in education enrolment rates and parity index between boys and girls, there were still challenges left in terms of high drop-out rates, low gender parity in secondary schools and skills gaps that a new curriculum would address.

The updated curriculum policy defined the content of learning; the knowledge, skills and attitudes of the future Kenyan society (MoEST 2015a:1). In terms of intertextuality, many of the strategies that were outlined in the curriculum policy were based on other texts from global bodies, such as OECD's proposition of a lifelong skills development strategy and the UN 2015 Sustainable Development Goals nr 4: equitable and inclusive quality education for all by 2030. The discursive analysis showed how the overall discourse differed slightly from previous policies and acts, since both gender and ICT were quantified and disparities were explained with underlying self-criticism: *"...worse still women account for less than 5% of the total enrolment in STEM. This unfortunate state is largely attributed to the school curriculum and the approach and methodologies used for teaching mathematics, science and technical subjects."* (ibid.) The connection between STEM, gender equality and development was also clearly articulated: *"training women in STEM will contribute heavily to availing a balance in human capital needed for wealth creation and human development"* (ibid.). The textual and discursive analyses showed how the curriculum policy was produced in a goal oriented manner, as the curriculum was said to be a '*driver'* for promoting girls' enrolment in STEM to make it *"the largest area of enrolment in the education system, and in addition ensure gender parity in these professions"* (ibid.).

Furthermore, the focus on *'attitudes'* was a recurring theme, as they were said to influence learning and behavior in schools. Attitudes were defined as *"a learned tendency or readiness to evaluate things or react to some ideas, persons or situations in certain ways, either consciously or unconsciously. Attitudes are underpinned by values and beliefs and have an influence on behavior"* (ibid.:32). The chapter

on Pedagogical Approaches outlined objectives on how to enhance teachers' pedagogy so they can support innovation, critical thinking and further sustainable development. One of the strategic goals was to *"build capacity for teachers trainers to enable them impart knowledge, skills, values and attitudes for implementation of the reformed curriculum"* (ibid.:18). This goes in line with the constructivist understanding of how language impact perceptions and how teachers, as transmitters of not only knowledge but also attitudes, shape behavior and arguably also the discourses on gender and ICT.

- **2015 – Education and Training Gender Policy 2015**

One of the outlined motives in the 2010 Constitution and the 'Gender in Education' program of the NESP was to create a gender policy for the education system with the purpose of ensuring equal rights for women and men, girls and boys in school. As seen in the intertextual analysis, this document affirmed the commitment: "*We call upon the entire education sector fraternity to take full charge of implementing this policy (...) in order to fulfil our goals and aspirations regarding equity and equality in education"* (MoEST 2015b:2). The aim of production of the policy was to promote gender equality issues with regard to access and equality in the education sector and to enhance empowerment for effective participation and contribution in national development.

While '*gender'* occurred 357 times, *'ICT'* was only mentioned once in relation to expanding access to gender sensitive and responsive education and to *"Encourage and facilitate the use of ICT in all education programs"* (ibid.:9). However, the textual analysis showed a more frequent use of *'technology'* (21) and *'STEM'* (32) which explains a recurring theme. Namely, a shift in focus from ICT integration in a broader sense, to developing the knowledge and skills that are required to tap the full potential of ICTs, such as learning programming and coding. The policy articulated that gender disparities were wide in terms of both access to and achievements in STEM subjects. Attitudes, practices as well as lack of role models, curriculum challenges, and pedagogy were pointed out as key factors that lead to gender gaps. In terms of interdiscursivity, the policy referred to previous strides in the curriculum policy 2015, but asserted that *"...more effort is required in the education sector to address pedagogy, teaching/learning processes and the entire student-teacher interaction in school that reflect gender biases, stereotypes and insensitivity. These assist in perpetuating gender disparities and inequalities in the sector."* (ibid.:5).

The policy echoed the understanding of gender as socially learned and changeable which was also expressed in the NESP from 2014. The text defined *'gender roles'* as *"socially assigned roles and responsibilities as opposed to biologically determined functions"* (ibid.:8) Moreover, the policy put forward how a gender-sensitive learning environment with gender positive attitudes of key stakeholders in the school, including management, teachers and students could impact gender gaps in STEM related fields (ibid.:5). The text assigned a salient responsibility to teachers to combat gender bias through gender sensitization; the process of developing people's awareness, knowledge and skills on gender issues. This process was said to bridge the gender gap within STEM by *"regularly review all teacher training curricula, including teaching and learning materials with a view to providing a gender responsive teacher education at all levels"* and to *"build the capacity of all teacher trainers on established standards and sensitize them on gender mainstreaming and gender responsive pedagogy"* (ibid.:14).

As such, the discourse have seemingly left the visionary goal statements that was prominent in the earlier policies, and moved towards explaining how gender gaps can be dealt with on the ground. There were for instance concrete measures on how to institutionalize a gender responsive curriculum in the education sector and to implement *"approaches that ensure gender-responsive pedagogy"* to "*...review teacher education training curricula to include examinable content on gender dimensions in education appropriate to all levels of education* (ibid.:15). Beyond the curriculum, there was also a focus on developing leadership programs, training and mentoring for teachers and students in technology related fields (ibid.:21). Finally, there was a quantifiable benchmark that would measure performance by "*ensuring at least one third of the students enrolled in STEM-related academic programs are females"* (2015:20).

In sum, this document provided interesting viewpoints on how education should be a fundamental right for all Kenyans - regardless of sex. On a textual level, it took an affirmative perspective of how '*equality'* includes girls and boys, women and men - rather than just girls and women. The policy thus acknowledged that gender equality does not mean that women and girls are the same as men and boys, and vice versa, but that gender should not be used to determine access to education.

5.1.1 Analysis of findings: policy documents and parliament acts

This section will analyze the findings from the reviewed education policies. In the textual, discursive and social analysis, we found that gender and ICT were not addressed in conjunction in the earlier policies. However, we identified discursive patterns that evolved alongside changes in the national development trajectory in Kenya, which helped us trace the dominant discourse on gender in relation to ICT in the education policies.

First, with regard to gender, the discursive analysis showed that *'inclusiveness'* was a recurring theme already in the early policy documents, but the textual analysis revealed that gender disparities was often presented in conjunction with *'disadvantaged', 'disabled'* or '*special needs'* groups. The early policies did not describe gender disparities in education as separate issues with separate solutions. The discursive analysis showed that the gender discourse then took a visible turn with the creation of the NESP in 2014, since gender in education thereafter was recognized as a separate problem area. This was the first time gender was described as *'socially learned'* and shaped by the expectations of society. As such, the policy acknowledged the existence of gender roles and emphasized that behaviors that are assigned to boys and girls can be altered through attitudinal change. The recognition of gender as a social construction can be seen as discursive shift away from traditional, binary definitions of gender. This arguably influenced the forthcoming strategies that were suggested to reduce gender disparities in education. Furthermore, there was an interdiscursive change over time, as the early documents only addressed gender disparities in relation to access of education, and the later documents addressed how disparities between boys and girls also appeared in learning outcomes in technological subjects. In the documents after the NESP, this gap was described to be particularly evident in STEM and ICT-related subjects, where girls were said to fall behind.

With regard to ICT, the textual analysis showed that ICT was frequently mentioned across all documents, but the scope and context changed over time. In the earlier policies, ICT was described as an input and motor to economic growth. However, the later documents described ICT in the context of how it could be incorporated in education to sustain also the human development agenda. ICT was said to enhance human capabilities and build the skills needed to achieve the development goals of Vision 2030. ICT was often categorized together

with *'technology'* and *'STEM'*, which became recurrent indicators for ICT in the texts. Consequently, the role of teachers in developing skills for boys and girls in STEM and ICT-subject was given increased attention in the texts. Specifically, the documents published after the NESP 2014 explained how teachers' pedagogical skills and attitudes are influencing learning outcomes and gender parity in STEM.

Overall, the discursive analysis showed that the policy texts on gender and ICT have gradually shifted from visionary statements, to include specific actionable strategies on gender related to ICT. This shift was particularly visible in the level of specificity in formulations of how Kenya should be transformed into a knowledge-based economy. From broad statements on how gender equality and ICT integration in education is crucial for creating sustainable economic growth in the earlier documents, the policy texts after 2014 included concrete strategies with quantifiable goals of how equitable and relevant education should be achieved in practice. Related to this, the discursive analysis showed that after the MTP in 2014, and even more so in the NESP in 2014, gender and STEM were connected. The fact that girls were falling behind in STEM was clearly problematized, and it was highlighted that the gender disparities in STEM needed to be addressed through improved teaching methods.

The social analysis showed that all policy texts published after 2012 were produced in the light of Vision 2030 and the 2010 Constitution, since these policies frequently referred to the reformed development agenda. This showed how the constitutional change and the introduction of a new development trajectory for Kenya have been discursive power tools that successfully altered content and definitions of gender and ICT in the education policies. This implies that the discourses on gender and ICT have emerged over time, influenced by the change in constitution and the new development agenda that have generated new understandings of the concepts. These understandings arguably impact the digital gender divide since the earlier policies focused on improving the enrolment for girls in school, which is linked to the first order divide that enables access to ICT for girls. However, these policies did not address girls' literacy and fluency of using and engaging with ICTs. The more recent policies put more explicit focus on improving the quality of education and stressed the importance of promoting girls into studying STEM. This affects both the first and second order divide, i.e. also women's' ability to use ICT.

Finally, the recurrence of references to ICTs in education as '*enablers'* for human capabilities and gender inequalities in education as '*barriers'* for human capabilities in Kenyan education policies show a discursive commonality. The dominant discourse links ICT and gender to the Kenyan development agenda, and sheds light on the responsibilities of the education system in reducing the digital gender divide. This discourse is seen the increased efforts to outline strategies and goals that will assist in achieving sustainable development by increasing girls' access and use of ICT and participation in STEM. As such, the policy language raises critical consciousness about gendered associations of technology since the language challenges traditional patriarchal ideologies. Since this discursive shift is communicated by the government, one of the powerful social structures in society where meanings and values are produced, it arguably contributes to shaping a new hegemonic discourse.

5.2 Interviews: Kenyan schools

The following section will present the findings from the interviews conducted with teachers and principals from primary and secondary schools in the Nairobi area. The interviews have provided data on how teachers and principals consume, understand and convey education policies, how they talk about gender and ICT and whether they see and address digital gender disparities in school. As outlined in Section 4.2.1, the Kenyan school system is fragmented and constitutes private and public and APBET schools. We have interviewed teachers and principals from all three types of schools. In order to account for the different social and economic contexts in which the schools operate, the findings from the interviews will be presented separately by each school type and thereafter analyzed together. We have organized the data by dividing the sections after the second and third research question to trace how teachers and principals are influenced by education policies and how discourses on gender and ICT appear in narrations.

5.2.1 Private schools

For this study, we interviewed two teachers and two principals from two different private schools. In addition to the schools' institutional character, the social analysis also revealed that the schools are highly resourced and funded by private means. The schools have access to advanced computer rooms and ICT is deeply integrated into all levels of teaching.

- **Private schools and education policies**

On whether private schools need to adhere to national education policies, the teachers and principals at both schools replied that they do not need to follow them. One teacher mentioned that she did not know of any Kenyan government education policy that she is bound to (Informant 2) and another explained that he followed other international guidelines for education. This despite the fact that the school is operating in Kenya and educating Kenyan children and youth (Informant 1). The other principal also explained that they are not following Kenyan curriculum policies, but that they make sure to adapt to some Kenyan standards:

> *"We are not following the Kenyan curriculum system, but there are certain standards that we have to check with the Kenyan Curriculum. So we have to look into that, what is it that is required, so we can offer it to our children so they do not struggle."* (Informant 4).

These findings indicate that the private schools have loose ties to the government, since they are not bound by the national education policies. One of the teachers articulated how this gives them more freedom in terms of setting the curriculum for ICT compared to public schools:

> "*Our curriculum is more hands on, more practical. The government curriculum is a bit heavy on the theoretical side. (...) Not all schools that follow the national curricula have wide access to computing resources so they won't be able to have as much time on the computers compared to our students."* (Informant 1).

In this statement the teacher also pointed to how the level of resources influenced the different schools' ability to integrate ICT in teaching. On the same note, the private schools demonstrated that there were clear differences between public and private schools' teaching methods in ICT-related courses due to the differences in curriculum design:

> *"It's a massive difference. It's shocking actually, it is completely different. Everything basically is completely different. Where to start to be honest. We went to visit them and see how they are teaching and it is literally, the students are not active participants, that is the main difference. I watched one ICT lesson in one of those better local schools you know a school that was a bit developed but it is*

still very poor and it was actually quite funny I didn't realize they were teaching ICT until probably half of the lesson. They were in a classroom and they had books and the teacher was talking, and they were writing something, they basically just copied, they learned the terminology of the process of how to switch the computer on, but there were no computer." (Informant 3).

This quote expresses a certainty of how the lack of freedom to set the curricula on ICT in local Kenyan schools inhibits students' ICT knowledge. On a textual level, the word choices *'massive'* and '*shocking'* again point towards the extent of the difference that the principal experienced between private and public schools.

The analysis of the education policy documents showed that the focus on gender in relation to ICT have gained ground in national policies over the years. However, an ICT teacher at one of the private schools stated that he was not aware of an explicit focus on gender equality in their policies:

"I don't think we have anything particularly but we do have a general policy that discourages any bias in terms of gender, but no policy in addressing the difference especially when it comes to subject choices and the like. (Informant 1).

Again, this showed how private schools were not influenced by the Kenyan education policies on gender and ICT.

- **Private schools on gender and ICT**

To trace discourses on gender and ICT, the teachers and principals were asked about whether they saw gender roles play out in school and whether they addressed it in their teacher teams. A teacher replied:

"Our secondary kids still conform to gender roles. Like even in what you would class as a really, you know, affluent and educated community, lots of our secondary students seem to fall straight back into old gender roles" (...) "Our girls are not self-promoters, our girls will carry the boys' plates in after lunch, they don't question the boys, so yeah really dominant type of gender roles.". (Informant 2).

She stated that the gender roles were more prominent among the secondary school students than among the students in primary school. When we asked why she responded:

> *"I'm not sure. Culturally, just from gleanings, culturally in Kenya women still have… I mean there are lots of progressive women in Kenya, some really significant women in Kenya, but you know if you look at government and that it is still a very male dominated culture here. And if you, even if you extrapolate out to wider society, I mean there is a percentage of girls not going to school because they are having their period or something like that."* (Informant 2).

On a discursive level, the teacher referred to how cultural circumstances and patriarchal ideologies still shape gender roles and girls' access to education. An ICT teacher at the same school was then asked whether he saw gender roles play out in the ICT classroom. He reported that digital gender disparities were visible, especially when boys and girls were to choose electives in secondary school:

> "*Yes there is a difference. Especially when there is an optional subject you will find more boys than girls. And for the girls who have chosen it, the few girls that do choose it, their performance is slightly lower than for the boys. More boys than girls choose ICT related subjects."* (Informant 1).

The teacher was also asked why he thought that gender disparities existed particularly within ICT and STEM subjects:

> *"...I think that perceptions generally, based on, even from their parents and from the generation they come from, the parents tend to look at programming and things like that as a man's' profession, being a computer technician as a man's profession. So it hasn't really been instilled in them that it is a profession that can be taken across."* (Informant 1).

As such, the teacher expressed how the home environment and cultural values shape the student's own associations of gender in relation to ICT and STEM. By referring to "*programming (...) as a man's profession*" the respondent echoed previous findings from the literature on how patriarchal ideology permeates the technological field. He was then asked, based on his role as a teacher in ICT, how he could make ICT more interesting for girls:

> *"Yeah I have thought about it (...) So maybe, if there were more career talks, more maybe visiting female entrepreneurs who have done ICT to come and give some talks to see what they did. It might change their perception. So then they could see role models, and have good role models that could come and talk and show them that ICT can be done by both genders."* (Informant 1).

By referring to '*good role models*', the teacher expressed a belief that the external context is important to show the students that "*ICT can be done by both genders"*. We refined the question and asked again whether he himself could address the digital gender divide by talking differently to his students in class:

> *"I did make mentions about it. But I feel that as a teacher maybe I should do more. I feel that actually I need to do more. Especially when they start from the earlier years, that is where it is important to plant a good foundation and talk more to them about it. So maybe we haven't spoken to them about it as much as we should have. Because we offer it as a subject but we don't really counsel them or talk to them about it. But if it was done so between year 7 and 9 it would maybe make them look at it differently."* (Informant 1).

As such, the teacher expressed an awareness of how he can influence the students' perceptions through language, but that he has not done this enough. On the question of whether the same school was integrating a gender focus in subjects on ICT to increase awareness among the teachers and the students, the principal said:

> *"I haven't thought about it that is the truth, I haven't thought about looking at the differences between boys and girls."* (Informant 3).

He was then asked how one could gender sensitize teaching methods in STEM subjects:

> *"If it is the girls that are not really motivated or not really engaged, then you could think of a topic that can work as an umbrella over this. So, I don't know, but if you are programming a toy... If it's a car, the girls will not be interested. So, they might be programming a toy that is a Barbie, or sorry I don't know any girls toys... But you know something that the girls would kind of, relate to." (...) "But there will not be a specific, in the lesson plan, there will not be a specific note in terms of*

what you do for boys and what you do for girls, but as a good teacher this is what you do." (Informant 3).

This statement shows how gender roles also play out in the principal's own discourse. By using words such as '*girls' toys*', referring to "*programming a toy that is a Barbie*" and expressing that girls lack an interest in cars, he articulated a gendered discourse of technology and suggested that girls may be more inclined to learn ICT if they can '*relate'* to the topic of programming. He was also asked whether he would discuss this issue with the teachers:

"This aspect? No. Well, not in my primary school no." (Informant 3).

Finally, he was asked if they specifically addressed the disparities from early age to make girls more encouraged to choose STEM subjects in secondary school:

"*No. Definitively not."* (Informant 3).

The principal demonstrated reluctance to address the digital gender divide in his school, despite that the ICT teacher in the same school had noticed differences in the ICT classroom between girls and boys. On a textual level, the words '*definitively not'* indicated that the principal did not consider to introduce specific guidelines to address gender disparities in the ICT-classroom. This witness about a misalignment between the ICT teacher who believed that gender differences should be addressed at an early stage, and the principal who did not acknowledge that the digital gender divide is an issue that requires exclusive attention.

In sum, the respondents at the private schools saw gender roles play out among the students. According to the teachers and principals, the gender roles stem from Kenyan traditional cultural values and the student's home environment. The ICT teacher reported a gender divide in favor of boys in choosing ICT courses. However, this was not addressed by the school's leadership. The principal instead expressed reluctance to address the gender disparities in technological subjects. This is problematic, since it was found that the private schools do not need to comply with the Kenyan national education policies that do address gender equality in education. As such, the transmission of the altered discourse on gender and ICT

in national education policies is inhibited. This shows that policies have not reached significant level of impact in the private schools in our sample, as gender roles are preserved and leadership restrain from affirmative action on combating the digital gender divide.

5.2.2 Public schools

For this study, we interviewed one teacher and two principals from two public schools. The social analysis revealed that one of the schools is a former community school in the slum area Kibera. The school was taken over by the government in the last election cycle and turned into a public primary school. It caters to 89 students coming from impoverished families in the area and receives little financial support from the government. The other public school is a better resourced primary and secondary school in central Nairobi. The school caters to just over 300 students and were one of the first public schools in Nairobi to introduce computers (Informant 7).

- **Public schools and education policies**

All three respondents stated that they are subject to Kenyan education legislation and follow the Kenyan national curriculum. The principal at the lower resourced school mentioned that they receive guidance and training from Kenya's Institute of Curriculum Development who cooperate with the Ministry of Education in terms of implementing policies and education acts into the curriculum:

> *"KICD is the official body of the Ministry where all the curriculum development take place and we meet there with them. They have pilots with schools and call all the teachers and brief them about what it is, and how is it developed. They train the teachers on the new curriculum in public schools." (...) "So that's where we get the syllabus and subjects from and they mirror the policies and the education acts. We get them from there and then use them as guidance."* (Informant 6).

She emphasized how this was helpful as her school lacks the resources to train teachers on changes in the education policies. This was the case, especially in ICT related subjects, since they have received more policy attention in recent years:

> *"We have some tablets from the Ministry for class one, but the teachers don't know how to use it, they lack some skills."* (…) *"My teachers are still learning ICT, and they also teach normal classes, so it becomes a big load on them.*" (Informant 6).

These statements show that the principal is guided by the national education policies and that she is aware of the increased focus on ICT, since her description demonstrated a connection between education policy and implementation in public schools. This was echoed by the teacher at the better resourced school:

> *"We have the new curriculum in place that was designed to cater for the technology in education system that has just begun this year. So it is in place and schools are being encouraged to use ICT in education as a tool for learning."* (Informant 7).

The social analysis also demonstrated how the respondent showed an awareness of changes in Kenya's social and economic environment, as she mentioned how the amendments to the curriculum are designed to reflect the new context in which their students are growing up:

> *"The past education curriculum in Kenya was not designed to enhance an appropriate competitive skills and knowledge to the students. You know we are living in a wide market in terms of technology and it is growing very fast so I think the new curriculum will cater for both. And were our students will actually get the skills they need in the wider market of technology."* (Informant 7).

However, the social analysis also showed that due to different financial and material resources of the schools, their ability to implement the education policies varied. The teacher at the better resourced school mentioned that they have 4-5 computer labs, which makes it easier to comply with the new ICT policies on a practical level. However, the lower resourced school mentioned that they struggle with implementation, not just due to a shortage of skills amongst the teachers but also due to financial and security reasons. The principal mentioned that the government only provided a few schools with computers and that they had received some, but very little financial support and training from the government. She also pointed out that theft is common in the impoverished area Kibera where their school is located. She stated that this makes it difficult for them to follow the new policies on ICT:

> *"No, I can't follow them, because we have no computers at the moment. And when they are sending the officials from the Ministry and they come and check if we have a secure room for computers or not. They check if the room is okay, then if it is they can give some more tablets. But just a few. I think what we need first is a secure computer room."* (Informant 6).

This shows that policies have little effect when schools lack the material means needed to comply with them. Despite their access to computers, the better resourced school highlighted how implementation of ICT policies also depends on students' engagement with STEM subjects. She stated that, in particular encouraging girls' engagement is a prerequisite for successful implementation of the policies:

> *"Well in terms of the effect, for me, I would say, even when they try to create these policies, the implementation is what becomes the problem. Because they address societal issues that will affect girls' ability to go into STEM, which are a prerequisite for these policies to be effective.*" (Informant 7).

In terms of interdiscursivity, this statement shows conjunctions in the teacher's discourse between STEM, ICT and gender as parameters needed for successful policy implementation. The principal at the same school also reflected on the role of cultural values as barriers for girls to receive education in the first place, which she expressed as another hinder to the implementation of the new ICT policies:

> "*Still, if you look at girls from underprivileged backgrounds, I mean they don't have access to computers, the internet, what about, some of them still not go to school when they are having their menstrual cycle and things like that. So I think that there are other things that interfere, when it comes to implementation. Such as culture. Sometimes the government here has good intentions but they are going way ahead of itself, like, you implement a laptop project, but the students don't have desks or school shoes!*" (Informant 8).

In sum, the analysis revealed that public school are guided by the national education policies. The respondents expressed awareness of the recent policy changes with regard to ICT, which shows that education policies have been transmitted. However, the respondents highlighted how both financial resources and persistent gendered associations of STEM and ICT inhibit

successful implementation of the policies. As such, these factors were found to impede the influence of policies in public schools.

- **Public schools on gender and ICT**

In relation to discourses on gender and ICT, reflections of how cultural values influence girls' and boys' access to education and STEM-related subjects were also expressed by the principal at the lower resourced school. She highlighted the problem with girls falling behind in STEM:

> *"That is a big, big challenge in our schools. Even with the technology, we find the boys are very faster. Very fast. But girls, they take longer time.*" (...) *"You know, boys are go-getters, they are very fast. Also in other subjects. You could look at it in the analysis, and see subjects like math, when we do it digitally, the boys are doing everything faster than the girls. They're getting it very fast. They girls will take time, because the girls are shy. And the culture, it has told them that math is made for boys. It is very wrong, so we are trying to get that out of their brain."* (Informant 6).

She stated how the differences depend on the mentality amongst the girls:

> *"Then we have subjects like science, they also think that's for boys. But when it comes to English, now girls will be faster. Because they like English." (...) "Girls have developed a mentality that 'boys are good in math, math is not meant for us, this is meant for boys"* (Informant 6).

In these statements, the principal expressed an awareness of gender associations with STEM. The words "*we are trying to get that out of their brain"* showed a willingness in how the principal wants to change the perceptions of girls' own gendered association with STEM as something "*that's for boys*". When we asked how and if she attempted to address the gender disparities in STEM she stated that:

> *"We have to do a lot of motivational talks to the girls and a little bit of counselling, so that they also compete with the boys in fields like math so they also can do that. We do the same with teachers; discuss in our group and on staff meetings. (...) "They also need to appreciate them, whatever they get, so tell them and encourage them to come."* (Informant 6).

As such, she recognized both the role of language through talks and the role of the teacher in bridging the gap between boys and girls and even stated that *"...it is up to the teacher to encourage them."* (Informant 6).

The better resourced school expressed a different view when it came to girls' and boys' engagement with STEM. On whether they saw any differences between the genders the teacher replied:

> *"No, there's no difference between girls and boys in using technology in our classes. Both of them are working hand in hand to achieve the same objective."* (Informant 7).

She was then asked if this had always been the case in her teaching practices. In her answer, she referred to the historical disparities between boys and girls and used normative words, such as '*should',* when she referred to gender equality in STEM:

> *"Both boys and girls should be given same opportunities when it comes to technology. But in the past few years, that has not been happening. Until now, when the government has decided to give laptops to primary schools in the rural areas, that is maybe when we will have a change in the technology world between boys and girls."* (Informant 7).

Furthermore, she reflected on girls' engagement with technology in other parts of Kenya and related this to attitudinal impacts and external factors, such as geographical location and the home environment:

> *"People who live in the rural setup think differently. So we need to look at the roles of girls and women and their contribution. Mainly in rural areas. I think problems in terms of gender inequalities and in relation to ICT comes from perceptions in rural areas. The parents also play major roles in the education. They need also to be sensitized about technology and all that. Because I think there is much more that can be done to encourage the girl child and taking technological subjects from the early stages."* (Informant 7).

The way the teacher highlighted *'rural areas'* was important for the social analysis, since she stated that perceptions that shape gender inequalities in relation to ICT comes from there.

She further explained an awareness that the problem of the digital gender divide is not just related to access to education, but the persistent gendered associations of technology and ICT:

> *"I think it's just like the rules we are associating with gender. Yeah, but, I think it's more articulated within STEM areas, because in terms of going to school, everyone wants their girls to go to school these days.*" (Informant 7).

Again, this demonstrated a conjunction between ICT and STEM. The teacher also described how she thinks that there is a shift taking place in Kenya and that girls are being more encouraged to learn technological skills:

> *"Myself, I tend to believe that things are going to change drastically. Because now the girl child is more empowered here in Kenya. Here, people talk about the boy child being endangered because now the girl child is coming up very strongly in terms of education, employment and all that. You can see key ladies being in powerful positions in the Ministries, politics, so I think the girl child is now more encouraged to take also technological skills for the wider market."* (Informant 7).

From a discursive perspective, the teacher arguably challenged patriarchal ideologies through this statement. This can be seen in descriptions of how the *'boy child'* is *'endangered'* and *'the girl child'* is *'more empowered'*.

Lastly, the social analysis showed that the public schools have strong ties to the government since they are obligated to follow the national education policies and receive both funding and trainings from them. However, the two schools in our sample differed from each other when it came to financial resources. This influenced their ability to implement the new ICT policies. Still, all respondents expressed an awareness of the persistent gendered associations of technology in Kenya in general. However, in contrast to the lower resourced school, the better resourced school did not experience any disparities in girls' and boys' engagement with ICT. Finally, all respondents expressed that teacher trainings on gender awareness and pedagogical approaches in the classroom are important, both in terms of challenging traditional gender norms and to enhance teachers' technological skills.

5.2.3 Alternative education providers

As explained in the case selection, there is an under-provision of schools in some areas in Kenya where alternative education providers have stepped in to fill the gap. One of these areas is the urban slum Kibera in Nairobi. For this study, we interviewed two founders and one teacher from two different APBET schools in Kibera. One of the schools have a computer room with four donated computers, and the other school have sporadic access to the computers at the church library nearby.

- **Alternative education providers and education policies**

First, the social analysis showed that in 2016, the APBET schools became legally recognized as official providers of education through the enactment of the Basic Education Regulations under the Basic Education Act. However, this was not the case before, which both of the founders brought up as a problem:

> *"If you look at the education policy Act 2013, it somehow oversaw that and they said that they only have public and private, and now we're wondering: where are we? Because we don't want to be private, but neither do we want to be public. But we want to be called a school that is serving the low income families."* (Informant 10).

> *"It is formal education in an informal setting. So, we are in between; we are not private, we are not public"* (…) *"So we are alternative; it definitely means we are filling a gap for the government and that is why I really think they need to take us more seriously"* (Informant 9).

The statements highlight that the APBET schools are supplementing the government's work. Despite the legal recognition the respondents expressed that they still have not been properly recognized by the government. Both founders stated that even though they are private providers of education, they deviate from the government definition of '*private schools'*. This is because even if they are founded by individuals or private organizations, they have limited financial resources since they depend on donors and are situated in impoverished areas:

> *"So the government should come in and bring in some resources or restructure on how the schools that are within the informal settlement, can be incorporated or can be funded and again, be regulated."* (Informant 10).

Furthermore, both founders articulated that despite their limited financial and operational support from the government, they still have to adhere to the formal education requirements. These include demands on course content, teachers' education and food provision for students:

> *"So we're trying to do a lot of necessary documentation to help us provide education that is of good standard that is making sense in terms of what they require." (…) "… something like what we are doing, is actually not something you should call alternative. Something that is really formal education, especially when they ask us to meet the formal standards of getting trained teachers, getting a salary, feeding the children and doing all the other things in classrooms and stuff like that."* (Informant 9).

However, when we asked about the progression of the education policies in terms of an increased focus on gender and ICT, they expressed that their main problem was that they receive little support from the government to be able to live up to these policies, even on a basic level:

> *"That is a problem, because these people, doing this they just sitting in an office. They don't consider your opinions; they just want you to use it. That is a problem that require a lot of resources for it to be implemented. You see, there's no option. The policies says that if you want to operate a school in Kenya, you have to follow the Ministry of Education's guidelines and rules. So if you don't comply, you'll be knocked out."* (Informant 10).

From a textual perspective, this statement shows tensions between the APBET school and the government since the founder describes the Ministry of Education as '*these people'* that are '*just sitting in an office'*. He also recognized the government's authority by saying that their school will be '*knocked out*' if they do not follow the national education policies. He expressed how the implementation of policies is problematic due to the lack of guidance or support on the ground from the government.

In relation to ICT, the same founder mentioned that he knew that ICT integration is part of the policies that they have to follow and that the inclusion of ICT in the syllabus is mandatory for the secondary school students. Again, he pointed out that while the government sets these demands, they do not help the APBET schools enough to live up to the policies. The teacher at the same school said that while the under provision of resources has made it difficult for them to comply with the more recent education policies, they have received some assistance:

> *"Yes, the government has provided some gadgets for learners, mostly class 1s, where teachers now use tablets and computers to illustrate classes." (…) "And then the secondary students now take computer science as a subject. But at primary, there is not yet a given curriculum that has been provided by the Ministry that we can use to teach computer, so now we only teach some basics."* (Informant 11).

The teacher expressed that the government neglects the needs of the APBET schools, which make policy implementation difficult. While both schools mentioned that they have access to some computers, it is not enough to cater to all the students. Only one of the schools has a computer room in the school with four donated computers. The school described how the poor infrastructure and the security level in Kibera also impede successful ICT integration and policy implementation:

> *"Yes, we're having a computer room." (…) "So we embrace it, but we have loads of challenges. Even the public schools are experiencing the same. It is not successful, because the power is a problem, electricity and security to protect. They are being stolen."* (Informant 10).

When we asked the founders what they thought that the government should do to make the policies more useful and realistic, both founders mentioned that they would need '*a middle ground way'* between requirements for public and private schools:

> *"If you look at what is in the policy guideline that the MoE currently constitutes, we can't meet the private or the public, but we can meet some of them. So this has to be a middle ground way. As I told you, it is also very important that the alternative schools also have a say. (...) How do we*

subsidize so people also can confidently run these schools? In the end of the day, we are also serving the children of Kenya. So I think that is why we need a middle ground policy." (Informant 9).

The sentence "*...very important that the alternative schools also have a say"* shows that even though they are legally recognized by the government, they still experience that the policies are not applicable to the APBET schools. This, combined with the lack of financial and operational support, demonstrates loose ties between the government and the alternative education providers.

- **Alternative education providers on gender and ICT**

In regard to gender and ICT, the discursive analysis revealed that the respondents focused less on specific gender disparities, and more on how all students in their schools were marginalized. They expressed that the schools' geographical location, the impoverished area of Kibera, impeded access and use of ICT's for all students. One of the founders referred once again to the government's neglect of the APBET schools and explained that the lack of provision of educated teachers instills a belief amongst the students that they are different to other students. He said that the key to achieve equal standards to public and private schools is to raise the quality of ICT-teaching:

"But if we get good teachers, you will realize that there are no differences between students in informal settlements and other students out there. So please give us something that works for us! That if a child goes here, and they see that what somebody else is getting in the upper market is then something I can also be able to do here, like ICT, then, I am OK. But every time they are looking up and thinking: They are better, the government is giving them textbooks, computers. Even psychologically it's really hurting the children like that." (Informant 9).

Both of the founders described that students need ICT skills to be able to advance beyond the informal settlement. They expressed that the schools' ability to teach subjects related to ICT is key to lift the student's confidence and to increase their life possibilities:

"For us now to survive and make sure that children are on track, we need to have it. Because children in the public schools, they have it. In the private schools, the academies, there are also

provided. So for us to be on the right track, we just have to get in it. These are the resources we don't have, but it's good if we have them." (Informant 10).

On a textual level, the founder expressed an awareness of the necessity to incorporate ICT in teaching as he described it as something they *'need to have'*. The teacher at the same school also acknowledged the need to *'embrace the digitalization'*, but stated that they currently were only able to integrate ICT on a basic level:

"You know everything is going digital, and you have to embrace the digitalization." (…) "So they need to be taught on how to use computers. We give them some basic computer skills and basic things that we teach them are about introduction to computers, processing some spreadsheet and some basic presentation and some basic internet." (Informant 11).

In relation to gender, we asked if boys' and girls' engagement with ICT differed. The teacher at one of the schools answered:

"I find it that girls are interested in using computers more than boys. Boys will only come here to play games, but girls want to know what is going on more than boys." (…) "I think the boys are faster at learning. But they also mainly want to play games and do the fun things. The girls are slower but concentrate more." (Informant 11).

This showed a different discourse from previous interviews with the public and private schools where all respondents but one[3] stated that the male students were overrepresented in terms of access and use of ICTs in school. The teacher described how the girls in his school often use the computers for writing and mastering the learning programs, whereas the majority of the boys are more interested in the games. When we asked if he sees this as a problem, he answered:

"I don't know. For the primary I don't think it's a problem. Because it's just basic. But for the older students I think, because if they want to be examined they need to know some things." (Informant 11).

[3] Interview 7, Informant 7.

Furthermore, the founder of the same school was asked on differences between boys' and girls' engagement in STEM subjects:

> *"Well, you must know that in Kenya, our culture, girls did not always go to school. But now they do and it is very important. But some subjects, like math and science, it is more popular for boys. And the girls like English and social studies better. But we try to change it and show that science and technology is for girls too. We have this one girl that is really good and so we try to tell the other girls that look, you can also do that. But it is difficult to change things that have been like that for a long time."* (Informant 10).

In terms of interdiscursivity, the focus on the role of culture correlated with other respondents' descriptions of gendered associations with STEM and ICT in the previous interviews. In his statement, the founder put focus on '*culture'* and how historical patterns are difficult to change when schools are trying to change perceptions about girls' engagement within STEM. The founder was then asked whether this was something he addressed with his teachers:

> *"Yes, yes we are. We say that it is important that girls also learn these subjects. Also now when you need to be digital it is important that all children learn the same."* (Informant 11).

As such, the founder stated that they did talk about issues with gender disparities in class among the teachers. However, he did not articulate any specific strategies of how the outcome of these talks were implemented in practice.

To sum up, the discursive analysis showed that in the narrations of the APBET schools, the focus on marginalized children in general was more prominent than a focus on gender disparities in particular. As such, emphasis was put on how all the students in their schools can get access to and become literate in the use of ICTs. They expressed that the lack of financial and material resources were main obstacles for integrating ICT in the first place. This inhibited them to comply with ICT policies. Thus, the main problem for the APBET schools was related to the first order divide of accessibility to ICTs. In relation to this, the respondents highlighted that if the government could give them financial and operational support, then

they could better comply with the new education policies on ICT. Finally, due to these challenges, gender disparities in ICT were not the main concern for the respondents. However, they still expressed an awareness of the issue. One teacher interestingly reported that more girls than boys were interested of ICT in his class. Still, the founder of the same school reported that the STEM subjects were more popular among boys. He expressed a willingness to address gender disparities with his teachers, which showed that an awareness of how gender issues have arguably started to gain ground in the APBET schools in our sample.

5.2.4 Analysis of findings: interviews with Kenyan schools

This section will analyze the findings from the interviews. This will be done for the purpose of answering how education policies influence primary and secondary schools and to establish the dominant discourses on gender and ICT in the narrations of teachers and principals. First we will present how policies influence private, public and APBET schools. Thereafter, we will outline the different discursive patterns that we traced when the respondents talked about gender and ICT.

5.2.4.1 Influence of national education policies

The social analysis unveiled that the influence of education policies differed depending on the schools' institutional character, since this affected their ties to the government. We found that private schools had weaker ties to the government, since they are not bound to comply with Kenyan education policies. On the other hand, the public and APBET schools are both legally bound to the education policies. Still, among the the public and APBET schools, all schools but one expressed that they experienced a disconnection between policy requirements and implementation. For instance, the low resourced public school expressed an aim to follow the new ICT policy guidelines, but struggled to do so due to limited financial resources and a lack of secure facilities to store computers. The APBET school also mentioned that they struggled with ICT policy compliance, since they received little financial and operational support from the government to integrate ICT in the first place. Only the better resourced public school did not mention any difficulties in complying with the national education policies on ICT. This might be since this school had received more financial support and training from the government than the other schools. Thus, the level of government funding and support were found to influence public and APBET schools' abilities to imple-

ment the new education policies on ICT. This, because these factors can be seen as prerequisites for facilitating both direct access to ICT equipment and development of teachers' skills and knowledge. This shows that even the schools that are legally bound to the education policies experience a disconnection in their ties to the government, since the majority of the teachers and principals reported that they struggle with implementation.

Furthermore, all respondents expressed an awareness of the increased focus on ICT integration in the national education policies. However, the respondents did not express the same awareness of how gender equality in education also have gained recognition in the education policies. Rather, the discursive analysis showed that the respondents were influenced by other factors when they talked about issues or progression with regard to gender equality, such as culture and the home environment (Informant 1) and parents' role in education (informant 7). This shows that other discursive influences are influential and shape the teachers' awareness of gender in relation to ICT in schools.

This shows that, on the one hand, discourses on ICT in the education policies have been transferred successfully to the public and APBET schools, but that they lack in implementation. On the other hand, it shows that policies on gender have not been discursively transmitted, but that teachers and principals are influenced by other discourses in how they make sense of gender disparities in education. The finding that policy discourses are not transmitted to all schools as expected in our theoretical model and the implications this has for the digital gender divide will be addressed in Section 6.

5.2.4.2 Dominant discourses on gender and ICT

In regard to the dominant discourses on gender and ICT in teachers' and principals' narrations, the discursive analysis showed that all respondents expressed an awareness of the importance to integrate ICT in their teaching. They stated that this is either something that they have done or are aspiring to do, as in the lower resourced schools. The textual analysis also showed that the respondents frequently mentioned STEM in conjunction with ICT. This was in line with previous findings in the literature which emphasized how associations between STEM and masculinity have been found to impede girls' identification with technology and ICT.

On gender in relation to ICT, the majority of the respondents expressed that they saw gendered associations of both ICT and STEM in their schools. This was seen in statements such as *"More boys than girls choose ICT related subjects."* (Informant 1) and *"... some subjects, like math and science, it is more popular for boys."* (Informant 11). Only the better resourced public school stood out, since the teacher stated that she had not experienced any disparities in her school. Still, the majority of the respondents articulated that the disparities in girls and boys' engagement with STEM and ICT in school was a problem. Furthermore, statements such as: *"...the culture, it has told them that math is made for boys."*; *"Girls have developed a mentality that 'boys are good in math, math is not meant for us, this is meant for boys'"* (Informant 6) and *"Our girls are not self-promoters, our girls will carry the boys' plates in after lunch, they don't question the boys."* (Informant 2), demonstrate an awareness among the respondents of how cultural norms infused by patriarchal ideologies shape girls and boys' relationship to ICT and STEM.

However, the discursive analysis showed that a majority of the respondents either overlooked or lacked an awareness of how to address the gender disparities. While some of the teachers expressed a need to talk about the issue, only the principal at the lower resourced public school stated that her teachers use active language and motivational talks to promote girls' engagement within STEM and ICT. This approach differed to one of the private schools, whose principal seemingly accepted traditional gender roles in the field of technology and did not make any mentions about how to discursively address this with his teachers and students (Informant 3). The APBET schools expressed that their main concern was to bridge the first order divide; the lack of access to ICT for *all* their students, rather than just for the girls. This shows how their primary concern was to solve access problems to ICTs for all, and that addressing gender disparities therefore become a secondary concern.

Thus, the dominant discourses on gender and ICT among teachers and principals is an awareness of gendered association of technology, but a general oversight or lack of awareness of how to address the gender disparities in practice. Being aware of the digital gender divide in school, but overlooking or not addressing it, is arguably to preserve the status quo of male dominated access and use of ICT in Kenya.

6 Discussion

This chapter will compare the findings from the education policy documents and interviews with teachers and principals to establish how discourses on gender in relation to ICT shape the digital gender divide. The findings and their practical and theoretical implications will be discussed in relation to our theoretical model as introduced in our theoretical framework:

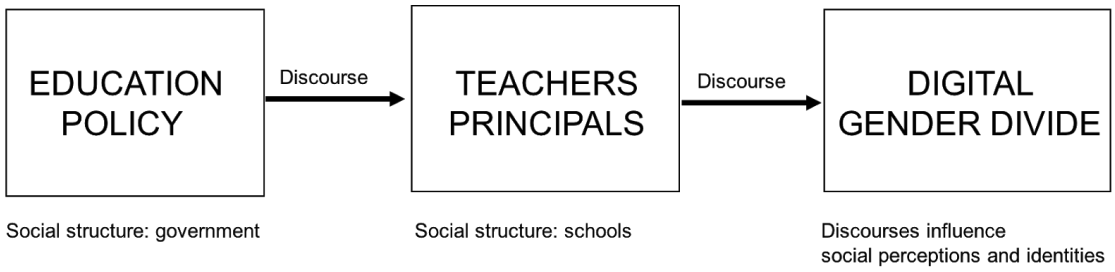

Figure 1 from Section 3.3.1: 'How discourses in the education system shape the digital gender divide'.

In the following sections we will first discuss the transfer of discourses from policy to teaching and thereafter how teaching narrations shape the digital gender divide. Lastly, our research contribution and suggestions for further research will be presented.

6.1 Transfer of discourses from policy to teaching

The analysis of the policy documents showed that a discursive shift has taken place in the Kenyan education policies. This is seen in how the promotion of girls' access and use of ICT and participation in STEM have become crucial objectives to achieve sustainable national development. After the NESP in 2014, reducing gender disparities in ICT and STEM subjects were mentioned as quantifiable goals with emphasis on teachers' pedagogical role in gender sensitizing education. However, the transfer of discourses on gender in relation to ICT from policy to schools was found to be disrupted. The disruption was particularly evident in three areas. First, the private schools were found to be disconnected from the government since they are not legally bound to follow the national education policies. Second, all the lower resourced schools in our sample expressed that they struggled to implement the new ICT policies due to a lack of financial and material resources. Third, the increased focus on gender equality in the education policies was not found to be transmitted to any of the respondents. This has both practical and theoretical implications that will be discussed below.

Despite the free public school reform in Kenya, more than half of the primary school students in Nairobi attend private schools (Zuilkowski et al. 2018). Since the private schools do not follow the national education policies, this means that teachers are not directed by the new progressions on gender and ICT in Kenya's education policies. This implies that students attending these schools are not exposed to the content of the policies, which inhibits the effect of the transmission of discourse to private schools. Furthermore, the respondents at the lower resourced schools stated that they struggled with ICT policy compliance, since they received little financial and operational support from the government to integrate ICT. This shows that even some of the schools that are legally bound to the education policies experience a disconnection in their ties to the government. When policy discourses that promote gender equality in access and use of ICTs in education does not reach all schools in the Kenyan school system, this arguably hinders a potential reduction of the digital gender divide. This is because the discourses are either not successfully conveyed to all schools, or consumed due to a lack of resources that hinder the implementation of new policy objectives.

It was also found that the change in policy discourse on especially gender equality did not seem to have been transmitted to the schools in our sample. The respondents did not mention any awareness of how gender equality in regards to ICT and STEM is a government priority. Instead, the respondents mainly referred to gender equality in ICT as being either promoted, or constrained, by cultural factors and/or the students' home environment. One implication of this is again that the efforts outlined in the education policies to bridge the digital gender divide are not transmitted to the consumers of the policies. This sheds light on theoretical limitations of our model.

Our theoretical expectation was that dominant discourses on gender and ICT in education policies would influence schools. However, it was found that only awareness of policy progressions on ICT had influenced the respondents from the schools in our sample. This raises doubts about the government's discursive power in shaping discourses on gender in relation to ICT, since the weakness in discursive authority arguably inhibits new ideologies to gain ground. Our theoretical assumption can therefore be questioned in terms of how discourses are transferred between social structures with authority, such as between the government and schools. We expected to see a transmission of the policy discourses on gender and ICT to all schools. However, as illustrated above this was not the case since the transmission

seemingly depend on the schools' institutional character (private, public and APBET) and whether they have the financial and operational capacity to implement the policies.

6.2 How teaching narrations shape the digital gender divide

With regard to teachers' and principals' narrations, the majority of the respondents saw gender disparities play out in classes on ICT and in STEM subjects. First, this shows that STEM and ICT were commonly mentioned in conjunction in both policies and teacher narrations. Second, it shows that the teachers and principals were aware of the digital gender divide. However, despite the respondents' acknowledgement that boys often were more engaged in ICT and STEM subjects, few mentioned that they actively addressed the disparities. Only one principal mentioned that her teachers promote girls' engagement in ICT and STEM, and have motivational talks with both students and teachers. Nonetheless, the overall lack of concrete efforts to address the disparities may have implications on the digital gender divide, since merely expressing an awareness of gender differences in ICT and STEM will arguably not reduce the differences. This is because by not challenging the patriarchal ideologies that normalize technology as something boys 'do', the teachers and principals can be seen as maintaining a hegemonic discourse that allows gendered association of STEM and ICT in schools. This means that the digital gender divide is maintained, despite the progressive changes in policies to reduce gender inequalities in relation to ICT.

Again, this relates to limitations in our theoretical model. Our theoretical argument was that discourses on gender in relation to ICT in social structures with authority, influence men's and women's ability to access and use ICTs. In order for discourses to shape the digital gender divide *positively,* i.e. making access and use of ICT for girls and boys equal, the discursive changes in policy documents need to be successfully transmitted to teachers and principals on the ground. Furthermore, since the respondents mentioned that gendered associations of technology stem from the Kenyan culture, merely a change in education policy discourse is arguably not enough to reduce the digital gender divide. Teachers and students are also subject to other discursive influences, from for instance the home environment, that shape their perceptions on gender in relation to ICT. However, if policy discourses on girls' and boys' equal access and use of ICT would be successfully transferred and expressed by the implementers of the education policies, namely the teachers and principals, this could arguably bridge the digital gender divide in the long term.

Lastly, how discourses on gender in relation to ICT in the Kenyan education system shape the digital gender divide are therefore found to depend on two main factors. These are (1) the degree of transmission of discourses between the government and schools and (2) whether gendered associations of technology as a 'male activity' persist in discourse. Thus, when policy discourses are altered, but not transmitted, and traditional gender roles in relation to technology remain unchallenged, the impact on reducing the digital gender divide in the Kenyan education system is limited.

6.3 Research contribution and suggestions for further research

Previous research has shown that despite the growing recognition of the digital gender divide in SSA, there is little academic consensus on the underlying causes and practical strategies for reducing gender disparities in access and use of ICT in the region. While quantitative studies have shed light on how structural inequalities impede women's access and use of ICTs in SSA, the impact of gendered discourses of technology is understudied. This case study has contributed to the literature on the digital gender divide with a qualitative examination of how discourses on gender and ICT in education policies and teaching narrations shape the digital gender divide. We have collected primary data from the Kenyan education system and drawn on insights from previous literature on the digital gender divide, gender studies and CDA, to advance the understanding of the role of discourse in shaping the digital gender divide in Kenya. Based on our findings we suggest topics for further research that can advance the scholarly debate both theoretically and empirically.

- **Focus on rural areas in Kenya**

Our study was conducted in Nairobi, which is an urban area. However, some of the respondents in our study stated that traditional gender roles in relation to technology are more visible in the rural areas. Thus, to gain a representative understanding of discourses on gender in relation to ICT in the Kenyan education system and further generate empirical insights on the digital gender divide in Kenya, we suggest that future studies include schools in the rural areas.

- **Replicate the study in other SSA countries**

Kenya was selected as a critical case example since it is one of the forerunners of the digital revolution in Africa. As such, other countries in SSA are expected to undertake similar development patterns with regard to ICT adoption in the near future. Since equal access and use of ICTs are prerequisites to sustainable economic growth, gender-sensitive strategies that guide the adoption of ICTs are needed. Rwanda, for instance, has already formulated goals to become an IT hub, but the digital gender divide persist despite government efforts to reduce it (Mumporeze & Prielen 2017). Therefore, examinations of discourses on gender and ICT in other SSA countries merit more academic attention.

- **Develop the theoretical model**

To advance insights on how discourses shape the digital gender divide in practice, we suggest that future studies develop our theoretical model. Since students can be seen as the end consumers of discourses in the education system, the model could be extended to include how students' perceptions of gender and ICT are influenced by teachers. Interviews with students in combination with observations of lectures would enable an analysis of how students consume and understand discourses on gender in relation to ICT and how these impact their access and use of ICTs.

7 Concluding remarks

The speed of digitalization has generated disparities in access and use of ICTs between men and women in SSA where women are lagging behind, both in terms of ownership of ICTs and in developing technological skills. This is known as the digital gender divide. Several quantitative studies have examined how structural gender inequalities influence the digital gender divide. However, scholars from the constructivist school have pointed to a research gap and called for more analyzes on how descriptions and perceptions of gender in relation to technology also influence how and by whom ICTs are accessed and used. This study has contributed to the research field by addressing this gap with a qualitative, exploratory case study of discourses in the Kenyan education system.

We have argued in line with the constructivist literature that the digital gender divide can be seen as a consequence of how gendered associations of technology are produced through discourses that manifest gendered divisions in relation to technology. We have put forward

the theoretical argument that discourses on gender in relation to ICT in social structures with authority, such as governments and schools, influence men's and women's ability to access and use ICTs. More specifically, this paper has sought to answer the overarching research question: *How do discourses on gender in relation to ICT in the Kenyan education system shape the digital gender divide?*

To this end, we have conducted a three-dimensional CDA of education policy documents and interviews with Kenyan teachers and principals. Through the analysis of text, discursive practices and social practices we aimed to see how language, embedded in social behavior and structures, impact the digital gender divide. We found that a discursive shift has taken place in Kenyan education policies towards promoting girls' access and use of ICT. However, due to fragmentations in the ties between the government and the schools, the transfer of discourses on gender equality in relation ICT from policy to teachers and principals was found to be disrupted. This was particularly evident in three areas. First, the private schools were found to be disconnected from the government since they are not legally bound to follow the national education policies. Second, all the lower resourced schools in our sample expressed that they struggled to implement the new ICT policies due to a lack of financial and material resources. Third, the increased focus on gender equality in the education policies was not found to be transmitted to any of the respondents. Overall, we found that teachers and principals in all schools demonstrated a general awareness of how traditional gender roles, infused by patriarchal ideologies, influence girls' and boys' relationship to ICT and STEM. However, the majority did not articulate any concrete efforts to discursively challenge the disparities to promote girls' access and use of ICTs.

Thus, how discourses on gender in relation to ICT in the Kenyan education system shape the digital gender divide are found to depend on two main factors. These are (1) the degree of transmission of discourses between the government and schools and (2) whether gendered associations of technology as a 'male activity' persist in discourse. This study concludes that since policy discourses were altered, but not transmitted, and traditional gender roles in relation to technology remained unchallenged, the impact on reducing the digital gender divide is limited. Thus, by not actively confronting the patriarchal ideologies that normalize technology as something boys 'do', the teachers and principals can be seen as maintaining a hegemonic discourse that allows gendered association of STEM and ICT to play out in school.

This arguably maintains the digital gender divide in a status quo, despite the policy changes that aimed to reduce the digital gender divide.

Based on these findings, our suggestions for further research are to replicate the study in Kenya's rural areas and in other SSA countries. This, in order to gain more insights on the impact of discourse in a region that is undergoing rapid digitalization, but where the digital gender divide persist. In terms of theoretical advancements, we suggest scholars to develop our theoretical model. Since students can be seen as the end consumers of discourses in the education system, the model can be extended to include how students' perceptions of gender and ICT are influenced by teachers. This would enable an analysis of how students consume and understand discourses on gender in relation to ICT, and arguably advance the understanding of how discourses shape the digital gender divide in practice.

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APPENDIX 1

List of policy documents

Document name	Year of publication	No. of pages
Sessional Paper No. 1 2005: a Policy Framework for Education, Training and Research	2005	110 pages
Early Childhood Development Service Standard Guidelines for Kenya 2006	2006	72 pages
Safety Standards Manual for Schools in Kenya	2008	78 pages
The Biosafety Act	2009	46 pages
The National Special Needs Education Policy Framework	2009	65 pages
TIVET Institution Guidance Counseling Policy and Operational Guidelines 2011	2011	25 pages
Education Sector Report 2013/14- 2015/16 Medium Term Expenditure framework	2012	118 pages
Sessional Paper No. 14 of 2012.: A Policy Framework for Science, Technology and Innovation. Revitalizing and harnessing Science, Technology and Innovation in Kenya	2012	37 pages
The Universities Act No. 42 of 2012	2012	65 pages
The Kenya Qualifications Framework Bill of 2013	2013	14 pages
The Science, Technology and Innovation Act, 2013 No. 28 of 2013	2013	37 pages
The Technical and Vocational Education And Training Act No. 29 of 2013	2013	45 pages
The Basic Education Act, No. 14 of 2013	2013	93 pages
The Second Medium Term Plan for Vision 2030, 2013 - 2017	2013	72 pages
Strategic Plan 2013-2017: Towards a Globally Competitive and Prosperous Kenya	2013	85 pages
National Education Sector Plan. Volume one: Basic Education	2014	251 pages

Programme Rationale and Approach 2013-2018		
National Education Sector Plan. Volume two: Operational Plan 2013-2018	2014	105 pages
Draft Technical and Vocational Education and Training (TVET) Policy	2014	35 pages
National Curriculum Policy	2015	33 pages
Education and Training Gender Policy	2015	46 pages
Draft: The Basic Education Regulations	2015	16 pages
The Basic Education Regulations	2015	16 pages
Revised Policy Framework on Nomadic Education in Kenya	2015	31 pages
The National Council for Nomadic Education in Kenya: Strategic plan 2015-2016 - 2019-2020	2015	38 pages
Kenya School Readiness Assessment Tool (KSRAT) Launching Programme	2015	16 pages
Kenya School Readiness Assessment Tool (KSRAT) for children transitioning to primary one	2015	15 pages
Education for Sustainable Development Policy for the Education Sector	2017	58 pages
Documents Required for Registration of your Institution	No date	1 page
Electroic Messages	No date	1 page

APPENDIX 2
Interview guide

Background

What type of school is xxx?

How long have you been a teacher/principal for?

What made you choose to become a teacher/principal?

What is the name of the school you are working at?

What subjects are you teaching?

National education policies

How free are you to choose the course content and formulate the course curricula for your students?

Do you follow government policies for education and ICT? Or any other frameworks? Are there any challenges?

To what extent are you guided by national education policies or other frameworks?

Do you know about any specific regulation(s) regarding gender and ICT in national education policies?

In 2010, the Kenyan government adopted a new constitution with increased focus on gender equality - is this something that you have noted in the guidelines that you receive?

Have the government assisted your school in any way? (Funding, resources, education for teachers etc.)

What role do you think the government should play in terms of deciding what schools should uphold/maintain/advocate when teaching ICT?

Discourses on gender & ICT

Do you teach computer science/technology to the students? If yes, have the teachers received training in computer science? If no, why not? What is hindering you?

To what extent are the students free to choose what subjects they are being taught? Are all subjects mandatory?

Have you noticed a difference in what subject boys and girls find interesting? If so, why do you think that is? Do you take any precautions as a teacher to remedy this?

In classes about IT/computer science, do you see a difference in how boys and girls interact with ICT and how they perform in the classroom?

Do you think that the way we talk about technology has impact on whether girls or boys want to study or pursue a career within IT?

APPENDIX 3
Interview transcripts

Interview 1

Informant 1
Age: 37
Gender: Male
School: Private international school in Karen, Nairobi
Position: Secondary school teacher

Thank you so much for taking the time. So before we get going I just wanted to ask if it's okay that I record our conversation?
No problem it is fine.

Thank you, so just for your information your name will not appear in the report, we will only state what type of school you're coming from and maybe use some quotes from the conversation if that is okay?
Okay, yeah that is fine.

Great. Do you have any questions before the start?
No I think we can just go ahead I don't have any questions, I'm just curious to hear what you will be asking me *laughing*.

Okay, great. So yeah, maybe if you could just start with telling me a bit about your background. Specifically, in relation to your career as a teacher and now at GEMS, what you do there.
Yeah, as a bachelor I did computer science, so I studied computer science in college and then I did a diploma in computing. And then I taught in a few colleges and then I came into the international school system and this is like my third school that I'm currently teaching in.

So have you done any teacher training?
Yes, I have done a post-graduate diploma in education.

Okay, and how long have you worked at GEMS for now?
At GEMS now it has been almost a year.

Okay right, so you started around the same time as *name of other interviewee*?
Yeah that's right it was around the same time as XXX yes.

So what is your role at GEMS? What do you do?
At GEMS I'm responsible for teaching ICT from year 7 to year 13.

Okay, for the younger kids is there a similar position to the one that you have?
For the younger kids no, we don't have a specific teacher. But they are getting someone I think for the younger kids.

Okay. So now I'm just going to ask you a few questions in relations to what frameworks and guidelines that guides you in your teaching process. So, are you free to choose the course content and formulate course curricula for the students in terms of ICT?
For year 7 to year 9 I'm free to choose the course content. But for the older years, that is from year 10 to year 13 there is a fixed course that they follow.

Okay, so who sets the guidelines for that course?
Yeah so we are guided by the exam bodies for which the school is registered so we select one of the exam bodies for the school and then that is what the school takes up.

Okay, so are those international exam bodies?
Yes, they are UK based exam bodies. The Cambridge and Excel.

So, how about the Kenyan legislation?
The Kenyan legislation for curriculum requirements?

Yeah.
No, because we are following the international curriculum from the UK we don't really stick to the Kenyan regulation, we are not bound by the Kenyan regulations in terms of curriculum.

In terms of the framework that you are following for the older students, does that also influence the course content of the younger students or is it different?
No we use it at least to guide us for what to include for the younger student. Because that will prepare them for the olders curriculum. So it guides us in a way in terms of what we teach them and what we offer to them. So yeah the curriculum for the older students does guide what we teach our younger students. Although with the young ones you have a bit more room to be flexible and to test a few different things to see where their interest lie.

So do you just teach strict ICT or do you also work together with other teachers to integrate ICT in other subjects?
We try and integrate ICT with other teachers and in other subjects in terms of, I assist the other teachers to incorporate ICT in their learning. And we also make the children use ICT when they do their work and their assignments and research. So we also have other teachers for example coming into the computer lab to do research, make presentations and so on and so forth.

Is there any teacher training for ICT?
We do have teaching insights at certain times and in certain periods so we have either the ICT teacher or an external person come in and talk about how can ICT be incorporated in other lessons.

And who could that external person be?
We have external teacher trainings on student campus so they will source the people that come in.

Okay, but so are they from private organizations or from government or does that differ?
No, mostly from private organizations, not from government. Because with our government constitution, the national curriculum differs quite a lot from what we offer.

Okay, do you know in what way it differs? What would you say are the biggest differences in terms of what you teach at your school and the national curricula for ICT?
With our curriculum, ours is more hands on, more practical. The government curriculum is a bit heavy on the theoretical side. So the content, they have quite a lot of theory content and very little hands on, practical content. But for us even the exam requirements that we have asks the students to do quite a lot of practical tasks whereas in the public schools I think they have only one project that they do. And then in terms or resources and availability of resources, not all schools that follow the national curricula have that wide access to computing resources so they won't be able to have as much time on the computers compared to our students.

And so, for your students is it mandatory to have ICT as a subject or how does that work?
So from year 7 to 9 it is mandatory and then in year 10 and 11 it was mandatory but now we have just made it optional.

So how does that work in practice, is it a timetabled course?
Yeah it is timetabled like the other subjects. So for example in year 10 and 11 they have ICT 3 hours a week and the younger ones have 2 hours a week.

And what would a regular class look like, what do you teach them?
For now, I'm focusing on the Microsoft Office package so we might teach them how to work with spreadsheets, how to make presentations, how to make a database, teach them a skill and then they sit in the lab and the actually do the task in front of the computers.

So, as I mentioned we are focusing in the gender divide in regards to access and use of ICT in Kenya and focusing on education as an important actor to bridge that gap. So I just have a few questions in relation to that. Have you noticed a difference in terms of interest in ICT between boys and girls amongst your students?
Yes, there is a difference. Especially when there is an optional subject you will find more boys than girls. And for the girls who have chosen it, the few girls that do choose it, their performance is slightly lower than for the boys.

Okay, so it's for the oldest students that it is optional?
Yes.

And by that time they have had the same ICT training during the years leading up to that?
Yeah, before that they have all gone through the same training when it was mandatory, so yeah the foundation is the same for all of them.

Yeah, so why do you think it is that there is a difference?
I think, looking at ICT, because we are teaching both ICT and computer science. Many associate computing as something being similar to math, so something that requires mathematical knowledge, requires that you can think outside of the box kind of mentality, so some fear that because of that oh it's just like math or like physics so I don't think I'll be up for it. So that is one reason. And I also think that perceptions generally, based on, even from their parents and from the generation they come from, the parents tend to look at programming and things like that as a man's' profession, being a computer technician as a man's profession. So it hasn't really been instilled in them that it is a profession that can be taken across.

So you are mentioning math and physics, is there a difference between boys and girls there as well?
In math and physics, yes there is a difference.

In what way?
Ehm. The girls tend to maybe stay away from those subjects. Yeah.

And why do you think that is?
I don't know if maybe it is guided by their careers, so that they see maybe math and physics leading to engineering and that type of courses that are more man like courses and they don't want to go to the engineering kind of courses they want to go to other courses. So they kind of say that these subjects are leading to a certain career but not seeing that as being a female career. Yeah.

So when it comes to ICT, do you discuss this difference that you have noticed with the teacher team?
No but just to give you an example. We recently had a LEGO competition which involved programming of robots. And the teams that went, somehow they consisted of boys only, and so there were no girls that signed up for the competition.

Okay, did you talk to the students about it? And what were your conclusions from that?
We didn't get any feedback from the students but I think it did give some food for thought. But as a school I don't think we have discussed it yet with the students. It is something that we look at discussing with them.

Do you think about it as a teacher teaching ICT, in terms of how you can make it more interesting for girls?
Yeah I have thought about it. I think even before we get to the classroom level of how we can make it more attractive, I think we also should look at our career department and our career counselling department that guides the students in their subject choices. They need to give student more talks to enlighten them, because maybe their perception is, they have their perception because of ignorance and that they are not well informed. So maybe, if there were more career talks, more maybe visiting female entrepreneurs who have done ICT to come and give some talks to see what they did. It might change their perception. So then they could see role models, and have good role models that could come and talk and show them that ICT can be done by both genders.

Yeah, and that it is used by both genders in work. So I was just wondering, do you think about the way you talk to your students in class in terms of addressing these differences in boys being more interested in ICT?
I did make mentions about it. But I feel that as a teacher maybe I should do more. I feel that actually I need to do more. Especially when they start from the earlier years, that is where it is important to plant a good foundation and talk more to them about it. So maybe we haven't spoken to them about it as much as we should have. Because we offer it as a subject but we don't really counsel them or talk to them about it. But if it was done so between year 7 and 9 it would maybe make them look at it differently.

Yeah, do you know if you have any guidelines when it comes to gender equality in your school?
I don't think we have anything particularly but we do have a general policy that discourages any bias in terms of gender but no policy in addressing the difference especially when it comes to subject choices and the like. But I also feel, and this is just my personal opinion, if such a policy should exist, for it to be successful they would also really need the input of the parents because I feel that the parents also really influence their children. In terms of thinking of and choosing subjects.

Do you discuss these type of things with the parents?
Yeah we do have meetings with the parents. But I wouldn't say, at my time here at GEMS I wouldn't say that we have had a forum or that we have had an opportunity where we have been able to discuss gender biases and subject choices with them in detail. But I think it is something that maybe we should, and that it would help in addressing some of these issues.

Do you think it would be a sensitive issue to discuss with the parents?
No I don't think so because the parents are open minded. Maybe they just lack the information. So if they got the information they will be in a position to know how to better advise their children.

Just out of curiosity, the other schools that you have worked at, have you worked at a school that follows the Kenyan curriculum?
No, unfortunately I have not worked in one that follows the Kenyan curriculum.

Great, okay I think that was all we had actually Michael. Just a small formality before we finish up I just want you to please state your age and where you are from.
Okay, I'm 37 and I'm from Nairobi, Kenya.

Perfect. Do you have any questions before we finish off?
No I don't think so no.

Great, well thank you so much for taking the time to speak with us, we really appreciate it.
Okay, yeah I hope I've been of help and if you have any other questions you can just let me know no problem.

Great, thank you so much.

Interview 2

Informant 2
Age: 42
Gender: Female
School: Private international school in Karen, Nairobi
Position: Primary school teacher

So before we start, is it okay if we record the interview?
Yeah, that's fine.

Great. So we will probably use some quotes from the interview but your name won't be mentioned, is that okay?
Yeah, that's fine.

Great, thank you. Do you have any questions before we start?
No no that's fine. I just hope that I can be of help.

Maybe if you could just tell us a little bit about yourself. Where do you work now and why did you choose to become a teacher?
So, I my mother will tell you that I was always going to be a teacher. I would line up my dolls, and try to line up the dog, to give them lessons. So my mum will say that she thought from early on that I was going to be a pretty good teacher. Now I have a dad and a grandma who are both teachers so I've decided that I'm just trying to ignore that prediction that they put on my life *laughing*. So I messed around a bit with an arts degree and a psychology degree at Uni and then I got to the end of that and I thought well, what can I actually do with that because I couldn't get into the Honors or the Masters program. So I was like, oh okay well what am I actually quite good at. Okay, I'll be a teacher. *laughing* As you do. 21 at that point in time, 20 maybe. And then I started working all around Australia. So yeah I started teaching in 1999, so this is my 21st year of being an educated teacher. First, three, sex and then seven years were all spent in three different schools. Now. all within a private school network. Ranging from regional to a big city, regional city school, I think we had a student population of about 500 and in my last school were I was purely in a leadership role where I was for seven years we had a student population of about 750 students. It was a primary to year 6. And then at the start of 2015 I moved to Tanzania and spend 20 months coaching and mentoring the leadership team at a really large charity school in Tanzania. And that was very rewarding and incredibly frustrating, especially you know talking about ICT in a developing situation that was a very interesting case. And then, I took this job in Nairobi in August 2016. Sorry, I'm not very good at this 2016 so yeah I'm coming towards the end of my second year. Yeah oh so I was in Tanzania in 2014 then *laughing*. And here at GEMS I teach, I'm a primary school generalist so I teach English, math, science, history, geography and arts. ICT is kind of across the curriculum, I don't teach specialized ICT but integrated ICT and then human

development, personal and human development to my home class. So yeah, that's my background I guess.

Yeah, so what is the name of the school?
GEMS Cambridge International School. Yeah so our school is part of the international, global, so GEMS as in G-E-M-S stands for the Global Education Management System. So it's a for profit schooling network and so it is based in Dubai by the Varkey Foundation. It is a very affluent foundation that does accommodation and big business premium schools right down to lower income… the newest model in Africa, that they are rolling out at the moment, is low cost local schools that they call "Dream Africa" schools were they are buying underperforming or existing local government schools and making them low fee paying schools. So I think that if you can get into that network, I don't know how your, what type of schools you are already researching in Kenya but I think that would be really interesting because that is a foundation with big money to make ICT provisions accessible to really really lower to emerging middle class Kenyan families. And how they are going to go about doing that could be quite interesting to look at. Kristian might have a connection for you actually.

Thank you.
Yeah, cause that could be really interesting to see because those schools have to align more with the Kenyan education system, like they would run Kenyan curriculum under, I think, Kenyan educational standards and regulations and policies, I think.

Yeah, thank you. So for your school in regards to fees, is it relatively expensive?
At GEMS school?

Yeah.
Oh, it's extraordinary expensive. We are about the 4th most expensive international school in Nairobi and there is probably about 25 different international schools in Nairobi. Yeah so we are classed as a premium school by GEMS. And I mean even in terms of ICT capacity. You know all of our classrooms have, all being out of date, so our term is 5 years so we have 5-year-old ICT provisions from 5 years ago so yeah. We are a very expensive school. We are about the 4th or 5th most expensive school in Nairobi. And our classrooms all have the interactive whiteboards, we have you know classroom ICT labs, but we you know we don't have things like studios and green screens and a whole lot of the really innovative technology that you now start to see in schools, elsewhere. And we would probably be one of the most you know IT proficient schools perhaps in the Nairobi scene I think. Yeah.

And do you teach ICT as well?
Not as a distinct subject. But I integrate ICT through like science and history, English and geography. But it's really only ICT as a, not what you term full ICT in other settings so. And we have a specialized ICT teacher, and she is the one who teaches my class coding and programming and things like that. Whereas we in the class context we use it more, you know we use it more as consumers rather than as producers.

So you use it in class?
Yeah well no because we don't have any iPads at the moment, they all got stolen. But yeah in an ideal world I would have half of the class using iPads most of the time with different levels of engagement and interaction but yeah our iPad network is out of operation at the moment. But we can still go to the lab and do things there.

And there do you have both laptops and stationary computers?
All stationary computers there. So it is quite an old model in regards to you know ICT for learning.

So you are mainly working with primary students?
Yeah, grade 4s so 8 to 9 year olds.

Okay, and so do they all have ICT as a specific subject?
Yeah they, over the 40-week school term, of the school year they have stand alone ICT lessons in the curricula for 12, or not so for half of that. For half a term they do ICT in the computer room and the other half of the term they do LEGO and they do a lot of the ……. On computers with the LEGO, like programming their LEGO creations and how to make them spin and twirl and move and swing, and yeah all the rest of it. So they get the robotics and the technical LEGO in their other half term.

Would you say that based on the division between boys and girls, what is your experience in terms of interaction and engagement with ICT between boys and girls? Do you see a difference or is it more or less the same?
No I think honestly they are all pretty equal in their approach and in their enthusiasm to ICT. Yeah with what I do they all love it, they all engage with it, they all want to do it. They are probably equally proficient, so yeah no I would say that there are no gender differences at our age span of the grade 4s.

Do you have any insight on the younger once or the older ones?
Ehm. All across the primary school classes I would say that you would probably see the same profile, I would imagine. Even right down with the little ones I think. And then probably with the grade 5 and 6s as well. Cause with my kids both last year and this year I mean all the kids they really seem to be keen to use technology whenever they could. In so far as what they know of course. Like, yeah.

Do they have ICT as a subject all the way through secondary as well or do they choose at some point whether they want to specialize within more ICT or other type of subjects?
I think it's up until year 10, so secondary starts in year 7. I think in year 7, 8 an 9 they have the same model of ICT where it is actually a timetabled course or session. And then, I think from year 10 and 11, 12 and 13, so those last 4 years of schooling is when they can choose ICT as an option. As opposed to arts or sciences and that kind of thing. Actually a really good person to ask if you want some more information on that is XXX he is our secondary school ICT teacher and I can talk to him tomorrow and see.

Yes, that would be lovely.
And he has come to us this year, and he came from another Kenyan school and I don't know if that was an international school or a public school. So he might have quite a, or I mean to recent perspectives. So yeah I'll talk to him tomorrow. And I know that he have just been away on a coding course and that they are looking at improving our ICT capabilities or yeah provisions from next year. So yeah there is quite a forward focus. Yeah but I think that XXX might have a bit of a different perspective because actually in Kenya, I mean the kids in our school are very affluent Kenyans. Like, our parent body are Kenyans who have been educated in the US and in the UK and England, so we are talking really affluent educated Kenyans. I mean Kenyans are educated anyway but lots of our parent body are you know really, extraordinary educated. But our secondary kids still conform to gender roles. Like even in what you would class as a really you know, affluent and educated community, lots of our secondary students seem to fall straight back into old gender roles. And I don't know whether that is a Kenyan thing or a, I don't know what.

In what sense do you see that play out?
Ehm. Our girls are not self-promoters, our girls will carry the boys' plates in after lunch, they don't question the boys, so yeah really dominant type of gender roles. And they ran this most fabulous football competition and the B-tech PE class had to have, so we have more girls than boys in secondary and all of the, so they were in four different teams and even though teams had like three boys and four girls in each, every team captain was a boy. And no really noticed it, it was just the way it was. You know that really quite explains it. And equally, there are Kenyan teachers that are supervising it and they didn't think about it. It was not until one of my primary school colleagues said hey, aren't those players' girls? Why is she not the captain? You know, probably in Australia you would have put them two and two or at least you know have drawn straws or whatever. Whereas here it is just you're the captain, you're the captain, you're the captain. You know, it's all little things but when you start looking at a few things in a row I think it gets quite interesting.

Yeah, do you discuss that at all within your teacher team?
Yeah it came up in the secondary team. I only know that because I have friends who work in the secondary department. In our primary school the gender divide is not significant enough to warrant a conversation about it. Like I mean, probably in the primary we don't have as defined gender roles as we start seeing in the secondary.

Why do you think that is, that you don't see it in the primary section but then it starts playing out in the secondary section?
I'm not sure. Culturally, just from gleanings, culturally in Kenya women still have… I mean there are lots of progressive women in Kenya, some really significant women in Kenya, but you know if you look at government and that it is still a very male dominated culture here. And if you, even if you extrapolate out to wider society, I mean there is a percentage of girls not going to school because they are having their period or something like that. Like there is this massive of what it means to be a woman in Africa. They often end up having, like, what it means to be a woman in Africa is very different in terms of what they can access and their availability I think whether or not that is still true, I think you can see it even in the more affluent families. Actually I haven't thought about it that much but it was interesting to see, even in our secondary student population

who are I mean coming from affluent Kenyan families, they are the next generation of Kenyan women. It's either that or that we have particularly assertive boys.

Yeah, how many students do you have at the school in total?
At the whole campus I think it's around 300. We have about 140 in the primary school I think. Or maybe 130, and I don't think that they are more than 170 in the secondary school. We are well under capacity and we don't seem to be growing at the moment.

Do you receive funding or support from the Kenyan government at all?
No not at all. No international schools in Kenya does.

But do you have to follow the same regulations as public schools or is it different?
I don't think we are. I think that the one part of the Kenyan policy that we do adhere to is that we have to teach some elements of Kenyan history and culture. And we teach Swahili as well. So I don't know but I think that they might be government education policies. But, I'm really not sure. I don't know of any Kenyan government education policy that I'm bound to as a teacher. Which is yeah, I mean I'm teaching Kenyan kids in Kenya.

So the curricula that you use is set by GEMS?
Yeah so we use Cambridge International Education Curricula, which is British. The international schools here in Nairobi use either that or the British National Curriculum. There is one primary American school that follows the American curriculum, and then I think maybe one IB-school. And then there is the next level schools, which are the lower fee paying international schools and they like St. Christopher's in Kilimani, they do a blend of Kenyan curricula and international curricula. Whereas we do no Kenyan curricula at all.

And there is nothing you have to comply with?
As a teacher in a classroom in our school no. There is not even reporting or monitoring and evaluations, or child protection law. There are school policies but they are international policies for all that.

And the schools is open for any nationality?
Yes, as long as you pay the fees. Yeah. It is an interesting thing, because in Australia as a classroom teacher you would known and been bound to every piece of national legislation. So this international schooling business is a really interesting thing.

Are most of the teachers international?
In the primary school it's about a 60-40 split, 60 % internationals and about 40 % Kenyans and in the secondary it is about the other way. I think part of the reasons why parents choose international schools for their children is because they want, you know they are obviously exceptionally better than Kenyan local schools. So my understanding is that it does have to be, and I don't know if it is government mandated or if our school have chosen to do it but I think there is a quota, in our school there is a quota that X number of teachers have to be local hires.

So you mentioned that you are teaching science as well, so just in general, do you notice any differences or see any patterns there again between boys and girls in terms of interest or engagement?
Yeah I honestly if I think about my cohort and my learners they are all just, they just love learning and they look forward to learning. So I mean now we're working on magnets and their task this week is that they have to design a vehicle that demonstrates magnetism, or the forces of magnetism, and they are all equally keen and there are no disparities between boys and girls. If anything the girls probably work harder because the boys get distracted and want to pimp up their vehicles too much.

And so when you teach, do you ever think in terms of how you talk to boys and girls, that you treat them differently?
No I think probably, as a human being first and as a teacher second, my students are my students and we look beyond gender. I look beyond gender. I have the same expectations and the same approach. Yeah I mean they are all learners and they have ideas and they have enthusiasm and passion. And I think also we had, years and years ago back in Australia we had a big session on gender equality in education through our school system and I think probably I was aware of it all before but they were just reinforcing it back that they are all learners and particularly in the primary years to expose everyone to every opportunity and to maintain equity in all of your approaches means that everyone has got the entry point that they need.

Do you discuss that within your teacher group? Do you have guidelines in terms of gender equality where you work now?
No. No.

Do you think that your colleagues has the same awareness as you have?
Ehm. Well in the primary context I think. This might sound naive but in the primary context I think children are less refined in terms of, particularly when they are in year 3 and 4 they are developing their humanity more than being a boy or a girl so to speak. You know, I'm trying to think about my colleagues but nah I think they would be alright. I think that everyone would be pretty equitable in their approach to boys and girls. Like last year we had a teacher, and she was terrible towards her boys. She basically, her attitude was that they are all just smelly, pre-teen boys and she would say that to us as colleagues and I remember telling her that don't forget that they are human beings as well, you know quite bluntly stick that back at her. But no I think that generally the attitude is that learners are learners. But yeah, it would be interesting to ask a Kenyan male teacher. I wonder if they would respond to that question in the same way or differently.

So you mentioned that even in your schools, being a relatively affluent school in Nairobi, you saw these gender roles clearly amongst some of the secondary students. Just from your experience or do you have any insight in how it might be in less affluent schools?
I would hesitate, I would hate to make generalizations. But my gut feeling is that, particularly if you are out of the Nairobi area, if you are out in the communities you know in Nieri and in places like that. That's where Kenyan girls are still fetching water before and after school and doing chores that will often come first before school and homework. So yeah, I think that kind of thing is just the norm and it is probably quite even more wide spread there. But yeah so one of my favorite

NGOs, just the fact that it had to be created I think says something, but they have designed backpacks that have a solar panel. So there are all these school girls that, I mean now we are in the less affluent areas so we're talking lower income areas. So they designed these backpacks that have solar panels so when these girls for what, 30-40 minutes to get to school in the morning or while they're getting water or anything else they're charging up their panels so when they get home at night the front panel falls over and there is a light in here that they can sit and study by. Because these are families that have no electricity, so when the sun goes down you do your reading by a candle or you don't do your homework. And you don't get home before dark because you walk home from school for 30 minutes or however long and then you still have to do all your families chores because you're the girl. So yeah, access to education let alone access to ICT. And I mean they go to schools that don't have electricity so they don't even have a computer in the staff room. Which is probably similar to what it was like in the Kibera schools. And then even if schools get kitted out with computers, if you don't have anyone on the ground to maintain them, or troubleshoot or you know have the skill to use them then the initial money that was given to get it kitted out is wasted or obsolete. So I think possibly that the gender differences gets more pronounced.

Well, I think we are done for now. But if we have any additional questions is it okay if we contact you?
Yeah of course.

And so the last thing that we need is just for you to please state your age.
Oh okay, so I'm 42 years old.

Great thank you!

Interview 3

Informant 3
Age: 41
Gender: Male
School: Private international school in Karen, Nairobi
Position: Principal

Perfect, do you have any questions before we start?
No, fire away and then we will see where it takes us.

Great, so just before we start, is it okay if we record the phone call?
Yeah absolutely.

So we're just going to start with a few background questions. How long have you been a teacher for and how long have you been working in Kenya for?
In Kenya, I started in August last year so just over 9 months but before that I was a deputy head teacher in Egypt for a year and before Egypt I was two years in Malawi as a deputy head teacher in a small international school as well. And then before that 14 years in the UK. So I have been teaching overall, how many years, yeah it will be 17 to 18 years at this moment.

Mm, why did you choose to become a teacher?
This is totally stupid but I just watched a movie, it was a kids' movie when I was like 10 years old and it was absolutely amazing it was set in the mountains and there was this teacher who was the role model for all the small rascals and it was just, he was teaching in a completely different way and it inspired me. It sounds really kind of blunt but yeah, it was just a silly movie and then I started working with kids in summer camps and I realized that I really like it and yeah, so I started studying a Masters in Education. So yeah, that's the reason why I became a teacher.

Alright, and you are the head teacher for the primary school?
Yes.

So are you in charge of setting the curricula, making sure that you are following policies?
Yeah, I'm charge of everything basically. So, basically my responsibility is the management of the school, to make sure it's running as a clock work, making routes, the material aspects of making sure that everybody knows what is happening every single day, that reports are being sent home to parents, and assemblies are done. And then the second part is leadership, which really is the main part. So quality of teaching and learning and it of course incorporates curriculum development, curriculum coverage, planning, checks, making sure that what is happening in the classrooms on a daily basis is of a high standard, and it can include a lot of things. We just started looking at gaps in the teachers practice, and then identified common threads, common gaps, and filling that through professional development and then tracking very carefully how the teachers are improving and which gaps are being filled, which ones aren't. And again, retrospectively we need to put in more professional development and then that is kind of on a teacher level. And then I look at the school in general and try to think what else, what initiatives should be included or brought in, that will improve the quality of the education for the primary sector. So now I brought in trainers from the UK for their second visit, they just left last week, and we are focusing on reading, because our students are, well English is their second language, so of course it has an impact on the comprehension of the language. It's not great and that has an impact on all other subjects including mathematics, word problems they don't understand the concepts, they don't understand what they are asked, they calculate and then they don't answer correctly. And then the grades drop so yeah, lots of different aspects but the main kind of umbrella is to ensure that the quality of teaching and learning is high. Yeah, it's fun.

Yeah, it sounds really interesting. So in terms of policies, or more specifically national education policy in Kenya, do you have to follow it or are you more guided by international standards?
Yeah, so we are an international school and we follow the Cambridge curriculum as well as the British curriculum for foundation subjects and all other policies including assessment or behavior,

we can develop it, we can take it from GEMS in Dubai, they will give us some suggestions and then we are able to tweak it according to our school in Kenya. The policies from the government, the only thing that we have to make sure is that we teach the kids Swahili, their national language. So that is the kind of guidance any school, even international schools and private schools in Kenya, we need to make sure we teach Swahili and we have to start in year 2. It's compulsory, if we didn't teach it they would be able to give us penalties or they could even close us down. So in regards to policy, that is the only thing we do need to teach. The other aspect when we design curriculum and we talk about history, you have to include the British history as well because it is a British school but we try to incorporate Kenyan history as well but it's not, we are not legally bound to do it.

Okay, but so do you keep track of what is happening in terms of national education policy in Kenya or is that not really relevant for you?
Well, we do because what is happening is that we have millions of children who are coming from the 8-4-4 system which is the Kenyan curriculum system so of course the teaching is completely different, it's rote learning so the children are just repeating what the teacher is saying. And we have lots of students from that area coming in to us so we need to make sure that we understand where they are coming from, so we do have an understanding of the curriculum. So now they are beginning a new national curriculum in Kenya, and yeah so we have teacher training at GEMS in Nairobi with us where they work quite a lot with local schools. Well, that is what they are trying to do at this moment and some of the teachers from other schools are involved as well to kind of help to train the local teachers and so, looking at the curriculum that they have and then help them to use different teaching strategies. So we kind of get involved in this way, so kind of more of a teachers training aspect and the idea is for them to come into our school as well and have a look at how we teach. But we try to, yeah there is an understanding but I don't think that my teachers know about the Kenyan curriculum. On my level I do have some understanding but I'm not an expert at all.

And in terms of those trainings, do you see that there is a big difference in terms of you teachers and teachers coming from other areas or other schools in terms of mindset, how you talk about subjects, teaching styles, authority?
It's a massive difference. It's shocking actually, it is completely different. Everything basically is completely different. Where to start to be honest, because we have so the "Dream Africa" schools that GEMS support so we went to visit them and see how they are teaching and it is literally, the students are not active participants, that is the main difference. Children in the public system are not active participants of the teaching process, they do not lead their learning and that is what we are trying to incorporate, you try to get them involved so that they are not bored and so that they are enthusiastic. And there it is very much, you need to sit and listen and repeat and learn by heart. And then just copy from the chalkboard what the teacher have written. So that is what they do. So that is the main aspect and so when you have these trainings you need to, because some of us developed modules for the training, for the teachers training for these local schools and the level also. If I do the training with my teachers, the level that I'm delivering that for the local teachers would be, I know it sounds patronizing but it must be much lower, otherwise they just would not be able to access it. So, it is not their fault because they attended the same schools, you know this is how they got taught and how they learned so this is the only way they have seen so it's not their fault. They are very keen and they really want to learn, so yeah they are like sponges they really

want to find out different ways, different teaching strategies or methods. And of course it is a long process for them to fully understand it because they are, they feel that they are in charge of the class and they do not want to let go. So, it is completely different what we do. Here children are in charge, not completely of course but there is much more talking and discussion in our school than in the local kind of teaching practice.

So for instance in regards to ICT and the STEM subjects, science, technology, engineering and math do you think there is a difference in terms of how you teach it in your school compared to these other schools that you are mentioning?

Sure, yeah so science and ICT well. I watched one ICT lesson in one those better local schools you know a school that was a bit developed but it is still very poor and it was actually quite funny I didn't realize they were teaching ICT until probably half of the lesson. They were in a classroom and they had, again they had books and the teacher was talking, and they were writing something, they basically just copied, they learned the terminology of the process of how to switch the computer on, but there were no computer. They were in a classroom without any PCs so there was just a big chalkboard. So if you know, you are talking about how to operate, how to do a knee surgery and you don't have the body in front of you and nobody is showing you. But so after then they went, so they actually had an ICT room with PCs but of course there was no Wi-Fi and there were no, it was just funny I was looking and thinking what are they doing. And then when you ask them, they were looking outside to catch the mouse, and I was thinking is this a game I don't understand the mouse, and then the mouse was actually the mouse that you use for the computer, the cursor, and they were basically just looking for it. And then they were just looking at the screen, you know the homepage and there were no programs so they try their best and I think if you compare to other schools it was a good lesson because they actually had computers there. But in terms of what you would expect an ICT lesson to look like, you know where you teach programming or coding, you know more computing rather than just opening Microsoft Word and typing, that is not happening. And then this school was actually very lucky that they had some PCs. So IT I think it's very low in the local schools and that is just because of the resources. I just attended actually last Wednesday, there was a Japanese company coming in and they try to promote their kind of coding robot which was really good and it was very clever and we would like to use it as well and the majority of the teachers were from the local schools and there was one representative from the Ministry of Education and he was saying I'm here to learn and to find out ways that we can, because one of the robots was 100 USD which is quite a lot, you know how we can donate these robots to every local school and you know it's not going to happen. It would be absolutely amazing and if it was donated, half of it would be lost somewhere on the way and if it was in a school it would, somehow it would disappear so there are lots of aspects to IT and why it doesn't work in local schools. It's just really difficult to be developed.

In regards to science I would say I do not know, I haven't watched any science lessons but I have watched other lessons and I would say it's very similar. So, I would say it's very much about theory. Actually you know what I did watch one lesson, it was a year 6 and it was about forces and it was again, the teacher was talking and he was just recording the theory, so it's not practice. They learn the theory but there was no, even the teacher did not show them the investigation, not even mentioning that the students should be doing or following the investigation and working out how

to do things. So again its is not practical but very rote learning where the teacher is talking only. So, yeah it is not good.

So in terms of your school, what have the biggest challenges been in terms of implementing ICT at your school?

In my school very similar because we need to have the budget approved from Dubai and you know, we just bought a new scheme of work which incorporates computing and coding. So what I described before, opening up Microsoft Word and writing something, that is not computing, that is not 21st century. So we bought a new scheme of work which is using applications, using coding programming, and it's fine you know we have the basics that we can get on with. We have a really good IT team that can organize all the programs for us, we are very lucky in this respect. So we can run with that, and it will be okay but we have PCs and what we wanted to buy are of course learn-pads which are like educational iPads so that the students would be able to use it in a cross-curricular approach. So that they would be able to use IT in science and in mathematics. You know, across subjects that would be, for me in my head IT would be at the core of our curriculum and then your kind of rotate other subjects around it. But, we are not, the budget hasn't been approved and then we wanted laptops like a selection of laptops again for the same reason for the teachers to be able to include IT in a lesson, but again the budget hasn't been approved so the procurement process is the biggest challenge for us unfortunately at this moment. So we are kind of running, we can do that, it is already better than it used to be, but when you have a vision of what it should look like we are about 50% from that vision and it is mainly because of the resources.

Okay, how about the teachers' knowledge, you mentioned before that you work with that as well and filling the gaps of knowledge, in regards to ICT?

Sure, so what I did, I identified one teacher who kind of wanted a little bit more responsibility so I basically told him as long as he is an outstanding teacher he can do that so he worked hard and he proved himself so he is now my ICT lead. Which is very good and we are just meeting next week to start designing trainings for the teachers to introduce them to the new scheme of work and show them what the lesson plan looks like and these are the resources and based on that we will have to have a look at you know, is there a specific program that the teachers are not really confident in applying. I'm guessing that programming and coding will be one of them. So, after the first one we will have to see which way we need to get more trainings. But in this term 3, this semester, this is because I created dates and deadlines for the whole term so we have two sessions for the IT development for the teachers planned already just to get their heads up and yeah we will see. The teachers are quite IT inclined, some of them will be more some will be less, they are okay and they are not afraid of change which could be one of those things that would make them worried. I'm sure there might still be a few but what we then are going to do in August, when I have all my new and old staff returning, we will do another big IT development session before the children start the school so that everybody is on the same page and we will continue with this development in term 1 as well because there will be some, you know things will arise. I know that some things will come up but I don't know as of yet what it will be. But I'm guessing it will mainly be in relation to understanding how to use the programs, because their lesson plans are very clear, very straight forward so that should be clear but it is more the IT aspect and in my head it will probably be, because we have IT teams that can do the technical aspects, like having individual, smaller group sessions where they can show and do a step-by-step guide for these programs and

software's so that they understand it. And, yeah the teacher learning will be me dropping in doing teacher observations and again looking at what their development needs are there.

And so then in terms of when you plan the teacher training in regards to ICT, is there any focus on the gender aspects? Do you teach the teachers also to make sure that both boys and girls are participating in the class and that there is an awareness of that?
Sure. So the gender differences are in terms of ICT?

Yeah.
Okay, well I'm sure it's common and I'm sure it will be so here as well that the boys are more excited about it. However, all of the children are really IT literate you know, everybody has got an iPhone or smartphone, everybody has got a laptop, everybody has got an iPad at home. So even the girls, I think, well I'm presuming, I might be totally wrong but they will be inclined to have a go as well. What we might need to, I haven't thought about it that is the truth, I haven't thought about looking at the differences between boys and girls. But it could be what we kind of do in all in terms of literacy in math or science, we try to think of a topic so you know if you are reading, and boys don't like reading and girls like reading so then you can get books that are about football or something that boys would be motivated to read. So the same with IT, if it is the girls that are not really motivated or not really engaged, then you could think of something, or a topic that can work as an umbrella over this. So, I don't know, but if you are programming a toy. If it's a car, the girls will not be interested. So, they might be programming a toy that is a Barbie, or sorry I don't know any girls' toys. But you know something that the girls would kind of, relate to. But, yeah I don't know like in all areas, in all subject areas that is what you try to do if you are a good teacher and I'm sure we will be mentioning that as well. But there will not be a specific, in the lesson plan there will not be a specific note in terms of what you do for boys and what you do for girls, but as a good teacher this is what you do. You try to see, if the girls are not engaged you try to think of different ways or themes to engage them.

So, in relation to that and the cultural gender roles that are quite persistent in Kenya. Is that something that you notice in school in terms of how boys and girls behave?
Yeah that is very much like culture. You know, the man is the king of the house basically and the women just serve everything. But, yeah it is the Kenyan culture as well. Like everywhere, not just rich Kenyans. In the rural areas the poor people, it would be the man who sits and just does nothing. Just sits and watches the world go by and the women, it is just fascinating to watch it especially when you are mountain biking or something you can see it in these villages. And the women they are washing, cooking, looking after the kids and the man just do absolutely, honestly, absolutely nothing and if there is a guy who does something, you know helps out the women that is very rare. So that is kind of the embedded culture and it also relates to money. You know, the woman might earn the money. I watched an interesting documentary about Kenyan runners and it was focusing on female runners and they mention exactly the same that you know, they run marathons, they are the ones who gets the sponsors, who get their money, and in a Kenyan aspect it is quite a bit of money but then she is expected, this is not questioned at all, it is expected that she does give all the money to the husband and he doesn't have to do anything. And then she train, she runs races and then she is still expected to go home and do all the chores, and that is just the expectation. And you can see it, you know when we sit outside and watch the girls carry the boys'

plates, that is what they do. That is, even when they are rich Kenyans, it is still embedded. But then when you watch them play, they kind of, because they are such a lovely nation, they are just so warm to each other and they play we have a very nice *inaudible* and the boys play football. And it was interesting to watch the dynamics, so the girls are starting to tease the boys and take the ball and run with the ball and pretend to play football as well, and the boys just joined in with them and it wasn't much of an issue. So yes it is there but it is also like the Kenyans are just so, they are quite nice people actually.

Yeah of course, but do you talk about the cultural aspects at all in class? Do you problematize it at all or is it just that it's there and that is how it is?
So we do not address it, because it is not an issue. And so we are the ones that are guests in this country and so in my opinion we have no right to tell them what is right and what is wrong. However, what we do, through assemblies or through we have like a physical, social, emotional curriculum. We teach it in a way that you know everybody should be accepted and respected. So I did an assembly on Friday about respect, everybody should be treating everybody in the same way, and so we do not address it because it could come around and bite us. You know. We have no right to do that. But what we are trying to do, we are trying to educate in this way that you should be treating everybody with respect and be kind to each other and help each other, so we kind of address it in this aspect. Just to teach them to be good people to be honest. So, yeah we do not address it specifically but it is being addressed through values that we have as a running weekly theme.

So, in regards to the transition from primary to secondary, *name of other interviewee* mentioned that the students then have the possibility to choose certain subjects such as arts, science and ICT. Do you have any insights on if there is a difference there in terms of boys and girls tend to choose?
It is definitely, well because then you can go A-levels, GCSC and then you can go to B-tech like vocational studies and it is quite clear that the girls do choose more humanities kind of oriented subjects, plus English and literature, and these aspects and the boys do go more into math, science and IT. There is definitely a visible difference.

Do you discuss that with the teachers' team at all?
This aspect? No. Well, not in my primary school no.

So there is no promotion from early age to make girls maybe be encouraged to choose the STEM related subject?
No. Definitively not.

Would you consider that or?
Hmm. I think what kind of. I, ehm. I'm not sure if I would consider it but in primary, as I explained before we try to teach lessons that are engaging so hopefully through this you kind of gain the interest from every single person in the classroom so we do not specifically say now girls should do specific science things, or something, we don't do that because if you teach the lessons in an engaging way then you would hope whoever it is, if it's a boy or a girl it doesn't matter, they will choose the subject that they are interested in.

So changing topic slightly but the government adopted a new constitution in 2010 where there was an increasing focus on gender equality, and this might be a bit far fetched but what is your experience when it comes to talking about and addressing issues with gender inequality?
I think there could be a change in the constitution but it is just so embedded in the culture that no, I haven't seen any change and in Malawi it was very similar as well. Because they have a very similar kind of structure. So no, there could be a constitutional change but it is just so fully embedded. And it is not even you know, nobody is the role model. They might have a paper but no. It is very similar to how it was to be honest.

I think that was about it actually. So lastly we would just like to ask about your age?
Sure. I'm 41.

Great, thanks!

Interview 4

Informant 4
Age: 36
Gender: Female
School: Private school, Karen, Nairobi.
Position: Principal.

You don't teach ICT?
No, we don't teach ICT and we prefer to delay children's contact with technology as much as we can. Of course, we are not very successful, because parents will buy phones, computers and other gadgets to their children. And because...they really don't understand the harm that social media can, or we have parents, although they have bought gadgets to their children they try to regulate and put parental guidance in it. But, I have to say, in the school we don't have computers and do not offer computers for children, but our children are exposed to computers anyways; phones when they go home.

Do most of them come from well enough homes so they do have it at home?
This is a private school, so most of our children come from well enough home that can afford to buy phones, computers and gadgets, yes.

So, in terms of then policies and frameworks that come from government, in terms of ICT, because I know there's a few quite specific ones that should be included in education? How do you work around it?
Uhm, the government is, I think it is in the stages of introducing ICT in schools. It hasn't, especially in the primary schools, it has not been a subject as such. In high schools it's offered as a subject. I

know that for a fact. But in the primary schools, it's just the beginning. So, we, our government is just trying to introduce it and we haven't had any government officials visiting us, saying "we must, must teach ICT in primary school". So far, so good, we haven't had anybody coming to us.

Do you think in terms of, I just come from schools in Kibera who has it, do you think that that would change how Waldorf schools looked at it, that the fact that many of these schools have basic access at home is a reason to why you can't include it in schools?
We don't exclude it just because they are exposed, that's not the reason why. But we exclude it because we find that exposure to especially at an early age disturbs, or even excludes completely, the imagination and creativity of children. Children who are exposed to too much media; TV; computer; phone or you know, whatever electronic gadget, they are less imaginative. They are less able to form their own pictures, imaginative pictures, they are less creative than children who are left totally without any of those things. So yes, it is that. And also, we find that gadgets remove human connections. So you go to a home and you find mum on a gadget; dad and the child are not talking to each other. So the connection, the human connection on that level disappears. Everybody is busy doing their own thing and nobody is talking to each other. So we want more of that human connection which we value so much and think is very very important. Yes.

What subjects do you teach in general?
We have the usual intellectual subjects. We teach science, geography, history, we do math, languages and here, we are doing three languages; English, Swahili and French as a foreign language. And besides that, the artistic subjects like drawing and paining and we have handwork where you make things with your hands. And wood work as well. And then we have to play! We have games and swimming and extra for some kids, they have horse riding so they have other things as well.

When it comes to gender equality, is that something you discuss with teachers in terms of how you talk to the children in general across all subjects?
We try to encourage everybody to be good at every subject. We have hand work, like sowing, it's more of a feminine, female sort of thing, but here in this school, even the boys do it. It's not like the boys go like: you can do something else, but everybody does hand work, regardless if you are a boy or a girl. And then we also have woodwork. Woodwork is more of a "masculine", a male kind of thing, but here in the school when it's time for woodwork, everybody, whether you are a boy or a girl, you go there and everybody is encouraged. So you see the girls using the saw, or hammering or making things. So there is no discrimination. Everybody makes the same thing. If it's time to make a boat out of wood, the girls also make a boat. You don't decide to make a doll or something like that. Everybody makes the same thing. So we try to equalize that everybody is doing the same thing. And when you are going to games, everyone is playing the same games. Uhm we are not going to tell the boys so "alright you are going to play football" while the girls play something else, softer, net ball or something like that. We are very few, so we need bigger numbers, but we try to have a culture where everybody does everything.

Is is quite even in terms of boys/girls at the school?
More or less equal.

This might be a little bit of provocative question, but do you think seeing that technology and digital technology is becoming a big part of work life as well across many industries, and even in Nairobi, do you think they will lack certain skills since they haven't had it in school?

I don't think so, because when they go to high school, unfortunately we don't have a Waldorf high school here, but in Waldorf high schools, they do ICT. So if they start in primary, and then high school, but it's not like…we understand it's not like they would never ever touch a computer, that's not how it is, they will be exposed to that, and then the other thing is, this generation is a digital generation. You give a child a phone; they've never used it before, but somehow they know how to navigate. They know where all the apps are, my kids know my phone better than I do you know, and sometimes if I get stuck I call my daughter and say "fix this thing" and she can be able to do it and she hasn't been trained or anything so I think, this age is a digital age and somehow they are born with it. They will be able to interact with the gadgets much more easily. We struggle with some things, we are a different generation, they that find it very easy. And then, it's their age.

In terms of interest, do you notice a certain difference in subject interest between boys and girls?

I just looking at my class, I know one girl is very good in math and one boy doesn't like math. So I wouldn't say there's an inclination towards certain subjects whether boys or girls, I think it's very individual and personal. There are certain people who chose math, and certain people chose something else. It's very individual. I cannot say "all boys like math". I can't say like that. It's a very personal matter.

It seems, based on the Kenyan school system, that children's background also play a role?

Yes, the background play a very big role. Because we also have kids, you know the parents can afford to buy them gadgets and not buying them until the child is 12 or 14, they are not getting a phone. Who limits TV, so we also have those kind of influences coming into the school.

In terms of curriculum, being a private school, do you still have to conform with the Kenyan Education System's curriculum?

No, we're doing a Waldorf curriculum. We are not following the Kenyan curriculum system, but there are certain standards that we have to check with the Kenyan curriculum. Because we don't have a high school, so when the children leave here they have to go to Kenyan high schools. And if they haven't reached certain standard, they will have struggles. So we have to look into that, what is it that is required, so we can offer it to our children so they do not struggle. Also, apart from that, we also have to look at the government requirements because if we don't, then they don't recognize us as a school. They would think we're just a home school or a place to play, not a formal school. So, we also have to look at that and so they consider us to be a real school. Because sometimes, people imagine that Waldorf schools are just "happy places" and nothing goes on, we just paint the whole day, and children play, they are happy and go home, which is not true.

Has that been difficult to get the government to recognize you?

Somehow yes, because people in the government does not understand what the Waldorf is. So it's been kind of difficult trying to educate them… Yeah you know how hard it is to educate someone who's already grown up! Getting it for a child is easy, but people in the government they already

have "we want you to be this and this and this, and if you're not doing that, then, yeah...not, you know. So that has been quite a difficult challenge.

Are you recognized it now or in process?
We are still in a process. As I've told you, this school is only two terms old and we only began in September last year so we are still in the process of recognition. But we have a sister school that is not very far, they've been around for about 20 years, maybe more, and they are also still in the process.

Interview 5

Informant 5
Age: 28
Gender: Female
Profession: Education system- and teacher training professional

So, just to recap a little bit of background information. We are conducting research at Copenhagen Business school about how gender and ICT are perceived in Kenyan policy and the education system. We can start out by asking a little bit about your background, relation to the Kenyan education system and the field of ICT?
Ok, understood. So I am an IT graduate from USIU- Africa in 2012. I studied Information Systems Technology with a concentration in networking. After graduation I worked for two years as an IT administrator and afterwards leaving to work in a startup as a business developer and teacher trainer.

Katya mentioned that you have worked with developing education systems for ICT for Kenyan schools, have you ever taught subjects within IT or worked in schools?
Here is where I begun training businesses and schools in our product which at that time was selling Google Apps for Business (now known as G-suite for Business) and Google for Education. So currently I am an entrepreneur working in the digital marketing space, part of that still includes training, but so far I have trained small businesses no schools yet.

Ok, interesting! In what kind of schools was your product implemented?
The schools ranged from primary schools, academies and universities. Or Institutions that provided some form of training.

Did you work together with school teachers when developing the product?
And what was the aim with implementing the product in schools?
The way the product was it was ready made and the teacher was trained to use it, the development of the product was solely on Google who did their own research, so when we took the product we took it to solve the teacher and the schools' challenges.

Which were the challenges that you identified for teachers and schools that you aimed to solve?

The aim was to one, move teaching to the digital fore, so that students would be able to engage with their teachers in the digital sphere, two, it was to ease class management for the teachers by automating some of the classrooms activities, thirdly it was a way of incorporating different teaching styles to enhance learning, i.e. for visual students there was the video aspect, for tactile students there was the chat option with assignments that require physical work...

Cool! It sounds like very comprehensive and much needed product. As mentioned, we are looking at the digital gender divide in Kenya, i.e. the gap in use and access to ICT between women and men. Is this something you had in mind when developing the product? In other words, did you consider that boys and girls might engage with technology differently?

For teachers the problems were, they were not tech savvy, so they had to be taught how to use the internet, the browser and finally the app, other times they were resistant to change, but most were concerned for their students who were without internet and devices that would help them use the application. We solved this issues by training the teachers about computers, we also developed a change management system that helped ease the movement from the old legacy system to the new system, and we provided cheaper device alternatives. Not really, the gender gap was not an issue, because we had to teach every one both ladies and gentlemen. We never, in hindsight, considered that there would be a challenge with training the different genders, even the training material never focused on that or insisted on it

You mention that some teachers were resistant to change in terms of implementing technology, in what way did this play out?

They would come up with all kinds of reasons against moving from what they had to the new system, some were legit like their concern over internet availability, security of their data, security of their children online. For most however they resisted change because it would disrupt how they currently did their work as now there would be increased visibility of teachers' performance, there would be data on how they were teaching, the assignments they gave, attendance. This would be resolved if the higher ups would put their foot down and insist that this was the way forward and that it was not an option.

Ok, interesting. Do you find that teachers, principals and other head educators (also based on your personal experience) have a lot of authority in the Kenyan school system?

Absolutely. I will send you some articles so that you see the kind of influence they have especially in politics. Because they are under a union, they carry weight when they demand for anything. However, they are not as powerful when it comes to changing times.

Yes! thank you! On that note, do you think that this authoritarian environment also affect the overall ability for teachers to change behavior in schools in how they teach?

Recently the education system was changed to meet market demands and to be relevant to today's society and the changes that are taking place, plus the country wants to position itself for growth in the region, so they had to shape up education. That's a good question hadn't thought about that. In a way yes, if it suits the union they might resist changes that would threaten teachers' jobs.

Yes, we also noticed that the constitution changed in 2010 to include more focus on gender equality and ICT adoption. With regards to the gender aspect, is your experience from working with teachers and ICT that technology is perceived as "a boys thing"?
There was some surprise when I began teaching, but once you prove yourself, they tend to get with the program. I would also like to note that when I was in school doing IT there were some people shocked that girls were doing a subject that they thought was hard, our lecturers thankfully never cared, so that helped, in fact they demanded the best from us. Mostly what I have encountered is surprise and then skepticism but afterward they went with the flow.

Ok, so you would say that there was no difference from the teachers in treating boys and girls differently with regards to ICT-education?
Nope, the difference would be in that they believed girls were more responsible than boys so we would be left in charge of group work, classes and projects, but when it came to understanding concepts we would be the same.

In regards to the changes in constitution with regards to gender equality, have you noticed any significant changes in how people talk about gender?
Yes, there are still those who are ignorant and say things, but due to the fact that it is illegal they are not widespread.

What is illegal?
As for gender equality due to the fact that not so many girls think that IT is hard and for boys, they themselves keep back from enrolling. Illegal is to deny someone a job or opportunity due to their gender.

Ah ok, thanks for clarifying. But do you think that if girls were encouraged to take on IT subjects, would there be a difference in participation?
So the bigger issue is that it is now the mindset, getting girls and their parents to see the opportunities in IT. Absolutely, and removing the stigma of IT being a boys thing... If we do that we can change the imbalance.

Would you say that is the girls and their parents' responsibility or should the focus rather lie on creating a good environment already in primary school, for instance?
I believe it will have to start from home, because currently the environment, though not perfect, has changed but the enrollment is low, though growing slowly. It will have to start from home. From home the environment will change because of the demand.

Do you mean enrolment in primary schools?
Enrollment for girls in STEM all across the board.

Ok, thanks! So shifting focus back to your Google product; in terms of regulation, were you guided or constrained by any national Kenyan education policies or could you freely implement the new product in schools?
Actually, apart from the laws the government has not been able to do much to digitize schools, due to politics and bureaucracy, they are slow, so schools are taking initiative to go online and incorporate IT to their teaching. So with that there was no constraint at all as long as the product solved the schools issue all was well.

I see, so have the government assisted your project in any way (financially/other resources)?
No, no at all, now that I think about it, it was the schools who were actively looking for solutions and IT companies coming up with the relevant products then selling them to schools, the government was rarely involved.

Ok, that's interesting. What role do you think the government should have in terms of deciding what schools should uphold/maintain when developing curricula and teaching ICT?
I believe with the new curriculum they have some digital aspect, I will have to check on this, but they should if not provide the digital solutions themselves, they could support schools (financially) so that they could be able to go digital, provide the resources such as free internet and computers to school so that they can learn ICT.

So last question! Turning towards gender: what role do you think government and schools have in terms of influencing perceptions of gender equality?
I think apart from coming up with the laws to promote gender equality, I think they should also have programs targeted to young girls to show them that other girls have done ICT and they have achieved success through ICT, this I believe would help in changing the perception that ICT is hard and thus increase enrollment and eventually this would help bridge the gap. As for schools they need to encourage girls more and expose them to what ICT is capable to do and how it will help them in life.

Interview 6

Informant 6
Age: 48
Gender: Female
School: Public school, Kibera, Nairobi.
Position: Principal.

--- Issues with recording the first questions about the interviewees background, name and age ---

We need ICT so much in schools. We have few computers, we got them from MP, but they took them back because of theft. And we have a big class. We have some tablets from the Ministry for class one, but the teachers don't know how to use it, they lack some skills.

So the teachers need to learn a little bit as well?
Yes.

Do you get a bit of support from the government for the school?
No, they give us some, but very little money. It is not enough. Because we have some teachers, but we are understaffed. We have 89 children and 6 teachers and need to pay them. The parents cannot afford. Then we have the food, we get some from the World Food Program but it depends we have two cooks that need to be paid. And it's a challenge for the parents, because they cannot pay for it. These are the challenges.

So there are this alternative education program, so you have public, private and alternative - informal education…?
Yes, the informal education, which the parents do not like. They think it's for the poor.

Is this a public school?
Yes, it is a public school. We depend on people like you, they come, see the school, then you see what we can do, talk to people at home, bring books. Education now is very difficult to manage.

So do you have any other partners or sponsors?
No, the sponsors we have is independent sponsors. Like for a specific child. Not for the entire school.

Is it because you are not allowed or because it is difficult to find?
Some come, but they don't sponsor. They promise, and it is also difficult. But I've seen this time they are coming now! We have UNICEF. They're coming, they promise to give us 25 000 and I do appreciate. Because we had an attack in relation to elections, this school was completely vandalized. The opposition did that, it's just because opposition leader doesn't belong to the Ministry. So this school was completely deleted. This was last year, last election, this place was completely attacked. Because we lost so many books, furniture… The police took it and locked it inside. So, that has also affected us so much.

So the computers, did you get them from the MP or the Ministry?
The Ministry do not provide...they do not provide with computers. They only give to a few schools. The 10 we have we got from donations.

Do the kids have access now?
We want the kids to have access, but we need a teacher. But we are lacking a storage room where we can keep them - a storage. The tablets are not brought in, because we need a strong room to keep them so we can have a computer lab also in the future. We have also kept books in the library that was damaged… We got some books from GEMS, I think it's an organization from Dubai,

they give us a library and books. Computers are not available in schools, but the system is supposed to be digitized.

So I know there are policies from ICT and Education from the Ministry, but how can or do you try to follow that when you don't have access to computers?
No, I can't follow them, because we have no computers at the moment. And when they are sending the officials from the Ministry and they come and check if we have a secure room for computers or not. They check if the room is okay, then if it is they can give some more tablets. But just a few. I think what we need first is a secure computer room.

They said you also need training for the teachers to learn the skills?
My teachers are still learning ICT, and they also teach normal classes, so it becomes a big load on them. So I need a teacher, immediately, only for that. So the children, if they can pay something small, like 20 shillings, that would be a salary for the ICT teacher. Because now we are going towards a computer system - everything computerized.

So when did you first get your computers?
We got them last year.

And then shortly after, they've got vandalized?
Mhm.

Has it been incorporated in classes?
No, because we put them in 209, that's really sad. In that school, because there, they are still learning. That school is ahead of this school. We can't allow them to go there. And the library was vandalized, so they could only go to their library.

Is it quite a bit of difference between the schools in Kibera, if they have computers or not?
Mm. It depends on the infrastructure. Yeah. We have secondary, but they are all stolen. The Wi-Fi, everything, gone. During the elections, the school belong to the opposition leader who was running to be the president. Very negative. Not very good.

What other subjects do you teach on technological side? Math…?
Most of the subjects, but mostly math, English, Swahili. Science. This got digitized long time ago. We have the syllabus, we have the Kenya Institute of Curriculum Development (KICD) who gave us syllabus and nearly all subjects. So we follow the syllabus, and teach them using the computers. So I need to get someone who can program, so we programmed everything in the computers. We can do it here, but now because of the vandalism, it has cut off, so they do it on the other schools but we will start it as soon as we have the security and storage. More computers, doesn't matter if we can't store them. It needs just to be reinforced. Because there's no problem with electricity.

In terms of gender equality between boys and girls and in school and what subjects they do, is that something that you think about?
Yes, so much. That is a big big challenge in our schools. Even with the technology, we find the boys are very faster. Very fast. But girls, they take longer time.

So how do you fill the gap?
We need to encourage them to be like boys. You know, boys are go-getters, they are very fast. Also in other subjects. You could look at it in the analysis, and see subjects like math's, when we do it digitally, the boys are doing everything faster than the girls. They're getting it very fast. They girls will take time, because the girls are shy. And the culture, it has told them that math is made for boys. It is very wrong, so we are trying to get that out of their brain. Then we have subjects like science, they also think that's for boys. But when it comes to English, now girls will be faster. Because they like English. So that are the deviations we have.

So why do is that, that, some of the subjects have been, you mentioned culture?
Yes, culture. This culture, it is originated from culture. Because I think all the time, boys do well and girls have developed a mentality of "boys are good in math, math is not meant for us, this is meant for boys". So it is up to the teacher to encourage them. And when we find again girls are leading in math, we have a celebration! But we have this problem for the girls, the mentality.

(interruption by a school board member)

How did it happen that it goes from a community school to a public school?
The enrolment was going up and the previous minister gave it to the government. Garanja is the smallest, but Kibera the OLDEST, and Olympic is quite new, like 1982.

So then we see that you mention that girls are falling a little bit behind in math and science, and you said that it something that you work with - how do you do that? How do you work with the teachers to change perception?
We have a lot of motivational talks, we have to do a lot of motivational talks to the girls and a little bit of counselling, so that they also compete with the boys in fields like math so they also can do that. We do the same with teachers; discuss in our group and on staff meetings. But primarily only for math, so we always meet them and discuss such as how to motivate the girls to be good in math so every teacher can come up with their own motivational talks and what else can be used to make girls become better in math. They also need to appreciate them, whatever they get, so tell them and encourage them to come. That is what we use. Girls are good, they are disciplined and like learning.

Sometimes student teaches the teacher - have you found that the students have a TV at home or a parent who has a phone?
Yes, some of they have and are very good with the computers, and they can also be used as teachers. Even in math, we do that. Another student teaching other. They improve so much and listen even better to fellow students. They develop so much and show a lot of interest. They feel good. So in Kenya we call it 'peer-teaching' and encourage it a lot in school. Especially in those technical subjects, and with computers, we get a small child in class 4, she can teach in class 8. And they get shocked! If she knows and he knows, "why don't I know?" Peer teaching in Kenya is much encouraged in schools. Like now, I teach English 8, but if I can't be there I use peer teaching. Then they do a whole passage! It happens often in this school, sometimes the teachers need to be in the staff room, and then students teach. The other students listen and ask questions freely! Peer-

teaching is the best! Other students get shocked when younger kids have learnt before the older. And many times students explain better than teachers.

ICT and access to computers, what would you say that are the things that need to change for you to be able to include computer science and basic computer skills in the education - in an ideal world?
Hm… Oh... We need like... So many things! Like teaching materials. Because when I am teaching science, maybe a chapter in science, it should be already drawn so I can use a system and show it on a screen. Then there needs to be teacher development. And incentives for parents to pay. If they get a teacher from the government, they're free without paying... And security - we need a wall so not anyone can come in and pick a computer at night. We need security, teachers, a very strong computer room so not anyone can access.

Are the students only allowed in class if they can pay?
Yes, they have to pay the teacher. And that can be very painful for some children, because sometimes they pay other things; sometimes they only pay exams, or only teachers. So they come from time to time. One student always use money from her own pocket. It's painful to see, but we have started to see some parents that are also chipping in. That is impressive, some parents are very positive. And as a head teacher, you have to keep the interest going!

It is a big property?
Yes, and we need to build a wall. The wall needs to be very strong so the school is safe from attacks.

In terms of the curriculum, you said you use the KICD - is that the government's set syllabus?
Yes, we use that. That is where we get all the syllabus. It is part of the Ministry of Education. We have the Kenya's Institute of Curriculum Development working together with the teachers' employer (THC) and they work with the Ministry in cooperation. They work as partners. So that's where we get the syllabus and subjects from and they mirror the policies and the education acts. We get them from there and then use them as guidance. We have for instance their code of regulation and code of good conduct and ethics, that we refer to if there's ever problem with teachers. But we have very good teachers, with loads of human sympathy and do talk. KICD is the official body of the Ministry where all the curriculum development take place and we meet there with them. They have pilots with schools and call all the teachers and brief them about what it is, and how is it developed. They train the teachers on the new curriculum in public schools. We are very organized!

Interview 7

Informant 7
Age: 34
Gender: Female
School: Public school, Nairobi.
Position: Teacher

Informant 8
Age: 42
Gender: Female
School: Public school, Nairobi.
Position: Principal

What type of school are you working at and for how long have you been teaching?
I'm working at a public school in Nairobi, and I've been working here since the past 7 years. I am an ICT educator.

Is it both primary and secondary?
The school is both primary and secondary, but I'm based at the primary teaching grade 6 to 8.

Are you following any of the national education policies from the Kenyan government or can you choose freely how to design curricula and set course content?
When we talk about technology in Kenya, it's something that is growing up. Nowadays there is a curriculum aligned to education, as in recent past, we have the government with the Ministry of Education that designed a policy that is going to get ICT in education, that is ICT in education and how it applies to gender.

Do you know if it will come or if it's work in progress?
We have the new curriculum in place that was designed to cater for the technology in education system has just begun this year. So it is in place and schools are being encouraged to use ICT in education as a tool for learning.

So in what way is the new curriculum different to the old ones?
The past education curriculum in Kenya was not designed to enhance an appropriate competitive skills and knowledge to the students. You know we are living in a wide market in terms of technology and it is growing very fast so I think the new curriculum will cater for both. Or where our students will actually get the skills they need in the wider market of technology.

So you are following the national curriculum?
Yes, we are following the national curriculum, although at the moment there isn't a curriculum that is based on ICT. It's actually more used as a tool in education.

Do you have a special then ICT guideline for your school?
For our school, we don't really have a guideline, but we put the use of technology to concur with the traditional classroom. So we mainly use ICT as a tool in learning. Not actually as a subject.

Do you believe that there has been a shift on government level in terms of the focus on ICT?
Yes, in the past few years the Ministry of Education have put in place a laptop project. We had a laptop project last year, where laptops were distributed to schools, the rural schools, the rural primary schools. But I think teachers are now undergoing training on how to use the gadgets.

Do you have, in terms of resources, do you have a computer room or ICT lab on your school?
Yes, in our school, in fact, our school was among the first public schools in Kenya to introduce computers. We have like, 4-5 computer labs. Each section has a computer lab. You know, to make it effective for all students to access to ICT.

Do you see that children are inclined to use ICT and is it widely accepted that it is a normal part of the learning process? Or have there been any difficulties in adopting ICT?
You know, we are living in an urban set up where our children are very speedy in using technology. I think there is a shift between the rural set up and the urban set up. in our case we don't have many problems concerning ICT, they are very vibrant in using ICT technologies.

In terms of gender, is it the same extent of use between girls and boys or do you see any differences?
No, there's no difference between girls and boys in using technology in our classes. Both of them are working hand in hand to achieve the same objective. Yes. I have not any challenges in the girl child in using ICT.

That they have ICT in the curriculum, is that mandatory all the way up to secondary?
Eh in our primary school, it is a subject, OK, as much as they use it as a tool for learning, we also teach them technological skills in the lessons. It's part of the daily learning in lessons, yeah. In secondary school it is not mandatory.

So do they choose then if they want to continue?
Yes, they chose on secondary level if they want to continue or not.

Do you know then, what the ratio is between boys and girls in continuing with having ICT as a subject?
Oh, no, in high school, I have been there, there's another teacher teaching them computer lesson, but I have not seen a shift between the boys and the girls. They are both there.

Has it always been like that historically, or like the past ten years, that there has been an equal ratio between boys and girls' representation in subjects about technology?
I don't know if I should answer this question based on our school or majorly in Kenya. You see, in the back, the girl child has been neglected. Girls are not encouraged to take STEM subjects that

is, sciences, engineering, physics... so I think parents also play a major role. They need to be the landmark of the children. Both boys and girls should be given same opportunities when it comes to technology. But in the past few years, that has not been happening. Until now, when the government now has decided to give laptops to primary schools in the rural areas, that is maybe when we will have a change in the technology world between boys and girls.

So you think that access there is going to be crucial?
The access will be crucial. Because I think every child in primary school will get access to a gadget, whether you are a boy or a girl, you have to be at par with each others.

Do you think the government is doing enough as of now, or do you think they can do even more?
They can do more, but I think what they have done is just the beginning. So expect more improvement as the years go by. Because teachers are now undergoing training courses on how to use the gadgets in school as they teach.

So you see that teachers training and pedagogical approaches to ICT is as important as just access?
It is very important, okay. Because they are being trained on teaching 21st century skills that will help them.

This is also again, you can answer in relation to your school and in Kenya broadly; you mention that there has been this idea that boys is more inclined to study STEM. Do you think even with access of computers, that there is a risk that that will also happen when it comes to technology and ICT?
Myself, I tend to believe that things are going to change drastically. Because now the girl child is more empowered here in Kenya. Here, people talk about the boy child being endangered because now the girl child is coming up very strongly in terms of education, employment and all that. You can see key ladies being in powerful positions in the Ministries, politics, so I think the girl child is now more encouraged to take also technological skills for the wider market.

Do you discuss issues with gender inequalities within your teacher group as well or do you have a gender policy at school?
The school no, we take every child equal. We give them equal opportunities. Yeah. We give them totally equal opportunities so we don't have problems. I think the problems come up when you go back to the rural areas. You know in the rural areas, they are very marginalized when you look at the Samburrus, the chamkarras, they are really marginalized. You know where people believe that a girl child can't do more than house chores. They believe a girl child, at a particular age, does supposed to be married. The girl child is supposed to be in the backyard doing house chores. So I think the problem begins in the rural set up, but in the urban set up, I think we are good to go.

You say that you treat all learners the same, but is that something that you have explicitly talked about in the teacher group or is this just sort of an understanding that you feel that you have?
We have had conversations; we have had trainings. Even the teachers. You know, you can see even from the lady teachers, they are very positive about it. So as they engage with the children, they also learn from them. Become their mentors.

Do you receive training from your school or do you receive training from the government?
We receive training from within, we have institutions that offer trainings to teachers, so we particularly base our training on inside arrangements.

But do you get any type of support from the government?
Ok, so the government is very supportive, but I think they're focusing more on the public primary schools, because that is where I understand that the major problem is, we are more equipped. But in public schools, children are many. Parents who take children to private schools are fewer; those who are able to pay the school fees. Public schools are free due to policy. So most parents, in the rural areas, prefer taking their kids to public schools. And with limited resources, they won't have access to all these things.

Are parents encouraging the girl children also to pursue ICT?
Yeah, because here, the school and the teachers play an important role in encouraging them, but in maybe other areas, I find sometimes that they are not as encouraged to pursue that as boys from home. In my experience. Sometimes the home support is not enough.

What do you think that comes from, like, historical reasons or…?
Yeah, I think it's just like the rules we are associating with gender. Yeah, but, I think it's more articulated within STEM areas, because in terms of going to school, everyone wants their girls to go to school these days. But at least, there are these organizations that are also encouraging participation of girls in technology and they are realizing that they can also play a role in that as cooperation. So they go to schools sometimes and go to school, speak about careers in that field, internships and things like that. Like Safaricom, for example.

Do you have that in your school?
We had Moringa coding, we done something with them before, and in the high school, they still have something going on. And then with SafariCom, not really because they focus more on other schools that they consider more needy.

In terms of government policies, there has been a shift in terms of a new curricula having a stronger ICT focus, what is your experience of that shift taking place? Has that shift in policy been clear or had an effect on how you teach at your school?
Well in terms of the effect, for me, I would say, even when they try to create these policies, the implementation is what becomes the problem. Because they address societal issues that will affect girls' ability to go into STEM, which are a prerequisite for these policies to be effective. Still, if you look at girls from underprivileged backgrounds, I mean they don't have access to computers, the internet, what about, some of them still not go to school when they are having their menstrual

cycle and things like that. So I think that there are other things that interfere, when it comes to implementation. Such as culture. Sometimes the government here has good intentions but they are going way ahead of itself, like, you implement a laptop project, but the students don't have desks or school shoes! So, it's basically that.

What would you say in terms of progress for gender equality within technology, what should be the focus?
I think we should not look at gender, but problems come when we look at the traditional setups. People who live in the rural setup think differently. So we need to look at the roles of girls and women and their contribution. Mainly in rural areas. I think problems in terms of gender inequalities and in relation to ICT comes from perceptions in rural areas. The parents also play major roles in the education. They need also to be sensitized about technology and all that. Because I think there is much more that can be done to encourage the girl child and taking technological subjects from the early stages.

Interview 8

Informant 9
Age: 42
Gender: Male
School: Alternative provision to basic education and training, Kibera, Nairobi.
Position: Founder and principal.

You have both primary and secondary here and how many kids?
Yes, right now 381 in primary and slightly about 40-45 in high school. Less than 50 yes.

And how long have you had this school for?
The primary school has existed since 2009 and the high school since 2014.

Have you been here from the start?
Yes, I've been here for quite, here, much longer, because we also have a church here, so the church started much earlier than the school, then the school came after, and the high school started like 4 years ago.

Has the church been able to help a little bit with funding or is it separate?
A little bit but not fully, but in different ways. Because this is a project of the church, so the church has helped bits and pieces financially, but in terms of running and management of the school it's basically run by a committee that supports. They support a lot, but also a number of, in terms of manpower, a number of teachers who are here from the church so there's a relationship between the church. Also, we have a number of children in this school who do not pay school fees, because they are no able to pay school fees so the church gets funding for them to remain in school. Yeah, so the church then pay for their school fees. So all the children here, they pay school fee. They may not be paying directly, but the church is then looking for ways to fund. Because all kids here are

paying because the government is not providing for the children's needs. So if they are paying a monthly amount for feeding, textbooks and general then they do not pay because you're unable to for whatever reason, then they church takes care of it after knowing the conditions of the different children.

So some of the teachers come from church, and the other teachers are…?
Some of the teachers come from the church, because they are not teachers, we have a number of things you do at the school apart from teaching stuff, but because this is started as a project from the church, we seem to give priority to the church members, especially those who have the qualifications for being teachers and when we began, the on set we did not have qualified teachers so it was a project of the Sunday school that we were running and because of the need, there was few schools that the children were able to go to so we thought of beginning this school because we never done it before, but just took some of the teachers teaching in Sunday school and teaching primary school and we started at that level. So when we started formalizing the school with the government, so that we get a government accreditation, that is when we started asking teachers from the outside to come, do applications and then we consider them to become teachers. So we have teachers here from government colleges, but we have some of them also who are in "just volunteering" because they fill the call to serve, and they have the time so they are willing to give their time to teach, and help because there are challenges with payments and when you have people who are from within, it is helpful.

They are all educated teachers?
Yes, yes.

In terms of relationship with the government, do you have any funding or can you apply for funding?
Uhm yes and no. Relationship: we need to be related to the government to run a school. So we're trying to do a lot of necessary documentation to help us provide education that is of good standard that is making sense in terms of what they require. They are occasional times when they've had plans for training and we've sent our teachers to go and get that training. So far, in terms of government funding, we've only got textbooks for some classes at one particular point, at one, there was a program the government was running with some NGO so we sent some of our teachers for that training and after that, they sent us some textbooks after that. In terms of regular funding of money to pay teachers, or the day to day running or for food we haven't received so far. We may receive in the future, but we haven't received so far.

This is also an informal institution?
Yes, but I don't know why they call it informal. It is formal education in an informal setting. So, we are in between; we are not private, we are not public, so we are informal. I think, I don't like that word, but I think that is what they like to call us; informal.

What is the government calling it?
Alternative provider of formal education. So we are alternative; it definitely means we are filling a gap for the government and that is why I really think they need to take us more seriously because starting from the business West of Kibera to the East on the other side, when we started the school

in 2009, and by then there was no public school in the entire Kibera. And I am pretty sure they haven't built any so far. I think they have a number of them at the edges of Kibera, but that therefore means we something like what we are doing, is actually not something you should call alternative. Something that is really formal education, especially when they ask us to meet the formal standards of getting trained teachers, getting a salary, feeding the children and doing all the other things in classrooms and stuff like that. So I think we have not gotten their, then they are calling us something that is very degrading in my understanding.

In terms of ICT; computers and tablets - do you have access to that so you can teach kids?
We have a few computers for the school because the high school, they also have computer lessons. But we also have a national library across, just behind here, about 5 minutes walking behind where the primary children go to do that. So we do not have our own, but we can access that. It's being used by several schools, but whether it's enough that we have share, if it's efficient and so on, but in terms of physical availability, they are there.

Do they provide the teacher or…?
Yes, like, if we have a teacher here, the children go with that teacher so I think they have someone else just to get the place, the classroom ready, then one of our teachers teach.

Have your teachers been trained at all?
For what they are teaching, you know here, we train our teachers about things like computer literacy, we trained a number of teachers last year all but one, because all of them just in basic computer knowledge. But in terms of detailed training that they can be able to train others, not much I wouldn't say they have that serious knowledge that they can be able to transfer to others.

Is that something that you would like to be able to do?
Like yesterday, for we would like to have done that yesterday, because if you're hoping to live here for the next five years, there is going to be very important. And we had an incident here, one of the students was trying to help a teacher on how to operate a laptop. And that was a bit funny; it was not expected. Because some of these children seem to be more exposed, so if you want a situation to be able to get the right content but also train the teachers, it makes a lot of sense. If they would offer a training like that; I would say we need it not tomorrow, but yesterday. Because it's something that we need if we are going to make it. Now, a lot of the research, a lot of the things, some of these books, they print them today and their outdated tomorrow so you need access to see what is really happening.

So where do the children learn ICT when they can show the teachers the laptop?
Some of the students, you know, we are mixed. We have a few of the children that are not exposed, but we have a number of children that are living with families that are coming from, they have TVs they have some very serious funds that they are able to access so much and being exposed from home, during holidays, they visit different places and you can't really figure out "this is where" but that was an incident that really sent me thinking that "if a child, a student is teaching a teacher in how to use a laptop, then it really means so much even in terms of loyalty, in terms of thinking how do that work, because a lot of what we do is just not formal education, we also need to do a lot of guiding in terms of morals, social issues… so there's probably a lot more that the children

know. If you are to talk with children you really need to know "what is it that they know?" so that you can be able to approach them from there, cause otherwise you're assuming they know nothing. Then you're in the 19th century. Technology is moving so fast. China is a blessing in this case, everything that you can access from an iPhone you can be able to get a phone for 3500 shilling and access the same things. The idea is that when you have parents who are not very well educated and they have a phone, it happens that the children then get to know what is in the phone and they are able to download stuff that you wouldn't been able to do as a mother because you grew up in a different age group. So what we are trying to think is that if you can be able to get people, some of them thinks that they have already gone passed, they are no longer on school, what are the basics that you can say to parents? If you can give them some training in ICT; I think you're able to help and grow the discipline. Because it has to be very high even for the children.

Do you think that the government needs to have special policies for alternative and other schools? Like a specific framework or the same framework?
If you look at what is in the policy guideline that the MoE currently constitute, we can't meet the private or the public, but we can meet some of them. So this has to be a middle ground way. As I told you, it is also very important that the alternative schools also have a say. Like, can we ask for more teachers? How do we subsidize so people also can confidently run these schools? In the end of the day, we are serving the children of Kenya. So I think that is why we need a middle ground policy. We need to agree that if a child is three years and they come to school and intend to leave in 17 years you are not going to take the child through another system. If they're missing something now, they are not going to get it elsewhere. What could be is to make a special provision, make it in a way that is much as they are in the alternative system, but can they get what any other kid is getting at the other side? Because the other thing that then is a problem, is that if a teacher go to a private school where they are trained, they will probably get a double digit to what we are paying them now.

Thus, we are only able to attract the weaker teachers and that therefore means that the whole business, when we talk about slum upgrading, is that when we upgrade children's minds, and when they come out from here they are going to university. Then they are not thinking about putting up a house here: they are literally thinking of families from here and put them somewhere. Otherwise the gap will continue. But if we get good teachers, you will realize that there are no differences between students in informal settlements and other students out there. So please give us something that works for us! That if a child goes here, and they see that what somebody else is getting in the upper market is then something I can also be able to do here, like ICT, then, I am OK. But every time they are looking up and thinking: they are better, the government is giving them textbooks, computers. Even psychologically it's really hurting the children like that. And when the teachers think that they are idiots, everybody looks at them thinking "those are the ones who did not make it" so that's why they are here. They are trying to go to other places. But literally, all these are Kenyan children and if you do not bring them up as responsible citizens, we are going to be a problem in the future soon. And they are going to put up more walls, you know the gated community. It's cheaper to just give us education and you don't need the walls.

Because in the end of the day, and this may not be a very kind thing to say, when you turn out students, every year they do class 8 and they go out. It is not my business whether they make it or

not. I would rather, that when they leave here, they can be able to fit in any other place in the society. But if they only living here because their years are gone and then they go there thinking "oh my I have never been to school, I have just been spending my time outside there" they come later and it's not very good. And the psych of poverty is because now your parents did no have any marketable skills, you are dropping in class 8 and then you go and in the end of the day you're going to start what your mother do; to give you food. You're already 2 but you still can't provide. And we talk about the lack of jobs; but what does the lack of jobs matter when you don't have the marketable skills? You say, we are looking for teachers, you dropped in class 8 you are 27 years, you can not come to apply because you are not given that opportunity.

They should not just sit at the top. These are Kenyan children. This is something that needs to be addressed; the gap between the Ministry and the alternative schools. The Ministry is ill funded!

Interview 9

Informant 10
Age: 43
Gender: Male
School: Alternative provision to basic education and training, Kibera, Nairobi.
Position: Founder and principal

Informant 11
Age: 34
Gender: Male
School: Alternative provision to basic education and training, Kibera, Nairobi.
Position: Teacher

--- Issues with recording the first 30 seconds about the interviewees background, name and age ---

How long have you been here for?
Since 2010.

And when did you start your secondary division?
2015

What kind of educational services are you providing?
If you look at the children that we are serving…. especially those who are coming from the informal settlement, guys, girls or women of the community...This slum is so huge, there is no school around this place. You find that this school is supplementing what the government is doing. So the government should come in and bring in some resources or restructure on how the schools that are within the informal settlement, can be incorporated or can be funded and again, be regulated.

Are they (the government) doing anything?
No, they are not doing anything. Yep.

Is there any government support or funding?
After we did… In the year of 2005, when the government came up with free primary education, we immediately heard a lot of noise about the children that are marginalized. Because in, those children, when they were assign for ICTP (?) they were registered as "private" and we wondered, if the child that was in public school paid a little bit lesser, than the child that is learning in informal school, why, we thought, why is that difference? We thought by that, that one, they are being marginalized. And Kenya, being one of the signatories of EFA (Education for All), Kenya is one of the partners of that, we used that platform, and during that time the Ministry of Education got us a slot in a desk in the Ministry, so that you find that now a desk that was called the "informal" desk and you find that these schools who are being piloted in the year 2004, so they were giving some money to buy books. But it has not been so much paid attention into. Because if, I think, if you pilot a project, after landing and meeting some of the challenges that you faced, then you will be able to come up with some regulations that can be now streamlined used in a manner that suit the targeted groups. But that one was not done.

Ok, so they did not really evaluate the results…?
No, they did not evaluate, like they did not comment on how it went or followed up the services. But it was not the objective here; the objective was to assist the child who are in this school. They are working with some challenges that they are facing in the schools; teachers, infrastructure, in terms of books, toilets, size of classroom, and this is so much and still these children are performing. SO Why? Why should they be given some check rules? I thought that the government would have just could come in and make a survey, to look at components; in terms of teachers' delivery, in terms of book ratio; in terms of class room sizes; what can be done? Can they talk to the community around schools, like a school like St. Christine? Talk, tell those communities that "we are able to open up for this and be able to let children also access these school". So they don't struggle going to the Olympics! So they can see how can we bring in teachers. And then, if there is something that this school is charging, for example, can they, this with the board of that school and they agree, "so you are charging something to sustain some of the projects in your school, can we now if we bring you a number of this teachers; then can you now at this level?" So we don't interrupt your activities as well, but also supporting. So that is where I think the government lows the mark. So I feel strongly, that if, that this kind of surveillance we try to look at in marginalized groups and those that are working in the informal settlements and in some difficulty areas, this is the best way that we can be able share and we can also have international partners. We can also compel them. Say that how can we prove our associates and then see if we can improve some of the services these schools are offering? I don't know, then you could have something to add on. Cause then you have something very experienced teacher here, he has been very very instrumental, these are some of the things he has been doing here, so I think he has something to add here.

But so in terms of regulations now, do the government have specific policies, are they still mainly divided in terms of public and private schools?
That is where the born of contention is. Because that is, when, in the 2015, early or 2016 - between 2015 early, immediately when the Minister of Education, the previous, Machiani, when he came in,

there was a policy that we did with the Ministry and we thought that after doing this, like, coming up with a standard revelation for the informal schools, then, he signed it to be a document that can now be used by the Ministry of Education as a policy document that can assist the schools in being registered and recognized by the Ministry by Education. If you look at the education policy act 2013, it somehow oversaw that and they said that they only have public and private, and now we're wondering: where are we? Because we don't want to be private, but neither do we want to be public. But we want to be called a school that is serving the low income families. So how are we...that is why we wanted to come up with a minimum standard that can suit these schools and they can run easily. And the Ministry of Education can be able to regulate and see how they are performing in terms of teaching and so it can be able, so it can be integrated into the national umbrella. So, they haven't done that, when Mr. Machiani signed the document, it become a document just governing the Ministry of Education offices, but no one implementing it. We have a desk - yes - of the same department but it not...is ill-funded. So it means, it is just there. So if, when they hear there is a funding, then they would *revive* it! (laughing) You see, so that was the main aim was, just to look at it, and again learn from it, what are the gaps, what can be done, how can we do about it and what are things that assist both schools, students, and that is what I thought should be done. Because if this was about making money, I don't think we would be sitting here today. It almost eating us. If I was to make money, I should be sitting somewhere doing IT. Those businesses that started 18 years ago, they are flourishing. But this one, I don't think, sometimes we talk to friends, we go into deficits, sometimes it's so hard to run a school. You know how schools work, if something, a small thing happen to a school, then also other things are being affected. So it gives us a lot of challenges.

In terms of technology and ICT, Clara told me you've just got a computer room?
Yes, we're having a computer room. The main aim of putting up a such kind of a building was to come up with an ICT center. So that the community around, embrace it, and the children also learning here get some of the skills.

So it's for the overall community, not only for the students?
It is not only for the children, we thought that it should also incorporate the community. Why? Because most of the people that learn, they were computing. So we open up for them, so they can learn and so the children can learn. We've been having some partnership with another organization called Ohle, a US organization that has been providing us with tablets. And these tablets have some materials. Some of them are really broken down, their lifetime is not so much, they have some challenges that we are facing. And they were here last year and said they could add us more tablets, phones, desktops so we would be able to do such thing with our program. Maybe because of our politics, people are not moving easily into Kenya. Oleh I think was funded by Obama. They came up that they could work on community level to embrace ICT.

That has all been privately funded?
Yes, no government. The computers were also funded by another organization, that were thinking to dispose their tablets when they bought new machines. They gave us about 17, but only 10 were working. We find that those are the 10 we normally use

And does that start in the secondary?
Ah even the ones from class one can attend. The e-learning materials so you can open a page and access some of the material. So it's not so much for training, but like a library. Learning how to use it, start touching some buttons.

So, in terms of teaching there, who is teaching?
We have a volunteer person who normally helps us, because we can not afford to pay someone teaching ICT (laughter). Sometimes, when we have some of the brokages, we have put them there, maybe god knows we get some money there, if we don't, we still stalk them and see if they can be able to maintain. Because maintenance is not so like we can get a profit on the money, so that is how we operate it. We have volunteer teachers that come. They come from the community. Usually from Saint Lucia, it was founded by Catholics. There is a partnership we enjoy with them and every year they give us volunteers for 6 months. Some of them are computer specialist, and some are just regular.

Is it the same for other subject?
Yes, we bought some e-learning material for biology, mathematics. And it can show exactly how it should be done and you can see how it can be done. But that's not a practical one! So far ICT has as a school, been the very start. Because you see the government are giving a lot of incentives to their schools. They provide teachers for their home schools, they supplement with money, and even give computers and tablets so you find that these kind of schools don't get the same opportunities. But you see, ICT is very important, when we have the information in the tablets they can stay for a long time, longer than the books. Because books stay for a year then they get lost. When it comes to registering children, we don't write it manually, but on tablets. We need those facilities, and many of these schools, you need to go to the center to register and for us, we can do it here. That is an advantage. And when it comes to setting exams, we can set so many questions in different subject so when we do an exam, they can just do a selection. It is not time consuming. So we embrace it, but we have loads of challenges. Even the public schools are experiencing the same. It is not successful, because the power is a problem, electricity and security to protect. They are being stolen. That is also why we let the community come here and use the computer, because for us, we have a few tablets here, but you can borrow it home and then parents can also learn and help. But since they are being donated, they have been used before so not all are working, but it's still a good thing.

So when children start to use them, are they quick to learn?
Yes, like, when we walk into that room, children are more able to explain how to use the stuff than we are. Most of us, maybe don't know, so they are the one who can tell us! But it is also overwhelming for the teachers to teach, since they are alone with loads of children. So you see it is a new thing, you really have to push people to be on track and we are still fighting that.

And is that the same for boys and girls?
I think the boys are faster at learning. But they also mainly want to play games and do the fun things. The girls are slower but concentrate more.

Is that a difference you have noticed in other subjects as well?
Well, you must know that in Kenya, our culture, girls did not always go to school. But now they do and it is very important. But some subjects, like math and science, it is more popular for boys. And the girls like English and social studies better. But we try to change it and show that science and technology is for girls too. We have this one girl that is really good and so we try to tell the other girls that look, you can also do that. But it is difficult to change things that have been like that for a long time.

Yeah I understand. Are you talking with the teachers about that?
Yes, or, we have thought about it. But it's difficult. We know that it is important that girls also learn these subjects. Also now when you need to be digital it is important that all children learn the same. But it's a process. We haven't come there yet.

What are the subjects you offer?
English, Math, Swahili, Social Studies. Some Muslim schools also offer ARI. But in high school many drops out.

Are there some subjects that are more important for the children to be able to continue education?
In primary, class two, they do almost all the subjects. Then in three, we have to help them in the subjects they can take. Primary is one to eight. Secondary is the same as high school. Then, if they want to go to another level, like university, they have to do a specific course to complete. But the information in the tablets, are applicable to all subjects.

When did you get the ICT room?
2015. But then it was a problem because we didn't have power.

Do you teach as well, Daniel?
I've been teaching for a long time, but now I'm educating teachers. We have 17 teachers, 10 primaries and 7 in high school.

And they all work at St. Christine full time?
They work here all the time, but it is a challenge, because we are not able to pay them. So some may think of going to work elsewhere, but we try to adjust the timetable and ask them to stay with us.

So have the teachers also received education to use the tablets?
Yes, we insist that they should be trained. We want them to make use of the tablets. Because right now, they are not seeing the need...but in the future. You know everything is going digital, and you have to embrace the digitalization. Even if you like it or not. In the past we didn't have the phones, but now most material you need is in the Internet. In fact, if you can go to a school that can offer you training, they should appreciate. But you see most of the time, the teachers just want to concentrate on examinable subject and they don't think it's the best way. Even kids being very talented, like I saw a boy, a six-year-old, he could easily navigate into that kind of form and you wonder, at that age, maybe I am not even aware! The teachers also need to upgrade their skills so

they can encourage the children, even if they like it or not. In the end of the day, to properly teach a child, you need to be digital. Because nowadays, we do not have space to keep papers. Even data, data could be saved in the internet!

So in terms of curricula, I know that there have been some changes in recent years with an increased focus on gender equality and ICT. Are you directed by the government through these new policies?
That is a problem, because these people, doing this they just sitting in an office. They don't consider your opinions; they just want you to use it. That is a problem that require a lot of resources for it to be implemented. You see, there's no option. The policies says that if you want to operate a school in Kenya, you have to follow the Ministry of Education's guidelines and rules. So if you don't comply, you'll be knocked out. They will tell you we don't think you are doing what we expected. The Kenyan setup kind of education has some components in it; like values. So they say you we have to go with what they want you to do. If you want to operate a school in Kenya.

So they set the demands, but do not provide the resources?
Yes! (laughing)

So in terms of ICT, is that included in what you have to teach or have you decided?
For us now to survive and make sure that children are on track, we need to have it. Because children in the public schools, they have it. In the private schools, the academies, there are also provided. So for us to be on the right track, we just have to get in it. These are the resources we don't have, but it's good if we have them.

But is it included in the governments directives?
Yes, it is there.

So if you don't have it, could they come and say that you are not following policies?
ICT is part of the policies. It is in the government syllabus, but mostly in secondary school. If you choose a subject, you get examined, you get graded. But in primary, it is not there, but they encourage. All books we have in hard copies; we also have in soft copies. So in order to benefit, we just need to get those skills and resources.

One more question in terms of the partnerships, you've got some of the actual material from partners, but in terms of training both ICT or like the practical skills how to use the tablets, but also general technology and how to teach the teachers?
The Ohle, they are doing it. But only for the teachers in the ICT center. So one is going to the training and then come back and teach our teachers. They have tried, but there is a long process before it's done.

--- Meeting the ICT teacher ---

So this the computer room?
Yes, but some are broken down, these are not functioning. So, they also gave us, something like a server, a localizing server, so whenever we sync with the Boston school, then we get all content to

that server. Then to be shared, it functions offline. It is just within that platform, but it is accessible at the server within here. Because the internet is so expensive for the school so it's really good. Apart from that platform, we also manage some software. Our physical apparatus was not functioning, but we have a software, an interactive software that can be used in class with some practical tools. Then we also teach basic computer knowledge to all our learners and also in primary. So they need to be taught on how to use computers. We give them some basic computer skills and basic things that we teach them are about introduction to computers, processing some spreadsheet and some basic presentation and some basic internet. And then the secondary students now take computer science as a subject. But at primary, there is not yet a given curriculum that has been provided by the Ministry that we can use to teach computer, so now we only teach some basics.

It's not the government that has a curriculum for the primary yet?
Yes, the government has provided some gadgets for learners, mostly class 1s, where teachers now use tablets and computers to illustrate classes. You also find that teachers can develop content and use these gadgets to teach. So, the computers in this case are used to enhance the learning because we believe that as a school, learning takes place when the sense of touch, sight and so the learning outcomes are engaged so they can grasp the concept.

So for the high schoolers, do they chose if they want to have computer science?
Yes, from the ones joining model 1 or model 2, it is mandatory for them to take all the 12 subjects. But the point in model 3, they drop subjects and take subjects of their interest. And these subjects are between 7 to 8. Max 8, that is subjects that are examinable in the national exams. And then a minimum of 7 subjects for high schoolers.

Is it popular to choose computer science?
We haven't yet gotten into Kenya's national examination center and we can only teach proper computer science when we get the examination center.

Is that a difficult process?
Yes, for us to get a center, there are certain things to be put in place. For instance, a school needs to have a free functioning laboratory and if you want to take computers to the national exam, we need a fully functioning computer lab. We can say that we are working on that, our computer lab is not that bad, but we are looking on how to improve our physical environment so to get the recommendation from the district educational offices who will then write a letter to the Kenyan national education center to provide us with an examination center. But you get that our learners, currently, they take exams in another center. But probably by the end of this year, we'll have the center.

Do you find that the interest of using computers and tablets, is it equal between boys and girls?
Uh I find it that girls are interested in using computers more than boys. Boys will only come here to play games, but girls want to know what is going on more than boys. Also amongst the primary students.

So the girls are more interested in learning about the computers and what you can do with them?
Yeah. Like writing and using the spreadsheets and the learning programs and things like that. The boys are also interested but more in the games.

Do you see that as a problem or do you let the boys and girls choose themselves what they use the computers for?
I don't know. For the primary I don't think it's a problem. Because it's just basic. But for the older students I think, because if they want to be examined they need to know some things. So then we have to tell them.

And is that difficult? To make sure that they don't just play on the computers?
No it's okay.

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Sessional Paper No. 1 2005 on a policy framework for education, training and research	110 pages	2005	Gender	27	"Female students enrolment constituted 44 percent of the total, but there exists serious gender disparities in terms of overall enrolment in science and technology related professions." p. 9	Gender disparaties is a serious issue. Expressing **intention**	Argumentative. Increased enrolment in public TIVET institutions **but** disparaties persist in terms of employment in science and tech.	Interactional control. Presented in the context of enrolment in other academic fields. Enrolment in TIVET (44%) is contrasted to enrolment in business studies (52.4%) and engineering (less than 5%). Female enrolment in polytech higher than ever in 2003.
					"Regarding **gender** parity, female students constitute 32 per cent of the total enrolment in public universities and 54 percent in private universities." p. 11	Necessity. Lifting the issue with gender parity when discussing problem with low transition rate from secondary to university.	Female enrolment have increased since 99 but still disparaties between men and women.	Interactional control. Related to overall enrolment from secondary school to university. Low transition rate overall (12%). Raising this issue.
					"However, despite the substantial allocation of resources and notable achievements attained, the sector still faces major challenges. Some of these challenges relate to access, equity, quality, relevance, efficiency in the management of educational resources, cost and financing of education, **gender** and regional disparities, and teacher quality and teacher utilization." p. 14	Gender disparaties presented as a **major challenge** when discussing problems of allocation of resources in the educational sector.	Argumentative. Lifting gender disparaties as a problem together with regional disparaties, teacher quality and teacher utilization.	Interaction in the paragraph. First sentence: Government has "demonstrated its commitment to the development of education and training through sustained allocation of resources". But acknowledging that more needs to be done. Last sentence: "The purpose of this Sessional Paper is to address these challenges and consequently provide a policy framework for the education and training sector in order to meet the challenges of the 21st century."

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					"For equity, it will be necessary to take affirmative action to compensate for historical and emerging inequalities and disparities in all areas of our national life including **gender**." p. 25	Gender is explicitly mentioned as an example of a historical and emerging inequality that needs to be addressed. Expressing **willingness**	Conjunctions. It is described as **necessary** to take "**affermative action**" and to "compensate" for historical and emerging inequalities such as **gender disparaties.**	Interaction: Describing the need to tranform the philosophy of education to address emerging challenges such as "substance abuse, corruption, violence and social exclusion." Talking about education for the 21st century that promoted "sustainable development, peace and social justice.".
					"Social responsibility - Education and training integrates social responsibility, including nurturing our cultural heritage, spiritual values, combating drug and substance abuse, sensitivity to the spread of human calamities like HIV/AIDS, developing positive attitudes to work, promoting **gender** equity, as well as care for the vulnerable regions and groups;" p. 26	Describing the promotion of gender equity as a **social responsibility issue**.	Conjunctions. Included in a list of areas that should be address in the Kenyan national philosophy of education.	Interaction: Gender equality is included in the area of social responsibility. Social responsibility is presented as one area that should guide Kenyas philosophy of education. Other areas are: National unity, Unity of purpose, Moral and ethical values, Life-long learning, Science and technology, Equity, Quality and Environment.
					"The Ministry has, therefore, set the following specific objectives in full cognisance of the national and international goals: (i) To develop a comprehensive ECDE policy paying special attention to **gender**, vulnerable and disadvantaged children by 2005;" p.29	Describing the need to pay special attention to gender. Expressing **necessity**	Conjunctions. Included in a list of **special objectives** that needs to be reached to fulfil the goals and objectives of Education by the Kenyan government.	Interaction. Included as a "specific objective" for the Ministry's overall goals and objectives for Education for the international long-term EFA (Education for All) goal of 2015 and short-term UPE (Universal Primary Education) goal of 2005. 1 out of 13 specific objectives.

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					"The Ministry has, therefore, set the following specific objectives in full cognisance of the national and international goals: (iv) To eliminate **gender** and regional disparities in primary and secondary education by 2005;" p. 29	Describing a need to **eliminate** gender and regional disparaties in primary and secondary education by 2005.	Conjunctions. Included in a list of special objectives that needs to be reached to fulfil the goals and objectives of Education by the Kenyan government. NOTE: this objective is stated to be fulfilled the same year as year of publication of this document.	Interaction. Included as a "specific objective" for the Ministry's overall goals and objectives for Education for the international long-term EFA (Education for All) goal of 2015 and short-term UPE (Universal Primary Education) goal of 2005. 1 out of 13 specific objectives.
					"The MOES&T aims at providing conditions for full development of talents and personalities, promotion of social justice, ethics and morality, social obligations and responsibilities; fostering positive attitudes and conscious- ness towards others, including addressing **gender** issues in order to serve the needs of national development and, above all, foster national unity." p. 30	Describing the need to address gender issues for the purpose of national development and national unity. Expressing obligation.	Argumentative. The Ministry **aims** at providing mentioned conditions.	Interaction. A summary of what the Ministry aims to achieve through the pursuit of the special objectives. Descibed as important to "enable them to play effective roles in the life of the nation". p. 30

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					"Despite this performance, primary education continues to experience many challenges relating to access and equity. These include: overstretched facilities; overcrowding in schools, especially those in urban slums; high Pupil-Teacher Ratios (PTRs) in densely populated areas; high cost of special equipment for children with special needs; diminished community support following their misconstrued role vis-à-vis that of the Government in the implementation of the FPE initiative; **gender** and regional disparities; increased number of orphans in and out of school as a result of HIV/AIDS and other reasons as well as internal inefficiencies." p. 39	Describing gender disparaties as one of the **challenges** that primary education experiences in relation to access and equity of education opportunities.	Conjunctions. Gender disparaties is included as one of several (7 listed) barriers for childrens access to quality primary education. Again described as a problem.	Talking "back" to the paragraph preceeding this one which described the improvements in terms of enrolment to primary education between 2002-2004.
					"Other factors relate to poor resource management in primary schools, in-adequate in-servicing of teachers, poor learning environment due to overcrowding, inadequate facilities, poor health and sanitation, **gender** insensitive environments, barriers for those with special needs and inadequacies in quality assurance also contribute to low quality." p 40	"Gender **insensitive environments**" is described as a factor that contributes to problems in quality of learning.	Acknowledging the role of the environment where teaching takes place as a factor for problems with quality learning. Gender insensivity as a characteristic of this environment. Not outlining what "insensitive" means.	Presented in relation to problems that primary schools face in terms of quality of learning.

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					"Sensitise parents on the need to enrol and retain **girls** in schools and make the school environment **gender** sensitive;" p. 43	Descibing the need to make the school environment **gender sensitive.** Also addressing the need to "sensitisie" parents to enrol girls in schools and make sure that they stay enrolled.	Acknowledging the role of both the home environment and the school environment to be "gender sensitive". Specific focus on girls.	Included as one out of 20 stratgies to be able to implement new government policies for education. These policies (13) are listed more as objectives in the document. The aim is to address challenges in primary education.
					"Pay special attention to factors that enhance **gender** parity, for example, **gender** balance at school management level." p. 43	Describing the need to pay special attention to gender parity. Expressing **willingness**	Using gender balance in management as an example of gender parity. Extends beyond student enrolement.	Included as one out of 20 stratgies to be able to implement new government policies for education. These policies (13) are listed more as objectives in the document. The aim is to address challenges in primary education.
					"Despite these initiatives, the secondary sub-sector continues to face challenges, particularly the low participation rates, low transition rates from primary to secondary and from secondary to tertiary (particularly to universities), as well as **gender** and regional disparities. In order to address these challenges, the Government will implement the following policies:"	Describing gender disparaties in secondary school as a **challenge** that needs to be **addressed**.	Argumentative and reflective. First sentence: "Despite these initiatives, the secondary sub-sector continues to face challenges". Gender disparaties being one of these challenges. The government **will** address these through a number of policies.	Talking about gender disparaties in seconday school as a challenge together with low participation rates, low transition rates from primary to secondary and from secondary to tertiary and regional disparaties. Introduces policies to address this.
					"To implement the above policies, the Government will employ the following strategies: (...) (xxiii) Ensure that the school environment is **gender** and special needs responsive;" p.48	Active sentence structure. The government **will** employ the following strategies to **ensure.**	Argumentative and active. The government **will ensure** that the school environment is gender responsive.	Included as one out of 29 stratgies to be able to implement new government policies for reducing challenges in secondary education. These policies (6) are listed more as objectives in the document.

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					"Despite the interventions and initiatives above, access and equity in ACE (adult and continuing education) and NFE (non formal education) are characterized by low participation rates, and regional and **gender** disparities that arise from a long history of neglect." p. 52	Reflective. Despite interventions and initatives gender disparaties still persist. **Intentional**	Gender disparaties are described as a consequense of "a long history of neglect".	These issues are presented in relation to the lack of quality and relevance in non formal education which in turn is described as a consequence of **lack of clear policy directives**.
			Men	0				
			Women	6	"Illiteracy manifests itself more dramatically among the poor, particularly **women** who constitute 61 percent of the total illiterate population." p.13	Explicitly mentioning women as being **particularly** affected by illiteracy in Kenya.	Argumentative. Shedding light on the fact that women are more illeterate than men.	Brought up in the section: Performance of the education sector. Describing a variety of issues in the Kenyan education system. One of them being illiteracy.
					"The Ministry has, therefore, set the following specific objectives in full cognisance of the national and international goals: (...) (vii) To achieve universal adult literacy, especially for **women** by 2015;" p.	Explicitly stating that achieving literacy amongst women is a **specific objective to adhere to national and international goals.**	Argumentative. Included in a list of special objectives that needs to be reached to fulfil the goals and objectives of Education by the Kenyan government.	Mentioned as one out of 18 strategic objectives. Specific and explicit focus on women when it comes to illiteracy.
			Boy	11	"To monitor and evaluate progress towards the achievement of the above objectives, the Ministry has set specific targets as follows: Achieve a transition rate of 70 percent from primary to secondary school level from the current rate of 47 percent, paying special attention to girls' education by 2008 without adversely affecting the **boy** child;" p. 30	Stating that focus on improvig girls enrolment should not adversely affect "the boy child".	Conjunction. Paragraph descibes the importance of improving transition from primary to secondary school. Especially for girls but **without** adversily adversely affecting boys.	Mentioned as one out of 7 specific targets to achieve the overall goals and objectives of education.

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					"To implement the above policies, the Government will employ the following strategies: (...) (xxii) Sensitise stakeholders and communities to discard socio-cultural practices that prohibit effective participation of **girls** and **boys** in secondary school education, and enforce legislation against the violation of the Children's Rights;" p. 46	Gender neutral. Describing the need to sentisise stakeholders and communities that **prohibit effective participation** in education of both boys and girls.	Argumentative. Describing how both boys and girls are subject to socio-cultural practicec that might inhibit them.	Included as one out of 29 stratgies to be able to implement new government policies for reducing challenges in secondary education. These policies (6) are listed more as objectives in the document.
			Girl	17	"It is important to note that the poor performance of the economy has been manifested by low enrolment, low transition rates, dropout and completion rates, especially among **girls** and children from poor households." p. 17	Describes how it is **important to note** the relationship between economic performance and low enrolment, transitions rates, dropout and completion rates especially amongst girls.	Conjunction. Low economic performance manifested **by** enrolement and transition rates in education.	Mentioned in relation to the state of the Kenyan economy and national economic performance.
					"The Ministry has, therefore, set the following specific objectives in full cognisance of the national and international goals: To ensure that all children, including **girls**, children in difficult circumstances, and those from marginalized/vulnerable groups, have access to and complete free and compulsory primary education by 2010;" p. 29	**Ensure** that all children, including girls, have access to complete and free primary education.	Explicitly expressing a focus on girls, children in difficult circumstances and from marginalised groups. Using the term "including girls" instead of f. ex. "with special focus on". Are "all children" not girls?	Included as one out of 13 policies to be followed in line with national and international goals for education. These policies are listed more as objectives in the document. The aim is to address challenges in primary education.

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					"To monitor and evaluate progress towards the achievement of the above objectives, the Ministry has set specific targets as follows: Achieve a transition rate of 70 percent from primary to secondary school level from the current rate of 47 percent, paying special attention to **girls**' education by 2008 without adversely affecting the boy child;" p. 30	**Special attention to girls education.** Expressed **willingness**	Argumentative. Emphasizing the need to focus on girls eductaion in order to achieve a transition rate of 70% from primary to secondary education.	Mentioned as one out of 7 specific targets to achieve the overall goals and objectives of education.
					"To implement the above policies, the Government will employ the following strategies: (...) (iii) Provide support to targeted boarding schools in ASALs (Arid and semi arid land), and other deserving areas especially for girls;" p. 46	**Provide support** to targeted schools, and especially for girls.	Argumentative. Emphasizing the need to especially focus on girls in terms of providing support for boarding schools and rural areas.	Included as one out of 29 stratgies to be able to implement new government policies for reducing challenges in secondary education. These policies (6) are listed more as objectives in the document.
					"To implement the above policies, the Government will employ the following strategies: (...) (xxi) Ensure the re-entry of **girls** who drop out of school due to pregnancy and early/forced marriage;" p. 46	**Ensure re-entry for girls.** Expressed **obligation**	Argumentative. Strategy that aim to help girls to come back to school.	Included as one out of 29 stratgies to be able to implement new government policies for reducing challenges in secondary education. These policies (6) are listed more as objectives in the document.
			Male	7				
			Female	12				
			Masculine	0				
			Feminine	0				
			Inclusiveness		This will be achieved through the provision of all-inclusive quality education that is accessible and relevant to all Kenyans. (p 14)			This vision is guided by the understanding that quality education and training contributes significantly to economic growth and the expansion of employment opportunities. (p. 14)

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			Equality	1	"Instilling values such as patriotism, **equality**, peace, security, honesty, humility, love, respect, tolerance, cooperation and democracy through education and training will be critical." p.25	Instilling values of equality in education are described as **critical.**	Putting equality together with values of love, respect, cooperation, democracy etc. Argued to be critical in the new philosophy of education in Kenya. "A holistic education system".	Introduced as one aspect of the new philosophy of education in Kenya that emphasize "the provision of holistic quality education and training that promotes education that involves both cognitive and affective domains." p. 25
			Inequality	1	"Education can reduce social and economic **inequality**." p.24	Describing education as a way to reduce inequality. Expressing **certainty**	Conjunctions. The sentences following describes Kenya as being characterized by large socioeconomic inequalities that constrains economic growth. Education is described as a contributor for reducing inequality and as such facilitate faster economic growth.	In the section of the role of education in national development. "The Government recognizes the strategic importance of improving the overall education level of Kenyans within the context of poverty reduction and economic growth." p.23

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			ICT	48	Technology is a critical form of wealth to any nation. For this reason, innovation, research, development, Information and Communication Technology (ICT), and science and technology will form one of the key pillars of education and training (p. 27)	**Will form one of the key pillars -** The importance of ICT for future national development	Affirmative.	
			ICT		"To promote and popularise ICT as well as science and technology education by 2008;" (p 29).	**Promote and popularise -** sentence put emphasis on making ICT universal	Argumentative. The aim to make ICT widely accepted and universal in education	Presented in the context for overall goals and objectives for education in Kenya
			ICT		"Against this background, the Government will make education the natural platform for equipping the nation with ICT skills in order to create a dynamic and sustainable economic growth." (p.79)		Conjunction. ICT and economic growth. The goal is to further skills in ICT through education. This will lead to sustainable economic growth and turn Kenya into a knowledge economy.	Presented in the chapter VIII on Information and Communications Technology after the following sentence ..."Many of the productivity gains in the developed world economies over the past two decades can, to a great extent, be attributed to the impact of ICT. The Government appreciates and recognizes that, an ICT literate workforce is the foundation on which Kenya can acquire the status of a knowledge economy"

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			ICT		Facilitate universal access to ICT infrastructure, that is, power, equipment and improved connectivity in all institutions of learning in both the formal and nonformal education sectors, including affirmative action for gender, ASAL areas, rural and urban-poor schools, as well as those of special needs (p 81)	**Facilitate; universal; affirmative action for gender**	Affirmative. Focus put on ICT as a good for the entire society, where also gender is included as a specific focus area.	Put as an implementation strategy to achieve sustainable economic growth
			ICT		Presently, there are a number of challenges facing access and use of ICT in Kenya which include; high levels of poverty that hinder access to ICT facilities, limited rural electrification and frequent power disruptions. Where there is electricity, high costs of Internet provision, costs associated with ICT equipment, inadequate infrastructure and support hinder the application of ICT (p 80)	**Number of challenges; inadequate; hinder application of ICT**	Decisive. Emphasis put on the obstacles in achieving the full potential of ICT.	Presented in relation to what the government will do in order to adress the challenges.
			ICT		Build institutional and human capacity to facilitate the use of ICT in education and training and institutional management in order to improve the efficiency of educational administration and management at every level from the classroom, through school to the sector as a whole; (p 82)	**Build capacity; education and training; improve efficiency at every level**	Argumentative. The role of education as an implementer/change agent in institutional settings.	Presented as a strategy to equip Kenyans with the necessary skills in ICT adoption
			ICT		Provide teachers and education sector managers with access to information and tools to enable them to better deliver educational services;	**Deliver better** educational services	Emphasis put on the concept of *change* and the impact of adequate education for teachers	

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			Technology	29	For the country to achieve desired economic growth targets and social development, a high priority needs to be placed on the development of human capital through education and training by promoting technical and vocational training, as well as the teaching of sciences and information technology.	**Desired** growth target and social development, **high priority**	Importance of science and technology for economic growth	
					For these reasons, education for the 21st century will have to depart significantly from the past trends by addressing globalisation issues such as environmental concerns, technology and terrorism.	**Technology as a social reality**	Necessary for the "survival" of the nation, equalized to terrorism	
					Science and technology - Technology is a critical form of wealth to any nation. For this reason, innovation, research, development, Information and Communication Technology (ICT), and science and technology will form one of the key pillars of education and training;	**Technology as nation wealth**		
					"A breakthrough towards industrialisation can only be achieved through the application of technology. It will,therefore, be necessary to give prominence to technical education in all sub-sectors." (p. 33)	**Education as mean to release the potential of technology**	Deterministic about the connection between technology and education and the growth of society.	Goal-oriented; pompous

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			Science	21	The teacher factor is also important in explaining the poor performance in that although the majority of the teachers are graduates, they are arts oriented which results in shortages especially in Mathematics, Sciences, English and Kiswahili.	**Teacher factor, important, poor performance, arts oriented**		
Early Childhood Development Service Standard Guidelines for Kenya 2006	72 pages	2006						
			Gender	10				
			ICT	2				
					Not addressing gender and ICT.			
Safety Standards Manual for Schools in Kenya	78 pages	2008						
			Gender	3				
			ICT	0				
					Not addressing gender and ICT.			
The Biosafety Act	46 pages	2009						
			Gender	1				
			ICT	0				
					Not addressing gender and ICT.			

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The National Special Needs Education Policy Framework	65 pages	2009	Gender	24	"A complex web of economic and social issues including gender inequality, create barriers within mainstream education, social and economic life to learners with special needs and disabilities." (p13)	Gender inequality positioned in a **complex web** of economic and social issues. When gender inequalities persist, this create barriers.	Conjunction. Gender inequality as a social issue.	
					Gender mainstreaming to ensure equity and equality in SNE is a challenge. According to the Gender Policy in Education (July 2007), gender differences in favor of males are considerable. (p 47)			
					In secondary schools, there has been a decline in the girl child enrolment resulting in gender disparity in favor of boys. Generally, the national education system has been characterized by gender disparities at the national level and across regions (p 48)	**Gender disparity in favor of boys.** Expressing **certainty**	Argumentative. Showing direction of the disparities.	Pronouncing the effects on larger scale - he male domination is school is a country wide phenomena
			ICT	11	ICT plays a critical role in educating people on issues like human rights, democracy and sustainable development. It is an important tool for shaping opinions, educating and entertaining people.	**ICT important for shaping opinions and educating people.** Expressing **necessity**		
TIVET Institution Guidance Counceling Policy and Operational Guidelines 2011	25 pages	2009	Gender	1				
			ICT	0				
					Not addressing gender and ICT.			

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Education Sector Report: 2013/14 2015/16 Medium term expenditure framework	118	2012	Gender	16	The overall Science, Technology and Innovation sector's goal is to achieve industrialization by 2030 in line with Vision 2030. The sub sector has the following objectives in line with this (...) - **To ensure gender equity in teaching, administration and research at all levels of higher institutions** (...) Increasing transition from secondary to university with special emphasis on **bridging the gender gap in all programmes**;(p.15)	Gender equity as a stated objective at **all levels in teaching. Increasing** attention from secondary to university with emphasis on **bridging** the gender gap - is this applicable for private/public/informal schools alike?	Affirmative and decisive. Gender equality is now a taken-for-granted objective that goes in line with the overall constitutional Vision 2030.	Put in a sentence listed of national goals. Apparent that gender equality has recieved national acknowledgement.
					The gender parity index improved from 0.96 in 2009 to 1.02 in 2010 in favour for girls. In 2011 the gender parity moved to 1.01 against a target of 1.0.	**In favor of girls. Evidence that the gender parity has improved since 2009.** Expressing **certainty**	Mentioned in relation to general enrolment rates in secondary school.	Put focus on the positive impact of gender equality in recent years.
					Negative stereotype, misconceptions and beliefs about the causes and consequences of disability as well as high levels of poverty and gender discrimination are barriers within society that prevent learners with special needs from participating in education	**Stereotypes** as barriers that prevent learners	Put in the context about disabilities, marginalized groups and learners with special needs. However, gender was **not** mentioned here.	

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					In conclusion, as is evident in chapter two, over the period under review, the sector made progress towards enhancing access, quality, retention, completion and gender parity as well as ensuring adequate supply of qualified teachers and other human resources required for the support of competitive education, research and innovation.	**The sector made progree towards gender parity.** Positive outlook and mention gender as a criteria/KPI	Conjunctions. ormulated in the section about overall national progress. Gender one of the improved areas.	
			ICT	47	In order to achieve Vision 2030 goal of “establishing a computer supply program that will equip students with modern ICT skills”, the Ministry continued pursuing a programme targeting 20,229 public primary schools, 4,000 public secondary schools, 20 PTTCs, 2 diploma and 10 Model e-learning centres for ACE. During the period under review the Ministry enhanced the supply of ICT to schools by facilitating the equipment of two schools in every constituency with fully functional computer labs. This complimented the initiative started under the ESP in FY 2010/11. Each benefiting school was funded to procure and set up a lab with 11 computers, networking, a printer, an overhead projector and other related accessories. (p 24)	Affirmative. ICT skills are prerequisites to achieve the new Vision 2030.	Mentioned as a strategy to **improve** the country.	Strategic formulation with practical outcomes. Both public primay and secondary school recieved support.

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					Information, Communication and Technology: Local communities have not exploited the full potential of ICT to access education especially for open and distance education programmes. The ICT has therefore to be tapped to ensure increased access to education for all. Few words indicating a focus on gender or equality. Frequent use of the words technology, science and innovation.	**Have not exploited the full potential of ICT.** ICT has therefore to be tapped **to ensure** access to education **for all.** Does increased access to education through ICT for all mean that also women are automatically included?	Put in context of ICT implementation in local communities.	**For all** is mentioned in a decisive sense - but lacks definition of who that is, or who it is meant to comprise.
Sessional Paper No. 14 of 2012. A Policy Framework for Science, Technology and Innovation. Revitalizing and harnessing Science, Technology and Innovation in Kenya.	37 pages	2012	Gender	2	"The effective implementation of the Science Technology and Innovation Policy will be guided by the following principles: (...) 8. Equity and non-discrimination: Ensure there is equity and non-discrimination in appointing the leadership team and in recruitment, promotions and human resource management of public ST&I institutions; and ensure the principle that not more than two-thirds of the members of elective or appointive bodies shall be of the same **gender** is observed." p. 11	**Ensure** equity and non-discrimination in hiring practices. **Ensure** that not more than two-thirds of the members of elective or appointive bodies **shall be** of the same gender.	Argumentative. Focusing on the importance of implementing gender equality in the leadership teams of the institutions that guide the development of science, technology and innovation in education.	Mentioned as a guiding principle for Kenya to enhance their work "to be a nation that harnesses science, technology and innovation to foster global competitiveness for wealth creation, national prosperity and a high quality of life for its people.".

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					"Policy 1: The government will establish an institutional and regulatory framework to promote, coordinate, mobilise resources and manage ST&I. (...) b) Re-engineer institutions to provide a governance framework to support autonomy, coordination, **gender** parity and partnership based application of ST&I;"	Government **will** establish a framework to **promote, coordinate** and **mobilise** resources... provide **support** for gender parity,	Conjunction. Gender parity is mentioned together with factors such as autonomy, coordination and partnerships that should be supported in the new framework.	Mentioned as a part of 1 out of 5 policies that the government want to implement to enhance the development of science, technology and innovation in Kenya.
			ICT	4	"The national sectors significant to achievement of national growth and development targets are Agriculture and Rural development; Health and Life Sciences; Trade and Industry; Human Resource Development; Physical Infrastructure; Energy; Environment and Natural Resource Management; **Information Communication Technology (ICT)**; and Space Science Technology." p. 3	**Significant** national sector for achievement of national growth and development targets.	ICT is mentioned along other national sectors that are deemed significant for national development. Listed as the second last.	Mentioned in the section "National priority sectors for ST&I Policy Interventions". The sentence preceeding this one stresses that it is important that the mentioned **priority** sectors are **strategically integrated** to create technology platforms for enhanced productivity growth. Mentioned as an important part to address the macroeconomic and social challenges and achieve the transformation to a knowledge based economy.
					"The ST&I sector, in facilitating achievement of the mandates of the Constitution of Kenya 2010 and Vision 2030 will pursue the following goals: (...) b) Identify and develop key industries, which include **ICT**, energy, manufacturing, agriculture, transport and space science that will help the country attain middle income country status." p. 12	**Key** industry that **will help** Kenya attain middle income country status. Argumentative.	ICT is mentioned as a key industry for facilitating the objectives of the new constitution and Vision 2030.	Mentioned in the section "Goals" under "Vision, Mission, Philosophy, Purpose and Goals" for enhancing ST&I development in Kenya.

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			Technology	84	"The main objectives of science, **technology** and innovation (ST&I) policy are to create endogenous ST&I capacities appropriate to national needs, priorities and resources, and to create a science, **technology** and innovation culture whereby solutions to socio-cultural and economic problems of the individual, the community and the nation are recognized and sought within the domain of ST&I." p. v	**Technology as a capacity, solution.** Expressing **willingness and certainty**	Argumentative. Technology mentioned as one solution to socio-cultural and economic problems both on an individual, community and national level.	Mentioned in the section of the main objectives and goals with the policy framework.
					"Science, **technology** and innovation are also key components of social integration, sustainable development and poverty eradication based on equity, freedom, justice, governance, peace and prosperity." p. 1	Technology as **key component**.	Technology connected to sustainable development and social targets in terms of freedom, equity, peace etc.	Mentioned in the Background section of the document. Laying foundation for the purpose of the ST&I policy framework.
					"At the economic front, science, **technology** and innovation will play a critical role in ensuring that productivity growth occurs, and that the economy is progressively transformed into a knowledge-based economy."	Technology as **critical, ensuring** productivity, economic development and transformation to a KB-economy.	Argumentative. Connecting technology development to the knowledge-economy and economic developement of Kenya.	Mentioned in the section "Link to National Vision" on how ST&I relates to the national objectives of Vision 2030.

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					"Globally, there are significant efforts to close the three missing links, which are key to leveraging science, **technology** and innovation for national development. These include; the need to establish a culture that respects knowledge and embed this in the various education curricula; the need to focus on active knowledge creation and acquisition and a deliberate and conscious effort to link knowledge creation to actual opportunities aimed at enhancing productivity and creating employment opportunities in existing and/or new sectors." p. 2	Technology as a factor that needs to be **leveraged** by focusing on three missing links.	Linking technology development with education and the importance of embedding it in education curricula.	Relating the aims of the ST&I policy framework in Kenya with global efforts.
					"The Kenya Vision 2030 and the Millennium Development Goals are the twin strategies adopted by the Government of Kenya to reduce poverty and enhance access to basic needs for majority of Kenyans. Science, **Technology** and Innovations are recognized nationally and globally as essential for the economic transformation, growth and competitiveness of Kenya and are also key components of social integration, sustainable development and poverty eradication." p. 3	Technlogy as essential.	Describing technology as essential for the economic transformation, growth and competitiveness of Kenya and are also key components of **social integration, sustainable development and poverty eradication.**	Mentioned in the section "The ST&I Policy and Kenya Vision 2030". Linking the ST&I policy framewor with the broader objectives of Vision 2030.

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					"The government will establish and promote ST&I knowledge sharing and awareness creation systems; (...) b) Establish and sustain national integrated advocacy programmes such as encouraging Science, Mathematics and **Technology** in Schools." p. 23	Technology as a subject that should be encouraged. Expressing **necessity**	Linking technology to schools and the need to establish and promote technological knowledge sharing.	Mentioned as a part of 1 out of 5 policies that the government want to implement to enhance the development of science, technology and innovation in Kenya.
The Universities Act No. 42 of 2012	65	2012	Gender	6				
			ICT	0	Since our focus is on basic education, this document is not relevant for the purpose of our study.			
The Kenya Qualifications Framework Bill, 2013	14	2013	Gender	2				
			ICT	0	Not addressing gender and ICT.			
The Science, Technology and Innovation Act, 2013 No. 28 of 2013	37	2013	Gender	1	"In appointing members under this section, the Cabinet Secretary shall have regard to the objectives and need of development of science, technology and innovation and ensure that there are balanced competencies, **gender equity**, inclusion of persons with disabilities, the marginalised and other minority groups." p. 804	The Cabinter Secretary **shall** (...) **ensure** gender equity. Affirmative.	Conjunction. Gender equity mentioned as one of the apsects that should be taken into conideration when appointing members to the National Commission of ST&I.	Mentioned in relation to the formal structure of the Commission that have been legally tasked with the national development of the ST&I sector in Kenya.
			ICT	0				

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			Technology	85				
The Technical and Vocational Education And Training Act, 2013	45	2013	Gender ICT	6 0	Since our focus is on basic education, this document is not relevant for the purpose of our study.			
The Basic Education Act no 14 of 2013	93	2013	Gender Technology	9 3	"The provision of basic education shall be guided by the following values and principles - Elimination of gender discrimination, corporal punishment or any form of cruel and inhuman treatment or torture;"	**Elimination of gender discrimination** as equal to cruel and inhuman treatment	Argumentative - gender equality as a core value and principle	Part of a list of values
			ICT	2	“ICT Integration and Education” means the seamless incorporation of information communication technologies to support and enhance the attainment of curriculum objectives, to enhance the appropriate competencies including skills, knowledge, attitudes and values and to manage education effectively and efficiently at all levels;	**ICT integration support** the **attainment of objectives,** to **enhance** competencies, knowledge, **attitudes and values**	Affirmative - ICT has important for learning processes, accumulation of knowledge and enhance **attitudes and values**	ICT as a knowledge enabler in the overall learning process in schools

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The Second Medium Term Plan for Vision 2030, 2013 - 2017	72	2013	Gender	3	"Following the formulation of the national ICT policy in 2006, Kenya' s approach to ICT has been guided by four principles, namely: infrastructure development; human resource development; stakeholder participation; and appropriate policy and regulatory framework. On the basis of these principles, the nation hopes to facilitate sustained economic growth and poverty reduction; promote social justice and equity; mainstream **gender** in national development; empower the youth and disadvantaged groups; stimulate investment and innovation in ICT; and achieve universal access."	Mainstream gender in national development. Expressing **intentions**	Conjunction. Linking national ICT development with economic and social development. The principles that guide Kenya's approach to ICT are hoped to **facilitate** f.ex. mainstreaming og gender in national development.	Mentioned in the section Science, Technology and Innovation Sector Priorities. Stong focus on the role of ICT as an "enabler in many aspects of life". "The emergence of Information and Communication Technology (ICT) as the principal motor of national growth and competitiveness has placed it as a driver of efficiency and effectiveness in all sectors of the national economy."
					"Therefore, there is need to support STEM to address the gap of scientists and engineers and other professionals in the scientific fields by developing their technological, pedagogical and content knowledge. These areas involve engaging multi-sectorial activities and people, such as introducing and repackaging STEM university programmes, preparing effective STEM teachers, setting affirmative **gender** actions for STEM programmes and investing in modern infrastructure for STEM with an aim of realizing the Kenya Vision 2030 and prosperity of the country."	**Setting affirmative** gender actions for STEM programmes.	Argumentative. There is a **need to support** STEM and one aspect of this involve **setting affirmative gender actions for STEM programmes.**	In the section Science, Technology, Engineering and Mathematics Education. STEM is descibred as: "...the foundation upon which rests a country's leadership in innovation and its economic prominence.

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			ICT	42	"The emergence of Information and Communication Technology (**ICT**) as the principal motor of national growth and competitiveness has placed it as a driver of efficiency and effectiveness in all sectors of the national economy. **ICT** is an essential enabler in many aspects of life today and as such is strategic to almost all businesses."	ICT as the **princial motor** of national growth. ICT as an **essential enabler** in many aspects of life.	Affirmative. Describing ICT as the **principal motor** and **essential enabler** for national growth, competitiveness and many aspects of life today.	Interaction. "Telecommunications, Electronics and Computers Technologies" is mentioned as one of the priortoties under the section "Science, Technology and Innovation Sector Priorities".
					"Clearly, **ICT** related projects have potential to provide economic and social benefits to the Kenyan society. That potential can be maximally exploited depending on the **ICT** capacity established in terms of human resources and infrastructure."		Less assertive than other descriptions. ICT have the **potential** to provide economic and social benefits.	Interaction. "Telecommunications, Electronics and Computers Technologies" is mentioned as one of the priortoties under the section "Science, Technology and Innovation Sector Priorities".
					"To address current and future market needs in **ICT**, there is need to comprehensively identify existing knowledge/skills, supportive infrastructure as well as other related gaps. Key activities under the project will include: (...) 4. Identifying areas for capacity review including ICT curriculum changes to ensure effective ICT response to current and future market needs."		Describing the need to **comprehensively identify** existing knowledge and skills gaps. Describing the link between ICT capacity and ICT curriculum.	Mentioned in one out of four projects that are suggested to be implemented under the "Telecommunications, Electronics and Computers Technologies Programme" to work towards the Kenya Vision 2030.

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			STEM	21	"Some of the important factors guiding identification of ST&I priorities identified for emphasis in 2nd MTP are as follows: (...) Promotion of education and training in Science, Technology, Engineering, and Mathematics (**STEM**) disciplines;"		Promoting education for STEM listed as one of the main priorities in the plan.	Mentioned in the Introduction of the plan. escribed as one of the main 9 priorities for this 5 year plan.
					"The Science, Technology, Engineering, and Mathematics (**STEM**) is the foundation upon which rests a country's leadership in innovation and its economic prominence. Expertise in this area is required to build and sustain economic and scientific leadership in a world whose focus is evolving from agricultural to industrializing and information technology."		Argumentative. STEM as the **foundation** on which the the country's innovation and economic prominence rests.	
					"These areas involve engaging multi-sectorial activities and people, such as introducing and repackaging STEM university programmes, preparing effective STEM teachers, setting affirmative gender actions for STEM programmes and investing in modern infrastructure for STEM with an aim of realizing the Kenya Vision 2030 and prosperity of the country."	Expressing **necessity** to incorporate STEM as a motor of prosperity	Same as above.	Same as above.

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					"Improving STEM education in Kenya has been identified as a critical concern that will embed ST&I in the country's education and production systems. This calls for enhancing the capacity of education institutions to provide STEM education by providing modern equipment and qualified staff."	**Improving** STEM education as a **critical concern.**	Describing the link between quality STEM education and ST&I. Argumentative. **Improving** STEM education is a **critical concern.**	Mentioned under the headline "Science, Technology, Engineering and Mathematics Programme" which outlines four projects to be implemented in the MTP 5 year period to promote STEM.
					"This calls for enhancing the capacity of education institutions to provide **STEM** education by providing modern equipment and qualified staff."		Argumentative. Call for focus on modern equipment and qualified staff in order to enhance the capacity of educational institutions to provide STEM.	Mentioned under the headline "Science, Technology, Engineering and Mathematics Programme" which outlines four projects to be implemented in the MTP 5 year period to promote STEM.

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					"Project 2: Repackage **STEM** in Education and Training. (...) The project is expected to promote experiential learning, innovation creativity and attraction to **STEM** related disciplines through well-coordinated programmes in education, R&D and Training in all aspects of ST&I at all levels starting from Early Childhood to Primary and Secondary Education levels up to University. To end the inadequate facilities, teaching and training staff challenge this project will enable technology-driven delivery of curriculum at all levels of education and training. To promote the generation of knowledge and its application in ST&I, the strategies will involve rebranding the Education Institutions by introducing innovation and creativity as a major function of ST&I and promote research to improve the manpower quality Education and Training Institutions at all levels."		Argumentative. Describing the need to repackage STEM in education and training throughout all levels of the education system to be able to **promote the generation of knowledge**.	Described as one out of four projects to enhance the capacity of education institutions to provide STEM education under the "Science, Technology, Engineering and Mathematics Programme" of the MTP.
Strategic Plan 2013-2017: Towards a Globally Competitive and Prosperous Kenya	85	2013	Gender	17	"To promote equality, **gender** equity was enforced in all education programmes."	Gender equity as something that should be **promoted** and **enforced.**	Affirmative. Stating that gender equity has been enforced in all education programmes.	Mentioned in the review of the achievements of the previous strategic plan. Initatives such as re-entry policy for female dropouts and sanitary towels programme is also mentioned in the same paragraph.

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					"Primary education has continued to experience many challenges chief among them high pupil-teacher ratio; overcrowded classrooms; high drop-out rates; inadequate infrastructure; limited availability of teaching and learning materials; and **gender** and regional disparities."	Gender disparaties as on the the chief challenges in primary education. Expressing **certainty**	Conjunction. **Gender disparaties** descibed as a **challenge**.	Gender disparaties included as one of the key challenges in primary education in Kenya. However not specified in what way. Mentioned in the setcion that outlines the strategic issues, objectives and strategies of the plan.
					"Strategic issue ten: Among the cross cutting issues that affect education, science and technology include HIV & AIDS; poverty; hunger; conflict and emergencies; guidance & counselling; integration of national social values, **gender** and youth. Strategic Objective: To deepen the mainstreaming of **gender**, HIV/AIDS and emergencies"	**Gender** as a "cross cutting issue that affect education, science and technology".	Gender specicifcally mentioned as one out of three factors that is included in the strategic objective.	Mentioned in the overview of the overall goals and objectives of the Startegic plan. Other strategic issues include ICT integration, enhancing development of ST&I, governance and management etc.
			ICT	109	"The link between education and the world of work, the economy and national development is indelible. The sector seeks to strengthen that link through the integration of **ICT** into education to ensure that all learners are exposed to science and technology and appreciate the new trends in education."	ICT as an important link to integrate to ensure that **all learners** are appreciating the new trends in education.	Argumentative. ICT as an important tool to link education with the world of work.	Mentioned as one of the aims in order for Kenya to achieve its Vision 2030 development agenda.

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					"The Government recognizes that an **ICT** literate workforce is the foundation on which Kenya can acquire the status of a knowledge economy by the 2030. Against this background, the Government shall make education the natural platform for equipping the nation with **ICT** skills in order to create dynamic and knowledge based economy."	ICT literacy as the **foundation** on which Kenya can aquire the status of a knowledge economy by 2030.	Argumentative. ICT as the foundation for knowledge and education as the natural platform for equipiing the nation with ICT skills to create knowledge.	Mentioned as one of the key strategic issues for the Stratgic plan to address.
					"Despite the endeavours to integrate **ICTs** in education, training and research, a number of issues have remained as barriers to full attainment of the desired goals. These include ; Access, funding, inadequate **ICT** facilities, high cost of development of interactive e- learning content, **ICT** not embraced as medium of instruction and management tool, inadequate capacity for teachers, absence of **ICT** Curriculum at ECD and primary levels, dynamic nature of **ICT** technology, inadequate capacity for maintaining **ICT** equipment, minimal use of **ICT** by the Ministry of Education, Science and Technology; inadequate limited monitoring of the utilization of **ICT** in schools and limited skills by the users on disposal of the e-waste."	Listing the **barriers** and **issues** for the full attainment of the 'ICT integration' goals.	Conjunctions. Listing the challenges to integrate ICT in education, training and research.	Included in the section that emphasizes the stratgeic objective with ICT integration. NOTE: digital gender divide is not mentioned, nor is gender disparaties in education.

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Document example	*x pages*	*xxxx*	*E.g. Gender*	*20*	*The analyzed sentence*	*Focus on the combination of words: transitivity and modality, and "moods", e.g. positive/ neutral/ affirmative/obligation*	*Focus on how sentences are linked together: conjunctions and argumentation.*	*Focus put on the large scale properties of the text: sentence length, complexity and interactional control.*
			Girl Boy Equality	4 2 1	"The bursary schemes are meant for the vulnerable groups including **girls** and children from poor families."	Girls as a **vulnerable group.**	Girls as group that needs special attention, such as bursary schemes.	Mentioned in the review of the achievements of the previous strategic plan. Initatives such as re-entry policy for female dropouts and sanitary towels programme is also mentioned in the same paragraph.
National Education Sector Plan. Volume one: Basic Education Programme Rationale and Approach 2013-2018	251	2014	Gender	122	"Specific education objectives during the plan period include to: (...) iv. Eliminate **gender** and regional disparities at all levels of education.	**Eliminate** gender disparities. Expressing obligation.	Argumentative. One of the objectives in the implementation of basic education is to eliminate gender disparaties at all levels of education	Mentioned alongside 14 other objectives for basic education that this plan focus on.
					"In order to achieve the above stated objectives, the following range of strategies will be considered: (...) x. Mainstreaming of HIV and AIDS and **gender** and SNE, APBET and ECDE issues in teacher management activities.	**Mainstreaming** gender issues in teacher management activities, special needs, and early childhood development.	Explicitly mentioning gender as an issue that needs to be considered in teaching management activities. Alongside issues of HIV,	Mentioned as one out of 15 strategies that should be considered to be able to "establish and maintain a sufficient professional teaching force that is equitably distributed and optimally utilized for quality teaching in public educational institutions."
					"Need to reform the teacher education curriculum at all levels of training to bring it in tandem with the emerging teacher training needs, including early grade literacy and numeracy, and pedagogy in cross-cutting themes such as **gender** sensitivity."	Gender **sensitivity** as a theme that needs to be included in emerging teacher training.	Argumentative, Need to reform teacher education curricululm.	Mentioned as one of the emerging issues and constraints for the development of the teacher education and development programme for basic education.

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					"**Gender** refers to the social roles, responsibilities and behaviours that are believed to belong to men, women, boys and girls. **Gender** roles are created by a society and are learned from one generation to the next. Because **gender** roles are socially learned, they can be changed to achieve equity and equality for boys, girls, men and women."	Describing gender roles as **social roles** that are **created by a society** and learned from one generation to another.	Argumentative. Since gender roles are **socially learned** they can be **changed to achieve equity and equality.**	"Equity & Inclusion" is listed as one out of six priority areas of the sector plan. "Gender in Education" is listed as the first priority area underneath this section. This section includes background, current status, issues and constraints, policy framework, objectives and strategies.
					"Ensuring **gender** equality for both girls and boys means both have equal opportunities to enter and participate in and benefit from the range of subjects or other learning experiences in school."	Linking **ensuring gender equality** to both equal opportunities and to benefit from subjects and learning experiences.	Affirmative. Ensuring gender equality **means**... Linking it to BOTH equal opportunities of enrolment and the **learning experiences and available subjects in school**.	Affirmative and straight to the point. Mentioned in the Background section of Gender in Education.
					"To address the **gender** disparities, targeted interventions have been put in place: (...) ii. The Department has undertaken mentorship/moulding programmes in regions with high **gender** disparities and sensitized education stakeholders and communities on the need to encourage boys and girls to participate in education."	Gender disparities that something that is being **addressed** with **targeted interventions.**	Argumentative. Gender disparaties as something that needs to be addressed through intervemtions and programmes to sntisize education stakeholders and communities on the need to encourage boys and girls to participate in education.	Mentioned in the Current Status section of Gender in Education.

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					"The following are some of the persistent challenges: i. Socio-cultural attitudes and practices, which negatively impact on access to education especially for girls, are still common in many communities. ii. **Gender** disparities in terms of access, retention, transition and learning outcomes in ASAL, urban informal settlements and pockets of poverty. iii. Sexual harassment and **gender** based violence continue in schools and even outside the school due to lack of clear policy framework. iv. **Gender** insensitive infrastructure in learning institutions such as furniture and sanitation facilities. v. Absence of monitoring and evaluation mechanisms on the implementation and effectiveness of gender policy in education. vi. **Gender** imbalance in teacher deployment leading to lack of role models for boys and girls in some regions, especially in some rural, arid and semi-arid areas and the urban informal settlement. vii. Lack of or limited **gender** responsive pedagogical skills for practicing teachers. viii. Inadequate community awareness on the importance of educating both girls and boys. ix. Inadequate provision of critical personal items especially sanitary	Gender disparaties as a **persistent challenge.** Specific list of issues rather than a generalization.	Conjunction. A list of **challenges** that are deemed to be **persistent.** The list connects both socio-cultural attitudes and practices, gender insenstivive infrastructure, gender imbalance in teacher deployment leading to **lack of role models** for boys and girls.	Interaction between several issues in terms of gender disparaties. Showing the width of the issues. A list of 'Issues and constraints' under the section of Gender in Education. Described to be especially peristsent in secondary levels of education.

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					"Objectives. Gender in Education initiatives will be implemented in line with the national frameworks as well as international conventions on human rights and goals of education. **Gender** in education includes the following range of objectives: i. Achieve Universal Primary Education (UPE) for boys and girls by 2018. ii. Promote **gender** equality and empower women and men, girls and boys to participate in education. iii. Reduce regional **gender** disparities in Basic Education by 2018. iv. Build capacity for all education stakeholders. v. Reduce and gradually eliminate child abuse and **gender** based violence in learning institutions, the workplace and the community by 2018."		Argumentative. Initiatives **will be** implemented. Connecting the objectives with national and international frameworks and conventions on human rights and goals of education. Listing objectives that range from equal participation in education to reduction of gender based violence. Describing the width of the issue.	The full range of objectives that are listed to be implemented in regards to Gender in Education. Specific mentions of the teachers role, which was highlighted in the 'Issues and contraints' section is not explictly mentioned here.

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					"Strategies. In order to ensure equal access to education and training a range of strategies will be considered: i. Promote **gender** equality and equity and facilitate gender mainstreaming in education. ii. Ensure equal opportunities and **gender** parity in the provision of education to children especially those with special needs. iii. Review and enact the **Gender** in Education Policy (2007). iv. Sensitize communities on the need to enroll and retain all children in schools and make school environment **gender** sensitive. v. Enforce affirmative action to address the needs of the marginalised, **gender** minorities, special needs and those in difficult circumstances. vi. Develop a **Gender** Based Violence (GBV) work place policy. vii. Develop a child protection policy. viii. Enhance **Gender** mainstreaming programmes in the Education sector. ix. Establish **Gender** mentorship programmes in learning institutions.	**Ensure** equal access to education and training.	Change of tone. A range of strategies will be **considered**. Not as direct as the sections under 'Gender in Education' leading up to this one. However, words used in the list are more direct: **promote, ensure, enforce.** The strategies range from the development of new government policy guidelines to the establishment of gender mentorship programmes and the need to 'sensitize' communities on the need to enroll and retain all children in schools and make school environment gender sensitive.	Full range of strategies that "will be considered" to address the abovementioned objectives.

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					"The MDGs and upcoming SDGs also provide targets for international actions to bring such visions into reality by expanding educational provision, redressing **gender** inequalities in education and developing national strategies for sustainable development."	**Redressing** gender inequalities in education.	Mentioning redressing gender equality in education together with expanding educational provision and developing national strategies for sustainability.	In the section Education for Sustainable Development under priority area: Social Competencies and Values
			Girl	54	"To address the gender disparities, targeted interventions have been put in place:: (...) vii. Empowerment of the **girls** through mentorship/moulding programmes."	**Targeted interventions. Empowerment** of the girls.	Direct. Interventions have been put in to place. Empowerment **through** mentorship programmes.	Mentioned under Current Status in the priority area of Equity and Icnlsuion -> Gender in Education.
					"Encouraging the study of Science Maths and Technology especially in the case of **girls**."	**Encouraging** girls to study Science, Maths and Technology.	Affirmative. Encouraging **especially girls** to study science, maths and technology.	Mentioned under Current Status in the priority area of Equity and Icnlsuion -> Gender in Education. Listed as an intervention that have been put into place.
					"The following are some of the persistent challenges: (...) Poor performance especially for girls in science, mathematics and technology."	Poor performance **especially** for girls.	Argumentative. Poor performance of especially girls in science, maths and technology as a **persistent challenge.**	Listed as one of the persistent challenges under Gender in Education.
					"Socio-cultural attitudes and practices, which negatively impact on access to education especially for **girls**, are still common in many communities."	The **negative impact** of socio-cultural attitudes and practices access to education especially for girls.	Argumentative. Especially girls are **negatively impacted** by socio-cultural attitudes and practices.	Raising the problem of socio-cultural attitudes and how these impact girls more than boys. Mentioned in the list of 'Issues and constraints' under the section of Gender in Education.

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			Boy	31				
			ICT	118	"**ICT**: information and communication technology are tools for enhancing pedagogy and learning opportunities, and information management. **ICT as a Pedagogical Tool:** as ICT infrastructure, hardware and software become more readily available, schools will use ICT as a pedagogical tool to enhance teaching and learning. ICT provides a mechanism for pedagogical improvement through enhanced data collection on and analysis of student learning. **ICT Capability**: includes the knowledge and skills to access, use, develop, create, and communicate information using ICT tools.	ICT as a **pedagogical tool.** **Enhancing** pedagogy, teaching and learning opportunities.	Argumentative. Providing three definitions of ICT. Focus on its ability to **enhance** teaching, learning opportunities and pedagogy. ICT is described as both a tool and an infrastructure.	In the 'Definitions' section of the plan. Defining ICT in three different ways.
					"NESP envisages a solid technology base through information and communication technology (**ICT**) to be reflected within the curriculum at all levels, its delivery and the system support mechanisms."	**Envision** of ICT to provide a **solid** technology base which is to reflected in the curriculum at all levels.	Argumentative. ICT as a toolt o provide a technology base in edcuation curriculum at all levels of education.	ICT described as a medium in education under the title "Pedagogy enhanced by Technology" in the Introduction of the plan.
					"By 2030, consistent with the four key principles above and the six priority areas, NESP implementation will have in place: (...) A schooling system that delivers the compulsory core curriculum: (...) integrating **ICT** into every aspect of teaching, learning and management."	**Compulsory** integration of ICT in the core curriculum.	Argumenttaive. ICT should be integrated into **every** aspect of teaching, learing and management of the core curriculum in the schooling system.	Mentioned as one of the core objectives of the NESP goals in the Introduction.

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					"Basic Education Investment Priorities: Integration of ICT into teaching and learning in the education sector.", "Promote the integration of ICTs into the teaching and learning process across all levels."	**Integrate** and **promote** ICT into the teaching and learning practices across all levels.		
					"Emerging issues: (..) Need to enhance pedagogical ICT integration in teacher development." (...) "Inadequate ICT Integration (pedagogy) in education and training to equip teachers with the requisite skills for science, technology and innovation."	**Need to enhance.** Expressing the **willingness** and **obligations** to enhance ICT	Argumentative. Need to enhance pedagogical ICT integration in teacher development, described as an emerging issue.	Mentioned under the priority area Education Quality. Further emphasizing the teachers role in integrating ICT but also the need to do it in a pedagogical manner. Also describining that the teachers need more training to have the right skills for science, technology and innovation.
					"Teachers will: (...) use ICT effectively in their professional and classroom practices."	Teachers **will** use ICT **effectively.**	Directive. Teachers **will** use ICT both in professional and classroom practices.	Mentioned in the list of 'Mandates' that the NESP should have.
					"The challenges of laboratory and laboratory equipment investment include: Inadequate or absence of computer laboratories and teaching accessories for **ICT** learning in pre-primary and in primary schools, secondary schools and other institutions of basic education in the country."		Describing the "inadequate or absence of computer laboratories and teaching accessories for ICT learning in pre-primary and in primary schools, secondary schools and other institutions of basic education in the country." as a challenge.	Mentioned as one of the Issues and Constraints under the priority area of Basic Education Infrastructure Investment. Thus, describing this as a problem.

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					"**ICTs** are expected to be seamlessly integrated in teaching and learning across all levels of education. Policy formation, capacity development, digital content and **ICT** infrastructure are the critical pillars for integration of modern technologies to teaching and learning."		Describing the need to integrate ICT **seamlessly** into teaching and learning across all levels of education.	Mentioned in the context of promoting "21st century learning skills". Described as crucial steps for Kenya to become a knowledge econonomy by 2030.
					"Provide a laptop for each class 1 pupil to enhance their skills in **ICT**."		Physical provision of laptop to class 1 students.	
					"Information, Communication and Technology (**ICT**) Local communities have not exploited the full potential of ICT to access education due to lack of ICT equipment and skills. ICT is especially important for open and distance education activities. ICT therefore, has to be tapped to ensure increased access to education for all."	**Unequal** access to ICT. Not been able to **exploit** the full potential.	Linking the problem of not being able to enhance the full potential of ICT to lack of ICT equipment and skills.	Mentioned as one of the key issues for basic education development in Kenya. Lack of ICT equipment and skill as the key barriers.
			Technology	47	"Intensifying the application of Science, **Technology** and Innovation (STI) in the curriculum."	**Intensifying** the application.	Argumentative. Describing the need to **intensify** the application of specifically these subjects in the curriculum.	Mentioned under 'Strategies' under priority 5: 'Relevance' which relates to the development of the education curriculum to become more relevant.

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				N.B. 'Technology' occured mainly in the name 'Ministry of Education, Science and Technology.				
			STEM	0				
National Education Sector Plan. Volume two: Operational Plan 2013-2018			Gender		"Requirements: ° National legislative frameworks to mandate policies and practices to address **gender** disparities in learning outcomes, environmental influences and behaviours, and socio-cultural attitudes and practices. ° Explicit recognition of the place of enabling approaches and strategies within all national education policies to support **gender** education."	Legislative frameworks and explicit recognition to address gender disparities as a **requirement.**	Direct. Addressing gender disparaties in various forms through legislative frameworks as a **requirement.** Also, **explicit recognition** of approaches and strategies to support gender education.	Listed a requirements in order to be able to fulfill priority 4 of the NEPS: Equity and inclusion --> Gender in Education is a subsection.
	105	2014		58 N.B. 'Gender' occurred mainly in the annexes to the plan, outlining the indicators for the different frameworks.				

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			ICT	46	"MoEST second pillar focus is on a policy for Curriculum Content and Pedagogy, including providing guidelines to support the promotion of information literacy as an educational outcome and the use of **ICT** tools to enhance pedagogy and learning opportunities. Goal: - A national policy and institutional framework for the integration of **ICT** tools in education administration, management and pedagogy at all levels.	ICT as a tool to **enhance** pedagogy and learning opportunities. **Promote** information literacy as an educational outcome.	Conjunctions. Describes ICT as a tool to enhance pedagogy and learning opportunities and that information literacy influence educational outcomes. The goal is to develop a national policy and institutional framework focused on integration of ICT tools in education.	Listed as one of the goals to reach the third priority area as outlined in Volume 1: Education Quality.
					"Within the context of the National Curriculum Policy Framework (to be developed) and associated new pedagogies for 21st Century learning, a review of the national policy for the promotion of information literacy as an educational outcome and the use of **ICT** tools to enhance pedagogy and learning opportunities will be made."		Describing the need to review policies to enhance **promotion** of information literacy as an educational outcome and the **use of ICT tools** to **enhance** pedagogy and learning opportunities.	Mentioned in the context of the development of new national policies for education.

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					"Approved National Curriculum Policy Framework, as a precursor to curriculum review and reform, to provide the context for defining the application of ICT tools to enhance pedagogy and learning opportunities. The policy will also include the rationale to support the Laptop for Grade 1 initiative and provide the mandate for the implementation strategies of this initiative."			
				N.B. 'ICT' occurred mainly in the annexes to the plan, outlining the indicators for the different frameworks.				
Draft Technical and Vocational Education and Training (TVET) Policy	35	2014			Since our focus is on basic education, this document is not relevant for the purpose of our study.			
National Curriculum Policy	33 pages	2015	Gender	8	Chapter 9: “Enrolment and gender disparity in Science, Technology, Engineering and Mathematics"	An entire **chapter** on adressing gender disparities in STEM		

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					"Goal: to increase enrolment in STEM related programmes and courses and enhance gender parity in these areas	**increase enrolment and enhance gender parity in STEM**	Part of the overall goals in enrolment and gender disparity in STEM	General goal. No strategization of how this will be achieved, but the aim is there.
					"Worse still women account for less than 5% of the total enrolment in STEM. This unfortunate state is largely attributed to the school curriculum and the approach and methodologies used for teaching mathematics, science and technical subjects."	**This unfortunate state is largely attributed to the school curriculum**	Self-relfection in terms of "blaming" the school system for the unsuccessful parity statistics.	
					"Training Women in STEM will contribute heavily to availing a balance human capital needed for wealth creation and human development (p . 26)	**constibute heavily; balance human capital needed for wealth creation and human development**	Recognizing the positive effects of gender equality.	Affirmative and firm. Gender equality within STEM WILL lead to prosperity and further development.
					Policy statement: the national curriculum will be used as a driver for promoting enrolment in STEM to make it the largest area of enrolment in the education system, and in addition ensure gender parity in these professions (p 26)	**national curriculum as a driver for promoting enrolment in STEM** and **in addition to ensure gender parity in these professions**	A clear focus put on how the curriculum is pivotal in adressing the digital gender gap.	
			ICT	3				
			STEM	11				
					"Kenya lacks adequately skilled manpower to spur it towards economic development as envisioned in the Kenya Vision 2030, hence the need to produce graduates who are globally competitive through a reform in education".			

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			Inclusiveness		"Provide adequate infrastructure and personnel to cater for diverse needs, abilities and talents of learners" "Build the capacity of curriculum implementers on digital instructional methods that cater for diverse learning styles	The importance on **adequate infrastructure** to ensure that **diversity** is nurtured.	Attitudes are recurring in chapter 5 on "Pedagogical approaches", where one policy objective is to enhance pedagogical approaches that support creativity, innovation, critical thinking and sustainable development. The strategic goal is to " build capacity for teachers trainers to enable them impart knowledge, skills, values and attitudes for implementation of the reformed curriculum".	
					"Attitudes are a learned tendency or readiness to evaluate things or react to some ideas, persons or situations in certain ways, either consciously or unconsciously. Attitudes are underpinned by values and beliefs and have an influence on behavior."	**"attitudes are underpinned by values and believes and have influence on behavior" -->** in line with the constructivist understanding of the world		
Education and Training Gender Policy	2015	46	Gender	357				

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			ICT	2				
			STEM	32				
					"Besides being a fundamental human right, education is an essential tool to ensure that all people realise their full potential. Investment in education for both boys and girls with a gender-based framework has been consistently acknowledged by the Government of Kenya as being a powerful vehicle for its citizens' advancement socially and economically". (p1)	Education as a **fundamental human right,** investment in education for both boys and girls with a **gender-based** framework has been **consistenty acknowledged by the government ; a powerful vehicle for its citizens**	Acknowledge the role of gender equality in education as a tool to increase economic and social development Conjunction.	Affirmative - the positive macroeffects on equal rights to education
					"Since the launch of the first Gender Policy in Education in 2007, there has been a wider and deeper understanding of the concept of gender as opposed to the perception that it is essentially a girls' and women's issue."	**A wider an deeper understanding of the concept of gender. As opposed =** Not only a **girls' and women's issue**	Focus on the unviversal importance of gender equality.	Claim.
					"In addition, the Government of Kenya has undertaken significant constitutional, legislative and policy transformation including the enactment of the Constitution of Kenya 2010, the Sessional Paper No. 14 of 2012 and the Basic Education Act No. 14 of 2013. These initiatives therefore necessitated the reviewed Gender Policy."	The government has undertaken **significant constitutional legislative and policy transformation**	The need to politically address the gender issue. Taken initiatives to review overall gender policy.	Self-reflection - acknolwedging the role of policy to shed light on gender equality.

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					Gender roles defined as socially assigned roles and responsibilities as opposed to biologically determined functions (p 8).	**Gender as a socially assigned roles as opposed to biology.**	How gender is defined also include a social dimension	Argumentative. The importance of shedding light on the social constructs around gender
					Gender senitisation: Process of developing people's awareness, knowledge and skills on gender issues.	Process of developing peoples awareness, knowledge and skills on gender issues. Expressing **intentions and willingness**	As a definition of gendersenitisation - put focus on the role of the observer	
					The policy adopts a wide perspective of equality that includes girls and boys, women and men, rather than a focus on just girls and women. Within the constitutional and legal framework provisions, the gender policy advocates for more equal participation between women and men, girls and boys; and acknowledges that gender equality does not mean that women and girls are the same as men and boys, and vice versa, but that gender should not be used to determine access to education and educational outcomes.	A wide perspective **including boys, girls, women and men, rather than a focus on just girls and women. Gender should not be used to determine access to education**	Conjunction. Put focus on how gender is no determination for access to education, should be equal right for all.	Argumentative

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					The gender gap, in favour of males, widens as one goes higher up the education ladder. In addition, it is evident that gender disparities are particularly wide in access to and achievement in Science, Technology, Engineering and Mathematics (STEM) subjects, especially in higher education. Some of the key factors contributing to gender inequality in the sector include socio-cultural and religious beliefs, attitudes and practices, poverty, child labour, poor learning environment, lack of role models, HIV and AIDS, curriculum, pedagogy and learners' attitudes among others.	The gender gap, in **favor of males** **Gender disparities are particularly wide in access to and achievement in STEM. Some of the key factors contributing to gender inequality include (...) attitudes and practices (...) pedagogy**	What causes a digital gender divide	Outlining of factors that contribute to the digital gender divide.
					The regional gender disparities are more pronounced, particularly in the Arid and Semi-Arid Lands (ASAL) regions and urban informal settlements.	**Regional gender disparities**	Poor women more affected	Emphasis on the regional differences, importance to take poor and rural regions into account

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Textual Analysis

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					The Kenya Institute of Curriculum Development has made strides in addressing gender issues in the development of curriculum and curriculum support materials. However, more effort is required in the education sector to address pedagogy, teaching/learning processes and the entire student-teacher interaction in school that reflect gender biases, stereotypes and insensitivity. These assist in perpetuating gender disparities and inequalities in the sector. A gender-sensitive working and learning environment includes the positive attitudes of key stakeholders in the school/institution, including management, teachers and students. (p 5)	**Has made strides in addressing gender issues; more effort is required to address pedagogy, teaching/learning processes that reflect gender biases, stereotypes and insensitivity. These assist in perpetuating gender disparitites and inequalities in the sector.**	Focus on how the pedadodical environment and power of teaching in a gender sensitive manner can help addressing divergences in gender.	Argumentative. The Institute of curriculum developmed **has made strides;** but focus have shifted to put more effort on adressing the role of language in teaching processes.

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					Strategies to institutionalize a gender responsive curriculum in the sector: Regularly review primary curriculum, teaching and learning materials to include Science, Technology, Engineering and Mathematics (STEM) concepts and to make them gender-responsive and Regularly review curriculum, teaching and learning materials			
					and ensure approaches that ensure gender-responsive pedagogy at this level;	**Strategies to institutionalize a gender responsive curriciulm; review; teaching; make STEM gender-responsive.**	Ensure teaching approaches to be gender-responsive	Strategization of how to create a red thread of gender focus throughout curriculum and teaching
					Review teacher education training curricula to include examinable content on gender dimensions in education appropriate to all levels of education;	**Review teacher education training to include examinable content on gender dimension**	As a strategic goal to bridge the gender gap in education	As a goal, teachers need to achieve more training to include gender dimension in all levels of education. No specific plan on how this would be carried out in practice
					Ensure at least one third of the students enrolled in STEM-related academic programmes are females;. (first quantitative measure) Develop gender-based mentorship programmes and role modelling in STEM and Innovation;	**Ensure that at least one third of the students enrolled in STEM-programs are females**	First quantitative mesure on gender goals in STEM related fields.	Goal-setting.

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					Review and revise teacher-training programmes in STEM courses to incorporate gender dimensions and improve performance; iii. Empower teachers, learners and communities to critique stereo-typical practices that impede equitable participation in STEM; iv. Carry out capacity building of teachers in gender-responsive pedagogy in STEM;	**Empower teachers to critique stereo-typical practices that impede equitable participation in STEM; capacity building of teachers gender-responsive pedagogy in STEM**	As part of the goals under enhancing pedagogy for increased gender focus in education.	Strategization.
The Basic Education Regulations 2015	16	2015	Gender ICT	4 0	Not adressing gender and ICT.			
Revised Policy Framework on Nomadic Education in Kenya	31	2015	Gender ICT	6	"One of the benefits of nomadic education is the improved chances for the girl child and those with special needs. By specifically targeting the girl child and those with special needs, the very vulnerable of the nomadic communities will be reached and guaranteed equitable access to education and future job opportunities."	**Girl child and** those with **special needs**	Highlighting the gender issue within Nomadic communities	Problematizing and strategizing.

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The National Council for Nomadic Education in Kenya: Strategic plan 2015-2016 - 2019-2020	38	2015	Since our focus is on basic education, this document is not relevant for the purpose of our study.					
Kenya School Readiness Assessment Tool (KSRAT) Launching Programme	12	2015	Gender ICT	0 1	Not addressing gender and ICT.			
Kenya School Readiness Assessment Tool (KSRAT) for children transiting to primary one		2015	Gender ICT	0 1	Not addressing gender and ICT.			
Education for Sustainable Develop-ment Policy for the Education Sector	58	2017	Gender	9	ESD (Education for Sustainable Development) content involves integrating critical issues, such as climate change, poverty reduction, gender equality, biodiversity, disaster risk re-duction (DRR), and sustainable consumption and production (SCP), into the curriculum.			

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			ICT	10				
Documents Required for Registration of your Institution	1	No date	Not adressing gender and ICT.					
Electroic Messages	1	No date	Not adressing gender and ICT.					

APPENDIX 5

Discursive Analysis

Document	Year	Author	Type of document	Aim of production	Aim of consumption	Interdiscursivity	Intertextuality	Themes
Document example	*xxxx*	*Author X*	*E.g. policy*	*E.g. what is the goal?*	*E.g. who will this goal target?*	*What is the overall aim manifested in text?*	*What other works is the text building on or referring to?*	*What are the overall themes?*
Sessional Paper No. 1 2005 on a policy framework for education, training and research	2005	Ministry of Education, Science and Technology	Sessional paper	Outlining key priority areas in education policies to meet new challenges and demands in the 21st century.	"The overall policy goal for the Government is to achieve EFA in order to give every Kenyan the right to education and training no matter his/her socio-economic status" (p. 14)	"Education is an investment in human capital and growth models, shows that human capital is a key determinant of economic growth. Indeed, sustainable development is only possible if there is a critical mass of skilled people." (p. 23)	In response to the growing and changing operating environment and in order to address emerging issues, the Government is determined to develop a new policy with appropriate national philosophy, vision, and mission on education and training. Once this is achieved, there will be need for **a new legal framework** to guide sector operations.	Inclusiveness, education for all
				p. 14 "The purpose of this Sessional Paper is to address these challenges and consequently provide a policy framework for the education and training sector in order to meet the challenges of the 21st Century."	To put hope into a successful re-invention of the education system as being inclusive, relevant and harmonized.	For equity, it will be necessary to take affirmative action to compensate for historical and emerging inequalities and disparities in all areas of our national life including gender. (p. 25)	The new legal framework will identify and **indicate the roles of different actors in the provision of education and training** services at all levels particularly, the Government, parents/community, sponsors and the private sector. In addition, this harmonized legal framework will decentralize operational functions and vest authority and decision-making in management bodies at all levels of service delivery in the education and training sector.	Future ambitions to follow up on more specified educational services. Harmonize the fragmentation in current legislation.
				These challenges relate to access, equity, quality, relevance, efficiency in the management of educational resources, cost and financing of education, **gender and regional disparities**, and teacher quality and teacher utilization (p. 14)		In addition to the above challenges, the sub-sector also experiences problems in the quality of learning. The current policy is that a primary school teacher should be able to teach all the 7 subjects in the primary school curriculum. **However, the two years of teacher training is not adequate for the teacher trainee to acquire mastery in subject content and skills of pedagogy in all the 7 subjects.** This compromises the quality of teaching offered after the training (p. 40).		A need to adress problems of inadequate quality of teaching.

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						Presently, there are a number of challenges facing access and use of ICT in Kenya which include; high levels of poverty that hinder access to ICT facilities, limited rural electrification and frequent power disruptions. Where there is electricity, high costs of Internet provision, costs associated with ICT equipment, inadequate infrastructure and support hinder the application of ICT. (p. 80) Facilitate universal access to ICT infrastructure, that is, power, equipment and improved connectivity in all institutions of learning in both the formal and nonformal education sectors, **including affirmative action for gender**, ASAL areas, rural and urban-poor schools as well as those of special needs;		
				The Government is fully committed to an education system that guarantees the right of every learner to quality and relevant education. Inclusive education is a government responsibility.		The low enrolment in pre-primary school level is due to various factors, including the fact that **Government plays a rather limited role**, lack of economic ability, and lack of awareness among communities and parents regarding the importance of pre-primary education. (p 5)		

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						Government acknowledge that education for all is important for sustainable development and highlight issues of inequalities. With regards to ICT, there is an entire chapter focusing on the importance of ICT adoption in subject and the concept is mentioned 48 times across the text. Gender is mentioned once with regards to ICT. Finally, the government acknowledge their responsibilities, but spell out their own limited role in providing support for both schools and teachers training.		
Early Childhood Development Service Standard Guidelines for Kenya 2006	2006	Ministry of Education	Not addressing gender and ICT.					
Safety Standards Manual for Schools in Kenya	2008	Ministry of Education	Not addressing gender and ICT.					
The Biosafety Act	2009	Ministry of Education	Not addressing gender and ICT.					

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The National Special Needs Education Policy Framework	2009	Ministry of Education	Policy framework	Making education accessible and relevant for all children, including those with special needs.	Successful implementation of this policy framework is expected to improve the quality and access to education provided to children with special needs. It also addresses issues of equity and improvement of learning environments in all schools. This will ensure that inclusive education becomes a reality and consequently improves the participation and involvement of people with special needs in national development in general (p 8)	Gender parity applying equally to men, women, boys and girls with special needs and disabilities.	**Sessional Paper No 1 of 2005 on "A Policy Framework for Education, Training and Research"** outlines the vision of our education sector as a major enabler of our youth. This vision will be achieved through the provision of quality education that is accessible and relevant to the lives of all children including those with Special Needs. Such an education will contribute significantly towards provision of employment opportunities and self-reliance (p. 8)	
TIVET Institution Guidance Counceling Policy and Operational Guidelines 2011	2009	Ministry of Hig	Not addressing gender and ICT.					

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Education Sector Report 2013/14 2015/16 Medium Term Expenditure framework	2012	The Education Sector - comprises of Ministry of Education (MOE); Ministry of Higher Education, Science and Technology (MoHEST); the Teachers Service Commission (TSC) and their affiliated Institutions.	Education sector government report	The sector is committed to the provision of quality education and training as well as research and innovation to the people of Kenya in line with the Constitution, National objectives and the globalization trends. The report is to clearly define and support policies, institutional and legal frameworks that effectively address citizens' needs and aspirations as well as social economic dynamics.	To develop guidelines and communicate the sector's overall goal to increase access to education, raise the quality and relevance of education, reduce inequality as well as exploit knowledge and skills in science, technology and innovation for global competitiveness.	The document is overall proposals from the educational sector to alignt the set policies and objectives to the 2010 Constitution. The education sector require themselves to undertake **comprehensive Investment in human capital** as an **important ingredient to the realization of the country's development goals.** Quality human resources in the education sector is a key factor not only in terms of resource utilization in the sector but also in the setting of standards to other complementary sectors. However, this document do refer extensively to ICT, but to a lesser amount to women.	Further to this the sector has aligned its priorities to the objectives of the Vision 2030 and the millennium development goals.	Overall proposals that more investment in human capital will help Kenya realize their national development goals. Visionary. Mention that they have yet not exploited the full potential of ICT. (...)" ICT has therefore to be tapped to ensure access to education **for all.** For all is mentioned in a decisive sense - but lacks definition of who that is, or who it is meant to comprise.

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Sessional Paper No. 14 2012. A Policy Framework for Science, Technology and Innovation	2012	Ministry of Higher Education, Science and Technology.	Sessional paper. Policy framework.	Given that ST&I is one of the foundations for socio-economic transformation in the Kenya Vision 2030, **this policy has therefore been created to support Vision 2030.** The National and County Governments will promote ST&I as the means to making Kenyan products and services globally competitive. The Government will therefore seek to entrench innovation in all national and regional production systems.	**Broad. Not just focused on education but a broader implementation of Science, Technology and Innovation capacities in Kenya.** The government will therefore adopt a new Kenya national innovation system (KNIS) to ensure that the education and research system (**universities, TVET institutions, sector-based research centres, national research and education network and schools**), the business system (**from start up informal businesses to large and multi-national companies**), the intermediate organisations, ST&I infrastructure (**financial, information, IPR regime, regulatory, incubation centres, science and technology parks, special economic zones, etc.**) and framework conditions in which they operate interact, dynamically and effectively respond to national needs of the stakeholders (**consumer, private sector and Government)** , while continuously learning from these interactions.	**Stong focus on the link between technological development and broader socioeconomic goals.** The vision: "To be a nation that harnesses science, technology and innovation to foster global competitiveness for wealth creation, national prosperity and a high quality of life for its people." The mission: "To mainstream the application of science, technology and innovation in all sectors and processes of the economy to ensure that Kenyans benefit from acquisition and utilisation of available capacities and capabilities to achieve the objectives of Vision 2030."	**The document is created to support Vision 2030.** "Given that ST&I is one of the foundations for socio-economic transformation in the Kenya Vision 2030, this policy has therefore been created to support Vision 2030."	**Textual focus on establishing the link between ST&I and sustainable economic development. Both economic growth but also "softer" values such as social integration, peace and freedom.** **Very little/no focus on gender. Gender parity and/or disparaties in relation to improving ST&I capacities is only touched on twice in relation to promote gender parity in the leadership positions of key institutions for ST&I.**

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				The main objectives of science, technology and innovation (ST&I) policy are to create endogenous ST&I capacities appropriate to national needs, priorities and resources, and to create a science, technology and innovation culture whereby solutions to socio cultural and economic problems of the individual, the community and the nation are recognized and sought within the domain of ST&I.	The Kenya ST&I sector is fragmented, losing on the benefits of synergy and networking. It also lacks national research agenda and does not have a strong institutional framework. **Aim is to create a framework that align these sectors in a common agenda for ST&I development in Kenya.**		"ST&I is one of the foundations for socio-economic transformation in the Kenya Vision 2030, enabling creation of new knowledge which plays a central role in wealth creation, social welfare and international competitiveness."	Broad focus on the actors and sectors involved in strengthening ST&I capacities in Kenya. No clear target group.
				This policy outlines the structures, frameworks and mechanisms towards bringing a collaborative engagement of all stakeholders into the Kenya National Innovation System.	The goal of the ST&I policy is to build critical capacity and capability in ST&I that will create change and transform Kenya into a newly industrialized country (NIC) through the utilization of knowledge as the driving force.		The ST&I policy reforms articulated in this paper have been anchored on a firm philosophy and principles for the sector.	
				"In addition to identifying the challenges facing the education sector, the Sessional Paper No. 14 of 2012 on Framework for Reforming Education and Training also offers a clear set of policies and strategies for addressing these challenges."	**This policy proposes to create three institutions as body corporates to manage the whole ST&I sector**. These bodies are National Commission for ST&I (NCSTI) to primarily set the national and county ST&I priorities and coordinate the sector across all sector ministries and in the County Governments; the National Research Fund (NRF) to mobilize resources for the National Innovation System; and the Kenya National Innovation Agency (KENIA) to largely develop and manage the National Innovation System.			

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				Broad. The end aim is to improve the status and competitivenss of Kenya globally. The means is to promote ST&I through all sectors of knowledge production in Kenya. Including, but not limited to, education.	**Broad. Not just focused on education but a broader implementation of Science, Technology and Innovation capacities in Kenya. Involving a broad range of actors and sectors. Especially the new institutions that are suggested to be established to implement the framework and manage the ST&I sector.**	Drawing on, and reinforcing, the discourse that ST&I are crucial factors for the development of a country. Both in terms of economic growth and social integration and justice.	**Reform previous ST&I policies and align this one with the goals of Vision 2030. Create a new innovation system for Kenya.**	
The Universities Act No. 42 of 2012	2012	The Parliamanent of Kenya	Not addressing gender and ICT.					
The Kenya Quali	2013	The Parliamanent of Kenya	Not addressing gender and ICT.					
The Science, Technology and Innovation Act, 2013 No. 28 of 2013	2013	The Parliamanent of Kenya	Legislative act. Enforceable by law.	Establishment of the National Commission for Science, Technology and Innovation which objective "shall be to regulate and assure quality in the science, technology and innovation sector and advise the Government in matters related thereto.". p. 803 "... to facilitate the promotion, co-ordination and regulation of the progress of science, technology and innovation of the country; to assign priority to the development of science, technology and innovation; to entrench science, technology and innovation into the national production system and for connected purposes." p. 800	The Act is focused on the establishment of the National Commission for ST&I. Hence, officials involved in establshing this Commission and the subsequent Commissionaries will be key consumers of the document. Also, in outlining the functions of the Commission, the Act includes other stakeholders including other departments, agencies, private actors and research institutions that are involved in the development of ST&I within and outside of Kenya.	Further establishing the discourse of ST&I as a key sector for Kenya. "Legislating" the discourse.	The legal "arm"/consequence of the policy framework presented in "Sessional paper 2012. A Policy Framework for Science, Technology and Innovation.".	Solidifying the role and importance of the ST&I sector in Kenya. **However,** very limited focus on the gender and equality. This is a lega text with less "freedom" than policy framework document. However, equlity could have been included as one of the tasks/objectives of the Commission to ensure/promote

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The Technical and Vocational Education And Training Act, 2013	2013	The Parliamanent of Kenya	Not addressing gender and ICT.					
The Basic Education Act no 14 of 2013	2013	Parliament of Kenya	The overall Act with principles for education in Kenya	"An Act of Parliament to give effect to Article 53 of the Constitution and other enabling provisions; to promote and regulate free and compulsory basic education; to provide for accreditation, registration, governance and management of institutions of basic education; to provide for the establishment of the National Education Board, the Education Standards and Quality Assurance Commission, and the County Education Board and for connected purposes" - works as a overall guiding constitutional framework for how to enact education	Guiding documents for schools and other institutions governing education. The schools registred under the Act is obliged to meet the basic prescribed standards and other institutions include the ones offering alternative approaches of multi-grade, double-shift, mobile schooling, out of school programmes, adult and continuing education, distance or correspondence instruction, or accelerated learning and talent based institutions, but does not include any institution or assembly of religious character.	The overall act points to the right to schooling for all pupils in Keyna. With regards to gender, a school or person responsible for admission shall not discriminate against any child seeking admission on any ground, including ethnicity, gender, sex, religion,race, colour or social origin, age, disability, language or culture.	The act is passed as a Bill by the National Assembly on the 11th December, 2012. Works as the overall basic education guideline.	The role of education for all. Laying down important principles for equitable education, but low focus on gender. More explained as a "zero-tolerance" factor, but not explicitly mentioned in terms of how to adress gender disparities etc.

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The Second Medium Term Plan for Vision 2030, 2013 - 2017	2013	"The Ministry of Education, Science and Technology and its stakeholders. "	A five year Medium Term Plan to address the goals and objectives set in Kenya Vision 2030.	The Vision 2030 is implemented through five-year Medium Term Plans (MTP) under the different sectors identified in the vision. The first ST&I MTP covered the period of 2008-2012. The second MTP (2013-2017) builds on the success and lessons learnt in the first MTP while acknowledging the opportunities in the dynamic environment.	The sector recognizes a multi-sector and multi-disciplinary approach as being pivotal in the effective implementation of the plan.	**Describing the potential economic and social benefit of ICTs but also raising the issue of barriers for this to be realised. Addressing knowledge/skills gaps and infrastructure.** "The nature and extent of adequacy of ICT capacity, in terms of infrastructure and skills in the country has not been comprehensively established. This is a limitation to the country's effort to attract international investments in the national ICT sector. To address current and future market needs in ICT, there is need to comprehensively identify existing knowledge/skills, supportive infrastructure as well as other related gaps.", ""Key activities under the project will include: (...) 4. Identifying areas for capacity review including ICT curriculum changes to ensure effective ICT response to current and future market needs."	The 2nd MTP provides for prioritization of ST&I programmes based on their potential impact and the existing gaps identified within the framework of Vision 2030, the ST&I policy and the 1st MTP 2008-2012.	Generally less assertive when it comes to ICTs economic and social benefits. Describing that **barriers** need to be addressed. IDentified barriers include knowledge/skills gaps and the need to review ICT curriculum. However, not relating this to gender.

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				"The objective of the second MTP is to achieve the transformation to a knowledge based economy that integrates ST&I in national production processes and create technology platforms essential for the development of products, processes and services in a wide range of sectors."	It identifies priority Flagship Programmes with clear outcomes to contribute to the long term achievements of the ST&I goals in support of Vision 2030.To achieve the identified Flagship Programmes during this MTP, various initiatives including the Public Private Partnerships (PPPs); linking industry with academia; value chain analysis; initiatives for closed-cycle cluster approach for enhanced cooperation and synergy as opposed to individual competition will be adopted.	**Establishing STEM as a key pritority and foundation for Kenyas national development and ability to reap the benefits of ICT**. Describing the need to "introducing and repackaging STEM university programmes, preparing effective STEM teachers, setting affirmative gender actions for STEM programmes and investing in modern infrastructure for STEM with an aim of realizing the Kenya Vision 2030 and prosperity of the country." + "Improving STEM education in Kenya has been identified as a critical concern that will embed ST&I in the country's education and production systems. This calls for enhancing the capacity of education institutions to provide STEM education by providing modern equipment and qualified staff."	The Kenya Vision 2030 and the Constitution explicitly place a premium on the generation and management of a knowledge-based economy and the need to raise productivity and efficiency.	**STEM as a KEY priority area for Kenya as a country to maintain and develop its "leadership in innovation and economic development".** - ""The Science, Technology, Engineering, and Mathematics (STEM) is the foundation upon which rests a country' s leadership in innovation and its economic prominence. Expertise in this area is required to build and sustain economic and scientific leadership in a world whose focus is evolving from agricultural to industrializing and information technology."

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						ICT -> STEM -> Education. "Project 2: Repackage STEM in Education and Training. (...) The project is expected to promote experiential learning, innovation creativity and attraction to STEM related disciplines through well-coordinated programmes in education, R&D and Training in all aspects of ST&I at all levels starting from Early Childhood to Primary and Secondary Education levels up to University. To end the inadequate facilities, teaching and training staff challenge this project will enable technology-driven delivery of curriculum at all levels of education and training. To promote the generation of knowledge and its application in ST&I, the strategies will involve rebranding the Education Institutions by introducing innovation and creativity as a major function of ST&I and promote research to improve the manpower quality Education and Training Institutions at all levels."		**Improving STEM education in Kenya.** "To promote the generation of knowledge and its application in ST&I, the strategies will involve rebranding the Education Institutions by introducing innovation and creativity as a major function of ST&I and promote research to improve the manpower quality Education and Training Institutions at all levels."
Strategic Plan 2013-2017: Towards a Globally Competitive and Prosperous Kenya	2013	The Ministry of Education, Science and Technology	Strategic Plan for the Ministry of Education, Science and Technology.	A Strategic plan to align objectives following a restructure of the Kenyan educational sector - the merging of Ministry of Education and Ministry of Higher Education, Science and Technology to the Ministry of Education, Science and Technology.	Since the aim is to align the objectives of MoE with MoHEST and the Vision 2030 the key consumers of the document are deemed to be the governmernt officials working at these ministries including the directorates beneath them. The purpose of the plan to guide these officials is also mentioned in the document.	Kenya recognizes that education, training, science and technology is fundamental to the success of the Vision 2030.	Referring to developments in both the Sessional paper of 2012 and Vision 2030.	The link between education, technology, science and the overall development and prosperity of Kenya. Emphasizing the role of education in contributing to "he building of a just and cohesive society that enjoys equitable social development."

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				Lay out strategies for "the realization of the aspirations for affordable and equitable access to quality education, training, science & technology." and the implementation of the Vision 2030.		Strong focus on ICT as the link between education and the world of work, the economy and national development.	"The plan has also considered the recently accomplished policy developments such as the Sessional Paper No. 14 of 2012, the various acts of parliament and the Second Medium Term Plan for Vision 2030."	Establishing ICT at the core of this development. As the "link".
				The Ministry is committed to the provision of quality education, training, science and technology to all Kenyans, in an effort to contribute to the building of a just and cohesive society that enjoys equitable social development. This way the country will have a “Globally Competitive Quality Education, Training, Research and Innovation for Sustainable Development”. This will be realized through the implementation of the following strategies for the overall goal of improving access to quality education and training as well as revitalizing and harnessing Science, Technology and Innovation in Kenya.		"Education, Training, Science and Technology Innovations are recognized nationally and globally as essential for the economic transformation; growth and competitiveness of Kenya; and are also key components of social integration, sustainable development and poverty eradication. Implementation of relevant strategies in the sector must be successfully delivered in order to achieve the goals set under the Kenya Vision 2030."		Gender inequality in education is addressed but only in relation to issues with enrolment and as a barrier to education overall. Not explicitly in relation to ICT or technology. Also stated that "gender equity was enforced in all education programmes." but not explained how or backed up with statistics.

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National Education Sector Plan. Volume one: Basic Education Programme Rationale and Approach 2013-2018	2014	Ministry of Education, Science and Technology	National Education Sector 5-year Plan. Volume 1 out of 2.	**The NESP is a five year plan that outlines the education sector reform implementation agenda in six priority areas based on challenges affecting the sector and lessons learnt in KESSP**. The areas include Sector Governance and Accountability; Quality; Access; Equity; Relevance and Social Competencies and Values. Each of the priority areas is further divided into investment programmes, which are presented in terms of: background information, rationale, emerging issues and constraints, policy frameworks, objectives, strategies, and requirements. The Operation Plan NESP is presented as a separate volume. VolumeTwo.	Each implementing agency (as defined in Volume Two) is expected to refer to this framework and use it as the basis for developing their own detailed annual work plans.	Establishing gender as socially created for the first time.	This Volume provides the framework for implementing the Sessional Paper No. 14 of 2012, specifically Basic Education. ""In addition to identifying the challenges facing the education sector, the Sessional Paper No. 14 of 2012 on Framework for Reforming Education and Training also offers a clear set of policies and strategies for addressing these challenges."	**Increased focus on the teachers role** in promoting gender equality and being able to be gender sensitive. Teachers pedagogical role is lifted in the text. Also, in relation to ICT. One of the problems being ""Inadequate ICT Integration (pedagogy) in education and training to equip teachers with the requisite skills for science, technology and innovation."
				The National Education Sector Plan (NESP) 2013-2018 is an all-inclusive, sector-wide programme whose prime goal is: Quality Basic Education for Kenya's Sustainable Development.	Directed to the whole education sector with detailed priority areas. Provides both strategies and objectives for improvements in these areas.	"Gender refers to the social roles, responsibilities and behaviours that are believed to belong to men, women, boys and girls. Gender roles are created by a society and are learned from one generation to the next. Because gender roles are socially learned, they can be changed to achieve equity and equality for boys, girls, men and women."	The plan refers to a list of different policies that 1. should be developed and 2. already exist but should be reviewed and amended. Thereamong: The gender policy in education of 2007, the national ICT strategy for education and training of 2006.	Gender roles as social roles that can be changed to achieve gender equality amongst both boys and girls, and men and women.

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				This Volume provides the framework for implementing the Sessional Paper No. 14 of 2012, specifically Basic Education.	The NESP 2013-2018, has been developed through an all-inclusive stakeholder consultative process.	Describing the link between teacher education/training/development/pedagogy and gender disparaties AND the role of the education curriculum. "An appropriate education curriculum is expected to play a major role in empowering the citizens with the necessary knowledge, skills and competencies to realize the national development goals."	"Gender in Education initiatives will be implemented in line with the national frameworks as well as international conventions on human rights and goals of education." p. 103	**Self-reflective:** "Lack of satisfactory progress in addressing these issues calls for new approaches and mechanisms to enhance gender parity in the education sector." - Describing that the interventions that have been made is not enough/potentially not correctly targeted.

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				"The proposed reforms cut across the entire education sector and include policies and strategies for addressing the organization, management and financing of education, the curriculum, teacher training development and management, and strategies for bringing technology within the reach of every Kenyan child."		Providing a broader definition of ICT - both as a tool and an infrastructure that can be used to enhance teaching, learning opportunities and pedagogy.	"The MDGs and upcoming SDGs also provide targets for international actions to bring such visions into reality by expanding educational provision, redressing gender inequalities in education and developing national strategies for sustainable development."	**The role of ICT in education.** "The principles described above clearly focus on the fundamental place of pedagogy in lifting and maintaining quality of learning. This policy pillar establishes the place of technology as a powerful support to pedagogy but not the determinant of pedagogy.", "integrating ICT into every aspect of teaching, learning and management." HOWEVER also acknowledging problems with inadequate access: "Inadequate or absence of computer laboratories and teaching accessories for ICT learning in pre-primary and in primary schools, secondary schools and other institutions of basic education in the country."

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						Resetablishing the discourse on the need to redress gender inequalities in education in order to attain national sustainable development and to adhere with international frameworks (f.ex the MDG and the SDGs).	Refering to initatives they have conducted to improve ICT integration in education: "To provide coordination and harmonization of ICT integration initiatives in education, the Department established ICT unit and ICT integration Team. This has provided continued guidance on public-private partnerships to mobilize resources for ICT in education." + Referring to the establishment of an ICT for education unit: "ICT integration in education in the Department has two pillars namely: e-government implementation which is managed by the ICT Unit for management and ICT integration in teaching and learning managed by the pedagogical arm - **ICT4E Unit.**	New discursive convention? **Specifically bringng up the fact that girls especially are falling behind in subjects of science, maths and technology as a problem.** "Poor performance especially for girls in science, mathematics and technology.", "Encouraging the study of Science Maths and Technology especially in the case of girls.", ""Ensuring gender equality for both girls and boys means both have equal opportunities to enter and participate in and benefit from the range of subjects or other learning experiences in school."

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						New discursive convention? **Specifically bringng up the fact that girls especially are falling behind in subjects of science, maths and technology as a problem.** "Poor performance especially for girls in science, mathematics and technology.", "Encouraging the study of Science Maths and Technology especially in the case of girls.", ""Ensuring gender equality for both girls and boys means both have equal opportunities to enter and participate in and benefit from the range of subjects or other learning experiences in school."		
						"The **Kenya Vision 2030 identifies Science, Technology and Innovation as a foundation for the social and economic development.** The national development blueprint recognizes the role of Science and Technology in development as new knowledge is expected to boost wealth creation, social welfare and international competitiveness." + "The **21st century learning skills** include: critical thinking, creativity, communication, collaboration, **ICT literacy,** and innovation skills to effectively function in a knowledge-based economy. ICTs are expected to be seamlessly integrated in teaching and learning across all levels of education. Policy formation, capacity development, digital content and ICT infrastructure are the critical pillars for integration of modern technologies to teaching and learning."		

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						First and second order divide as the main barriers for ICT adoption in education: "Local communities have not exploited the full potential of ICT to access education due to lack of ICT equipment and skills. ICT is especially important for open and distance education activities. ICT therefore, has to be tapped to ensure increased access to education for all." + Seeing improvement in access as one of the solutions to this problem: "Connection of schools to the national grid will enhance use of ICT in education. ICT monitoring will include the use of computers by both teachers and pupils, assessment of teachers' ICT skills and the impact on learning achievements."		
National Education Sector Plan. Volume two: Operational Plan 2013-2018	2014	Ministry of Education, Science and Technology	National Education Sector 5-year Plan. Volume 2 out of 2. The operational plan of Volume 1.	The Operational Plan for NESP. Aim: Operationalization of the strategies and objectives laid out in Volume 1 of the NESP.	The implementation authorities of each of the objectives and strategies outlined in Volume 1.	Focus on gender disparaties in terms of **learning outcomes, environmental influences, socio-cultural attitudes etc.** Not just a question of enrolment anymore. "- National legislative frameworks to mandate policies and practices to address gender disparities in learning outcomes, environmental influences and behaviours, and socio-cultural attitudes and practices. - Explicit recognition of the place of enabling approaches and strategies within all national education policies to support gender education."	The operational plan of the NESP. Refering heavily to the objectives and strategies outlined in Volume 1 of the NESP (see document above).	A financial summary under the section Gender in Education shows that the government planned on doubling their spend on the "Gender in Education programme" between 2013 and 2018. From 671 KSH million to 1267 KSH million.

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				This Operational Plan focuses on those key goals, objectives and associated strategies included within NESP as critical to effecting the changes in the system that will improve learning outcomes.	It is expected that the implementing authority for each of the strategies will undertake due diligence of all identified parameters and develop a comprehensive detailed annual activities' plan as a start to its approach to implementation. These Annual Plans will describe how the activities will be operationalised on the ground to bring about the strategic changes described in the Sector Plan.	Focus on integration of **ICT** and information literacy as factors that influence **learning opportunities** and **educational outcomes**. "MoEST second pillar focus is on a policy for Curriculum Content and Pedagogy, including providing guidelines to support the promotion of information literacy as an educational outcome and the use of ICT tools to enhance pedagogy and learning opportunities"	The Government of Kenya is committed to implementing its international, regional and national commitments to education. The Millennium Development Goals (MDGs), Education for All (EFA) goals, post 2015 education targets, the Sessional Paper No. 14 of 2012 on Reforming Education and Training and the Basic Education Act (2013) have all emphasized the need to provide quality basic education. The Kenya Constitution (2010) provides for free and compulsory basic education to all children. Articles 43 (1) (f), 53 (1) (b) and 55 (a) in Chapter 4 of the Kenya Constitution (2010) obligates both the state and the parents to facilitate quality basic education for all children.	Addressing how both gender disparaties and level ICT integration influence educational outcomes. However, the two issues are discussed seperately and not together.
							One of the goals with the operational plan is to create "An up-to-date policy framework of gender education that will guide existing policies, strategies and interventions with the commitment necessary to achieve national goals by 2018."	The document outlines the need for a new policy for Curriculum Content and Pedagogy to be able to effectively address and implement the objectives and strategies in terms of ICT integration. - However not mentioning objectives of reducing gender disparaties.

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							"Gender equity of access is a cross-cutting principle underpinning gender in education initiatives consistent with national legislative and regulatory frameworks as well as international conventions on human rights and goals for education."	
Draft Technical and Vocational Education and Training (TVET) Policy	2014	Ministry of Education, Science and Technology	Since our focus is on basic education, this document is not relevant for the purpose of our study.					
National Curriculum Policy	2015	Ministry of Education Science and Technology together with The Curriculum Review Steering Committee	Policy	In 2014, the government embarked on a consultative process of preparing a policy framework for curriculum review. The reform policy is influenced by questions about the nature and kind of society and social system Kenya wants to become or remain. The policy thus defines the content of learning, the knowledge, skills and attitudes or a range of values and perspectives that the Kenyan society upholds and thus the relevant knowledge to be transmitted and applied daily and in the world of work in Kenya (p. 1).	Aim: will insure participation of a relevant competency based curriculum which will ensure that all learners acquire competencies and qualifications capable of promoting national values, inspiring individual innovation and life-long learning. It will also ensure that learners are not unnecessarily delayed at any level of education. The policy aim to provide a clear framework for undertaking curriculum reform in Kenya. Consumers: "aim to ensure that quality and relevant education is provided to citizens"	"Kenya lacks adequately skilled manpower to spur it towards economic development as envisioned in the Kenya Vision 2030, hence the need to produce graduates who are globally competitive through a reform in education" --> goal statement	Build on OECD (2012) proposition of a lifelong skills development strategy to deal with unemployment and inequalities and the 2015 Sustainable Development Goals (SDGs) - equitable and inclusive quality education for all by 2030. Refers to the African Economic Outlook 2012 recognizes the picotal importance of education and appropriate skills as the prevailing solution to mitigating unemployment and vulnerable employment among youth. Refers to the East African Community (EAC) Treaty that foster cooperation and integrated investments in the aim of harmonizing the curricula	"in line with global trends, Kenya needs to align itself to this paradigm shift in education". --> signals the awareness of CHANGE

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								Pedagogical approaches To empower teaches with effective, efficient and sound instructional strategies, methodology and techniques that facilitate competency based learning." --> focus on the role of teachers as knowledge transmitters
						Interesting is that they underpin **"attitudes**" having an impact on learning. Attitudes are defined as "A learned tendency or readiness to evaluate things or react to some ideas, persons or situations in certain ways, either consciously or unconsciously. Attitudes are underpinned by values and beliefs and have an influence on behavior. Attitudes are recurring in chapter 5 on "Pedagogical approaches", where one policy objective is to enhance pedagogical approaches that support creativity, innovation, critical thinking and sustainable development. The strategic goal is to "build capacity for teachers trainers to enable them impart knowledge, skills, values and attitudes for implementation of the reformed curriculum".		How the teachers transmit also values and beliefs

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The Education and Training Gender Policy	2015	Ministry of Educaton Science and Technology	Policy document	Through this policy, the Ministry re-affirms its commitment and determination to address legal and policy concerns in order to reduce gender equality gaps in the education of girls and women, boys and men. The overall goal of this policy is to promote gender equality issues in regard to access, equity and equality in the education sector and to enhance empowerment for effective participation and contribution in national development by all. Ultimately this policy will work towards ensuring inclusiveness in issues of gender, empowerment and mainstreaming of needs and concerns of women, men, girls and boys in the sector.	"We call upon the entire education sector fraternity to take full charge of implementing this policy to the letter as outlined in order to fulfil our goals and aspirations regarding equity and equality in education" (p. 2) For teachers: "regularly review all teacher training curricula, including teaching and learning materials with a view to providing a genderresponsive teacher education at all levels; Build the capacity of all teacher trainers on established standards and sensitize them on gender mainstreaming and gender respon-sive pedagogy."	"It is my hope that the implementation of this Gender Policy will lead to fruition of the overall goal of the Education Sector – providing equitable quality education for all Kenyans." (written by Prof. Jacob T. Kaimenyi, Cabinet Secretary Ministry of Education, Science and Technology) "The Kenya Institute of Curriculum Development has made strides in addressing gender issues in the development of curriculum and curriculum support materials. However, more effort is required in the education sector to address pedagogy, teaching/learning processes and the entire student-teacher interaction in school that reflect gender biases, stereotypes and insensitivity. These assist in perpetuating gender disparities and inequalities in the sector. A gender-sensitive working and learning environment includes the positive attitudes of key stakeholders in the school/institution, including management, teachers and students. (p 5)"	The Constitution of Kenya 2010 ushered in a new legal framework that called for a review of the gender policy. The Bill of rights provides that every person has the right to education. The review has therefore, been carried out with the purpose of focusing on equal rights for men and women, girls and boys and the realisation of Goal 3 of the Sessional Paper No. 14 of 2012 which is to 'Eliminate gender and regional disparities in Basic Education by 2017'. The Ministry of Education, Science and Technology (MoEST) has undertaken the review of the Gender in Education Policy (2007), to incorporate emerging issues that have implications on gender equity and equality in the Education Sector.	Strong focus on a new policy, where the government recoginzes the need to incorporate gender equality in education on ICT to fulfil national development goals Focus on teachers role in perpetuating gender disparities. First time this has even been mentioned in policies.

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The Basic Education Regulations 2015	2015	Ministry of Educaton Science and Technology	Not adressing gender and ICT.					
Revised Policy Framework on Nomadic Education in Kenya	2015	Ministry of Education Science and Technology and UNICEF	This is not a policy framework, but an updated version of the 2010 Policy for Nomadic Education in Kenya	The reviewed policy aims at addressing three distinct challenges that are in the pastoral nomadic counties and marginalized groups urban informal settlements: These are;-One: how to close the gap between these regions and the rest of the country in terms of access, quality, relevance and gender disparities in education.	To hightlight a social issue from a development perspective for IO's and other groups helping Nomadic communities.	The Government of Kenya recognizes the fact that the needs of nomadic communities are generally complex and that those providing education face even more challenges. Another challenging fact is that education cannot be provided to the nomadic communities in isolation of their spiritual, social, security, moral and other developmental concerns.	This is not a policy framework, but an updated version of the 2010 Policy for Nomadic Education in Kenya	
The National Council for Nomadic Education in Kenya: Strategic plan 2015-2016 - 2019-2020	2015	Ministry of Educaton Science and Technology	Not relevant for the analysis.					
Kenya School Readiness Assessment Tool (KSRAT) Launching Programme	2015	Ministry of Educaton Science and Technology	Not relevant for the analysis.					
Kenya School Readiness Assessment Tool (KSRAT) for children transiting to primary one	2015	Ministry of Educaton Science and Technology	Not relevant for the analysis.					

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Education for Sustainable Development Policy for the Education Sector	2017	Ministry of Education	Policy Document; The Education for Sustainable Development Policy for the education sector was launched at the Kenya Institute of Curriculum Development on March21st 2017. It constitutes an essential milestone for Kenya, providing a competency-based curriculum for quality education, emphasizing the teaching of science, technology, engineering and mathematics.	Social challenges include poor governance, corruption, bigotry towards cultural diversity, ethnic animosity, gender inequality, HIV/AIDS, malaria, tuberculosis (TB) and other communicable and non-communicable diseases, human rights abuse, all forms of violence and increased insecurity, degraded lifestyles and behaviour, drug and substance abuse, and erosion of cultural values and morals, among others. This policy provides an opportunity for the education sector to address these challenges through ESD. It is the responsibility of the Ministry of Education to create an enabling policy environment essential for ESD implementation in the sector.	The Sector Policy on ESD shall be applicable to the two levels of Government and shall include programmes and activities at all levels of education. Its implementation will address key education result areas that include basic education, higher education, teacher and technical & vocational training institutions and workplace, lifelong learning and non-formal education, and capacity building, networking and social learning. The policy strategies herein become part of the daily tasks and responsibilities of actors within the education sector. The Education for Sustainable Development Policy for the Education Sector in Kenya was launched in the presence of a diverse category of stakeholders including senior Ministry of Education officials, County Directors of Education, County Regional Directors of, Country Directors of the Teachers Service Commission, the Parents Association, the Ministry of Environment, Development Partners and academics. Dr Belio Kipsang, Principal Secretary for Basic Education presided as Chief Guest.	The ESD Policy is considered to be an important milestone and timely initiative by Kenya, which passed a directive on mainstreaming the Sustainable Development Goals (SDGs) in policy, planning, budgeting and programming at the Seventh Cabinet Meeting in 2016. As a matter of fact, the ESD policy provides the framework for a competency based curriculum for quality education. Kenya is also working on the development of a mechanism to monitor SDG4 on inclusive quality education. The Kenyan curriculum reform lays special emphasis on teaching of Science, Technology, Engineering and Mathematics as a "strong pathway" in the national curriculum. The need to build human capacity also implies increasing awareness and knowledge of the teaching fraternity to ensure that all young people are equipped with the required values and attitudes for critical thinking, which is a core characteristic of ESD for lifelong learning. Principal Secretary, Dr Belio Kipsang underlined the fact that "the quality of education is as good as the quality of the teachers."	The Ministry has been highly involved with UNESCO headquarters for considering Kenya to become a member of the "Priority Action Area 1: Advancing Policy" Partner Network of the Global Action Programme (GAP) on Education for Sustainable Development, the follow-up to the United Nations Decade of ESD (2005-2014). The policy guidance and exposure of Kenya to the World cannot be underestimated. The UNESCO support has been immense and continues to help Kenya to scale up ESD actions at all levels and in areas of education and learning to accelerate progress of agenda 2030 for sustainable development. - the role of UN and the international frameowork in guiding sustainable education policies in Kenya. The policy document is further based on 23 county stakeholder consultations and complements the National ESD Strategy of 2008 and Sessional Paper No. 11 of 2014 on National Education for Sustainable Development Policy that also calls for nation-wide stakeholder engagement. The Sessional Paper No. 4 of 2012 on Reforming Education and Training in Kenya has recommended curriculum reform that is expected to foster quality education and enhance the integration of ESD at all levels of education.	

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Documents Req	1	No date	Not adressing gender and ICT.					
Electroic Messa	1	No date	Not adressing gender and ICT.					

APPENDIX 6

Social Analysis

Document Name	Year	Author	Authority	Institution	Social Cohesion	External Circumstances
Document example	*xxxx*	*Author X*	*E.g. Focus on individual positions. Who is the agent of communication?*	*E.g. In which network of social practice is the language being communicated?*	*E.g. Nature of institution: e.g. public/private/informal school; parliament, departments, government.*	*E.g election/new constitution*
Sessional Paper No. 1 2005 on a policy framework for education, training and research	2005	Ministry of Education, Science and Technology	The Ministry; government officials.	Ministry of Education, Science and Technology	Outlining key priority areas in education policies to meet new challenges and demands in the 21st century. Sessional Paper No 1 of 2005 on “A Policy Framework for Education, Training and Research” outlines the vision of our education sector as a major enabler of Kenyan youth. Despite the substantial allocation of resources over the years before 2005, the education sector had faced numerous challenges and the effectiveness of the system had to undergo increased scrutiny. Previous policy initiatives had focused on the attainment of Education for All (EFA), and key concerns was centered around access, retention, equity, quality and relevance as well as internal and external efficiency within the system. The government was pressured to do reform of the education sector in order to address the overall goals of the national Economic Recovery Strategy Paper (ERS), as well as international development commitments, including the Millennium Development Goals (MDGs) and Education for All (EFA). The Sessional Paper No 1 of 2005 on policy framework for education, training and research became a new framework to deliver the new policies that would live up to the new agreements (Nzomo 2005).	Kenyan constitutional referendum in November 2005. The new constitution was rejected. "In 2003, the Government organised the National Conference on Education and Training that brought together more than 800 players in education. The conference developed a new policy framework for education. The Sessional Paper No 1 of 2005 on Policy Framework for Education, Training and Research constitutes the Government policy on education and training and is based on the recommendations of the conference." The Government pronouncement of Free Primary Education in 2003 necessitated the Ministry to undertake a more comprehensive sector-wide approach to program development to ensure the delivery of educational services to the learner in the most effective and efficient manner. The Ministry worked with a wide range of stakeholders in the education sector to develop a Kenya Education Sector Support Program within the sector-wide framework for the next five years. Since 2003, the policy and program development process deviated from the historical trends of setting up commissions or taskforces that have consumed substantial amounts of resources to formulate policies. The process was backed up by stakeholder involvement and the use of research studies, sector reviews and plans that were undertaken and resulted in Policy Paper No. 1 of 2005. (Nzomo 2005)

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Social Analysis

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Early Childhood Development Service Standard Guidelines for Kenya 2006	2006	Ministry of Education	Not addressing gender and ICT.			
Safety Standards Manual for Schools in Kenya	2008	Ministry of Education	Not addressing gender and ICT.			
The Biosafety Act	2009	Ministry of Education	Not addressing gender and ICT.			
The National Special Needs Education Policy Framework	2009	Ministry of Education	Not relevant for the analysis.			
TIVET Institution Guidance Counceling Policy and Operational Guidelines 2011	2009	Ministry of Higher Education, Science and Technology	Not addressing gender and ICT.			

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Education Sector Report 2013/14 2015/16 Medium Term Expenditure framework	2012	Education Sector	Ministry of Education (MOE) and its affiliated institutions; Ministry of Higher Education, Science and Technology (MoHEST) and its affiliated Institutions; Teachers Service Commission (TSC)	Kenyan ministry of education	The Education Sector Report is produced as a performance report/progress statement and vision outline. It is obvious the government is guided by the implementation of a new constitution in 2010 and the Vision 2030 2008. They recognizes that Kenya's main potential is in its people; their creativity, education, and entrepreneurial skills. The overarching goal of the vision 2030 is to turn the country into a globally competitive and a prosperous nation by the year 2030. The Education Sector has therefore been expected to take on a major responsibility of facilitating the process of developing manpower necessary for transforming Kenya into a globally competitive country and it is clear that the document signals those ambitions. Overall, there is a large focus on ICT and it's empowering effects on people, but less so on gender with no reference between ICT as working for female empowerment.	"The education sector is committed to the provision of quality education and training as well as research and innovation to the people of Kenya in line with the **Constitution**, **National objectives** and the **globalization trend"** (p. 12)
Sessional Paper No. 14 of 2012. A Policy Framework for Science, Technology and Innovation.	2012	Ministry of Higher Education, Science and Technology.	Ministry of Higher Education, Science and Technology i.e. government officials.	Within the ministry and other state departments. The nature of the document - a suggested policy framework rather than a parliament act - makes it more accsessible to other actors that are mentioned as being important for the ST&I sector in Kenya.	Published within the context of the government. Focusing on ST&I as a means for national development in Kenya thus also involving a focus on private actors and how business is necessary to help increase the competitiveness of Kenya. Holistic focus on involving both public and private actors in this process.	This sessional paper was published 4 years after the Vision 2030 was launched. There seems to be a focus on creating frameworks that supports the implementation of Vision 2030 objectives. Focus on placing **Kenya in the global context**. On how the ST&I policy and Kenya Vision 2030 can make Kenya more competitive with the aim to become a "newly industrialized country":
The Universities Act No. 42 of 2012	2012	The Parliamanent of Kenya	Not addressing gender and ICT.			

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The Kenya Qualifications Framework Bill, 2013	2013	The Parliamanent of Kenya	Not addressing gender and ICT.			
The Science, Technology and Innovation Act, 2013 No. 28 of 2013	2013	The Parliamanent of Kenya	The Parliamanent of Kenya as representing the Republic of Kenya.	Legislative act. Primarily communicated within the network of the officials involved in establishing the Commission.	Amendement of legislative act to further establish the government discourse of ST&I as a key sector for Kenya. "Legislating" the discourse.	This amendment was published alongside several other Act amendements in 2012/2013 with focus on the development of ST&I in Kenya.
The Technical and Vocational Education And Training Act, 2013	2013	The Parliamanent of Kenya	Not addressing gender and ICT.			
The Basic Education Act no 14 of 2013	2013	The Parliament of Kenya	The parliament - highest force of government for passing bill	Government.	Internal changes in the government with regards to the constitution is visible throughout the document.	Amid efforts to realign the education sector with the Constitution,the government enacted the Basic Education Act 2013. The new legislation restructured management of education in the country and more importantly anchored free and compulsory primary education into law. It also laid heavy penalties and punishment for parents and other defaulters who would negate rights of children to access education.
The Second Medium Term Plan for Vision 2030, 2013 - 2017	2013	The Ministry of Education, Science and Technology	"The Ministry of Education, Science and Technology and its stakeholders."	Government and key stakeholders for reviewing the first MTP and developing the second MTP.	A follow up on the first 5 year Medium Term Plan of for Kenya Vision 2030. Reviewing progress and setting new goals.	The Kenya Vision 2030 and the Constitution explicitly place a premium on the generation and management of a knowledge-based economy and the need to raise productivity and efficiency. This document is focused on enhancing this process.
Strategic Plan 2013-2017: Towards a Globally Competitive and Prosperous Kenya	2013	The Ministry of Education, Science and Technology	The "new" Ministry of Education, Science and Technology that have been established after restructuring in the education, training science and technology sector.	Government. Aimed at the government officials who are constituting the new Ministry. To align and outline strategic objectives and streamline them with the Vision 2030.	The restructuring of the Ministry i.e. the merging of two ministries and the need to align their objectives to be in line with the Vision 2030 is visible in the document.	The Vision 2030 will be implemented in 5 year medium term plans (MTPs). This strategic plan is created in light of the creation of the second of the MTPs (for 2012-2018) and as a consequense of the restructuring of the Education, Training Science & Technology sector in 2012/2013.

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						Merging of Ministry of Education and Ministry of Higher Education, Science & Technology. The current process of re-structuring the Ministry of Education, Science and Technology and the need to respond to the demands of the Constitution of Kenya 2010; the Kenya Vision 2030 and the Jubilee Manifesto contributes to the realization of the aspirations for affordable and equitable access to quality education, training, science & technology. These therefore necessitate the development of the Ministry of Education, Science & Technology Strategic Plan for the period 2013-2018.
National Education Sector Plan. Volume one: Basic Education Programme Rationale and Approach 2013-2018	2014	Ministry of Education, Science and Technology	The NESP 2013-2018, has been developed through an all-inclusive stakeholder consultative process. The completion of this document was made possible by the collective effort of the education stakeholders in the country. On behalf of the Department of Education, we wish to acknowledge the role played by the Directorate of Policy Partnerships and East African Affairs, in the coordination of the NESP activities, conceptualizing and developing this education sector plan.	Government.	Government-led. "The National Education Sector Plan (NESP) 2013-2018 is an all-inclusive, sector-wide programme whose prime goal is: Quality Basic Education for Kenya's Sustainable Development." This Volume provides the framework for implementing the Sessional Paper No. 14 of 2012, specifically Basic Education.	One of several documents published by the Ministry in 2015. Drawing on the suggestions outlined in the 'Sessional paper: A Policy Framework for Science, Technology and Innovation' developed in 2012.

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National Education Sector Plan. Volume two: Operational Plan 2013-2018	2014	Ministry of Education, Science and Technology	The NESP 2013-2018, has been developed through an all-inclusive stakeholder consultative process.	Within government. The "receiving" parties are the implementation authorities of each of the objectives and strategies outlined in Volume 1, who will implement said objectives.	Government-led. "The National Education Sector Plan (NESP) 2013-2018 is an all-inclusive, sector-wide programme whose prime goal is: Quality Basic Education for Kenya's Sustainable Development." This Volume provides the framework for implementing the Sessional Paper No. 14 of 2012, specifically Basic Education.	One of several documents published by the Ministry in 2015. Drawing on the suggestions outlined in the 'Sessional paper: A Policy Framework for Science, Technology and Innovation' developed in 2012.
Draft Technical and Vocational Education and Training (TVET) Policy	2014	Ministry of Education, Science and Technology	Since our focus is on basic education, this document is not relevant for the purpose of our study.			
National Curriculum Policy	2015	Ministry of Education Science and Technology together with The Curriculum Review Steering Committee	Government	Government	In 2014, the government embarked on a consultative process of preparing a policy framework for curriculum review. The reform policy is influenced by questions about the nature and kind of society and social system Kenya wants to become or remain. The policy thus defines the content of learning, the knowledge, skills and attitudes or a range of values and perspectives that the Kenyan society upholds and thus the relevant knowledge to be transmitted and applied daily and in the world of work in Kenya (p. 1).	“Policy documents after an evaluation in 2009 have indicated gaps in the current curriculum which include the following: the curriculum for basic education is not aligned to the requirements of Constitution of Kenya and Vision 2030”. --> Misalignment of other documents and that the previous curriculum carries old assumptions about the world

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					The curriculum is guided by the vision "nurturing every learners' potential to produce citizens equipped with relevant and quality knowledge with national values and social competencies (Kenya Constitution 2010) and to equip them with the 21st century skills and competencies (Vision 2030), Kenya is undertaking a major reform of the national curriculum. The Government has deliberately invested in increasing access to education for all learners. As a result, the sector has witnessed an increase in enrolment; parity index between girls and boys; the number of special needs learners. Despite this progress, there are challenges including a drop in primary completion rates, low gender parity in secondary.	
The Edcuation and Training Gender Act	2015	Ministry of Education Science and Technology	Published by the Ministry of Education, Science and Technology (MoEST) with the Financial and Technical Support from the United Nations Educational, Scientific and Cultural Organization (UNESCO) in the context of the UN/GoK Joint Programme for Gender Equality and Women Empowerment (UN/GoK JPGEWE)	Clear expert focus from both international gender specialists and the Ministry's full presence.	Government-led research together with international bodies (UN)	The Constitution of Kenya 2010 ushered in a new legal framework that called for a review of the gender policy. The Bill of rights provides that every person has the right to education. The review has therefore, been carried out with the purpose of focusing on equal rights for men and women, girls and boys and the realisation of Goal 3 of the Sessional Paper No. 14 of 2012 which is to 'Eliminate gender and regional disparities in Basic Education by 2017'.
The Basic Education Regulations 2015	2015	Ministry of Educaton Science and Technology	Not adressing gender and ICT.			
Revised Policy Framework on Nomadic Education in Kenya	2015	Ministry of Educaton Science and Technology	Not relevant for the analysis.			

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The National Council for Nomadic Education in Kenya: Strategic plan 2015-2016 - 2019-2020	2015	Ministry of Educaton Science and Technology	Not relevant for the analysis.			
Kenya School Readiness Assessment Tool (KSRAT) Launching Programme	2015	Ministry of Educaton Science and Technology	Not adressing gender and ICT.			
Kenya School Readiness Assessment Tool (KSRAT) for children transiting to primary one	2015	Ministry of Educaton Science and Technology	Not adressing gender and ICT.			
Education for Sustainable Development Policy for the Education Sector	2017	Ministry of Education in partnership with other IO's such as the UN	Ministry, guided by the global SDG's. Focus on SDG nr 4; Education for Sustainable Development	Government together with the UN		The need for this policy arises from the understanding that while much has been achieved in implementing ESD over the last Decade, a lot remains to be done to ensure policy coherence between the education sector and other sectors for sustainable development. Kenya has developed a National ESD Policy, but lacks an education specific ESD policy.
Documents Required for Registration of your Institution	1	No date	Not adressing gender and ICT.			
Electroic Messages	1	No date	Not adressing gender and ICT.			

APPENDIX 7
Analysis procedure: Interviews

SA: Social analysis
DA: Discursive analysis
TA: Textual analysis

Interview 1

Informant 1
Age: 37
Gender: Male
School: Private international school in Karen, Nairobi
Position: Secondary school teacher

Comment [Office1]: SA: Institutional character

So, how about the Kenyan legislation?
No, because we are following the international curriculum from the UK we don't really stick to the Kenyan regulation, we are not bound by the Kenyan regulations in terms of curriculum.

Comment [Office2]: Re: Education policies

So do you just teach strict ICT or do you also work together with other teachers to integrate ICT in other subjects?
We try and integrate ICT with other teachers and in other subjects in terms of, I assist the other teachers to incorporate ICT in their learning. And we also make the children use ICT when they do their work and their assignments and research. So we also have other teachers for example coming into the computer lab to do research, make presentations and so on and so forth.

Comment [Office3]: DA: Theme – ICT.

Comment [Office4]: DA: Theme – ICT.

What would you say are the biggest differences in terms of what you teach at your school and the national curricula for ICT?
With our curriculum, ours is more hands on, more practical. The government curriculum is a bit heavy on the theoretical side. So the content, they have quite a lot of theory content and very little hands on, practical content. But for us even the exam requirements that we have asks the students to do quite a lot of practical tasks whereas in the public schools I think they have only one project that they do. And then in terms or resources and availability of resources, not all schools that follow the national curricula have that wide access to computing resources so they won't be able to have as much time on the computers compared to our students.

So, as I mentioned we are focusing in the gender divide in regards to access and use of ICT in Kenya and focusing on education as an important actor to bridge that gap. So I just have a few questions in relation to that. Have you noticed a difference in terms of interest in ICT between boys and girls amongst your students?
Yes, there is a difference. Especially when there is an optional subject you will find more boys than girls. And for the girls who have chosen it, the few girls that do choose it, their performance is slightly lower than for the boys.

Comment [Office5]: DA: Theme – Gender disparities in relation to ICT-subjects.

Yeah, so why do you think it is that there is a difference?
I think, looking at ICT, because we are teaching both ICT and computer science. Many associate computing as something being similar to math, so something that requires mathematical knowledge, requires that you can think outside of the box kind of mentality, so some fear that because of that oh it's just like math or like physics so I don't think I'll be up for it. So that is one reason. And I also think that perceptions generally, based on, even from their parents and from the generation they come from, the parents tend to look at programming and things like that as a man's' profession, being a computer technician as a man's profession. So it hasn't really been instilled in them that it is a profession that can be taken across.

Comment [Office6]: TA: ICT in conjunction with STEM.
DA: Theme - Math and physics as gendered.
DA: Theme – Gendered associations in relation to ICT.

So you are mentioning math and physics, is there a difference between boys and girls there as well?
In math and physics, yes there is a difference.

Comment [Office7]: DA: Theme – Gender disparities in STEM.

In what way?
Ehm. The girls tend to maybe stay away from those subjects. Yeah.

Comment [Office8]: DA: Theme – Girls falling behind in STEM.

And why do you think that is?
I don't know if maybe it is guided by their careers, so that they see maybe math and physics leading to engineering and that type of courses that are more man like courses and they don't want to go to the engineering kind of courses they want to go to other courses. So they kind of say that these subjects are leading to a certain career but not seeing that as being a female career. Yeah.

Comment [Office9]: DA: Theme – Gendered associations of technology.

Do you think about it as a teacher teaching ICT, in terms of how you can make it more interesting for girls?
Yeah I have thought about it. I think even before we get to the classroom level of how we can make it more attractive, I think we also should look at our career department and our career counselling department that guides the students in their subject choices. They need to give student more talks to enlighten them, because maybe their perception is, they have their perception because of ignorance and that they are not well informed. So maybe, if there were more career talks, more maybe visiting female entrepreneurs who have done ICT to come and give some talks to see what they did. It might change their perception. So then they could see role models, and have good role models that could come and talk and show them that ICT can be done by both genders.

Comment [Office10]: DA: Theme – Social construction of perception of gender roles.

So when it comes to ICT, do you discuss this difference that you have noticed with the teacher team?
No but just to give you an example. We recently had a LEGO competition which involved programming of robots. And the teams that went, somehow they consisted of boys only, and so there were no girls that signed up for the competition.

Comment [Office11]: DA: Theme – Gender disparities in STEM.

Okay, did you talk to the students about it? And what were your conclusions from that?
We didn't get any feedback from the students but I think it did give some food for thought. But as a school I don't think we have discussed it yet with the students. It is something that we look at discussing with them.

Comment [Office12]: DA: Theme – Teachers role in addressing gender disparities.

Yeah, and that it is used by both genders in work. So I was just wondering, do you think about the way you talk to your students in class in terms of addressing these differences in boys being more interested in ICT?
I did make mentions about it. But I feel that as a teacher maybe I should do more. I feel that actually I need to do more. Especially when they start from the earlier years, that is where it is important to plant a good foundation and talk more to them about it. So maybe we haven't spoken

Comment [Office13]: TA: Argumentative. "Actually need to do more".
DA. Theme - Teachers role in addressing gender disparities.

to them about it as much as we should have. Because we offer it as a subject but we don't really counsel them or talk to them about it. But if it was done so between year 7 and 9 it would maybe make them look at it differently.

Yeah, do you know if you have any guidelines when it comes to gender equality in your school?
I don't think we have anything particularly but we do have a general policy that discourages any bias in terms of gender but no policy in addressing the difference especially when it comes to subject choices and the like. But I also feel, and this is just my personal opinion, if such a policy should exist, for it to be successful they would also really need the input of the parents because I feel that the parents also really influence their children. In terms of thinking of and choosing subjects.

Comment [Office14]: DA: Theme - Teachers role in addressing gender disparities.

Comment [Office15]: DA: Theme - Schools role in addressing gender disparities.

Comment [Office16]: DA: Theme – Gender perceptions in the home environment.

Interview 2

Informant 2
Age: 42
Gender: Female
School: Private international school in Karen, Nairobi
Position: Primary school teacher

Comment [Office17]: SA: Institutional character

Would you say that based on the division between boys and girls, what is your experience in terms of interaction and engagement with ICT between boys and girls? Do you see a difference or is it more or less the same?
No I think honestly they are all pretty equal in their approach and in their enthusiasm to ICT. Yeah with what I do they all love it, they all engage with it, they all want to do it. They are probably equally proficient, so yeah no I would say that there are no gender differences at our age span of the grade 4s.

Comment [Office18]: DA: Theme – No gender disparities in ICT.

Yes, that would be lovely.
And he has come to us this year, and he came from another Kenyan school and I don't know if that was an international school or a public school. So he might have quite a, or I mean to recent perspectives. So yeah I'll talk to him tomorrow. And I know that he has just been away on a coding course and that they are looking at improving our ICT capabilities or yeah provisions from next year. So yeah there is quite a forward focus. Yeah but I think that XXX might have a bit of a different perspective because actually in Kenya, I mean the kids in our school are very affluent Kenyans. Like, our parent body are Kenyans who have been educated in the US and in the UK and England, so we are talking really affluent educated Kenyans. I mean Kenyans are educated anyway but lots of our parent body are you know really, extraordinary educated. But our secondary kids still conform to gender roles. Like even in what you would class as a really you know, affluent and educated community, lots of our secondary students seem to fall straight back into old gender roles. And I don't know whether that is a Kenyan thing or a, I don't know what.

Comment [Office19]: DA: Theme – Patriarchal ideologies shaping gender roles.

In what sense do you see that play out?
Ehm. Our girls are not self-promoters, our girls will carry the boys plates in after lunch, they don't question the boys, so yeah really dominant type of gender roles. And they ran this most fabulous football competition and the B-tech PE class had to have, so we have more girls than boys in secondary and all of the, so they were in four different teams and even though teams had like three boys and four girls in each, every team captain was a boy. And no really noticed it, it was just the way it was. You know that really quite explains it. And equally, there are Kenyan

Comment [Office20]: DA: Theme - Patriarchal ideologies shaping gender roles.
TA: Cohesion - "Girls are **not** self-promoters"

teachers that are supervising it and they didn't think about it. It was not until one of my primary school colleagues said hey, aren't those players' girls? Why is she not the captain? You know, probably in Australia you would have put them two and two or at least you know have drawn straws or whatever. Whereas here it is just you're the captain, you're the captain, you're the captain. You know, it's all little things but when you start looking at a few things in a row I think it gets quite interesting.

Yeah, do you discuss that at all within your teacher team?
Yeah it came up in the secondary team. I only know that because I have friends who work in the secondary department. In our primary school the gender divide is not significant enough to warrant a conversation about it. Like I mean, probably in the primary we don't have as defined gender roles as we start seeing in the secondary.

Why do you think that is, that you don't see it in the primary section but then it starts playing out in the secondary section?
I'm not sure. Culturally, just from gleanings, culturally in Kenya women still have… I mean there are lots of progressive women in Kenya, some really significant women in Kenya, but you know if you look at government and that it is still a very male dominated culture here. And if you, even if you extrapolate out to wider society, I mean there is a percentage of girls not going to school because they are having their period or something like that. Like there is this massive of what it means to be a woman in Africa. They often end up having, like, what it means to be a woman in Africa is very different in terms of what they can access and their availability I think whether or not that is still true, I think you can see it even in the more affluent families. Actually I haven't thought about it that much but it was interesting to see, even in our secondary student population who are I mean coming from affluent Kenyan families, they are the next generation of Kenyan women. It's either that or that we have particularly assertive boys.

So you mentioned that you are teaching science as well, so just in general, do you notice any differences or see any patterns there again between boys and girls in terms of interest or engagement?
Yeah I honestly if I think about my cohort and my learners they are all just, they just love learning and they look forward to learning. So I mean now we're working on magnets and their task this week is that they have to design a vehicle that demonstrates magnetism, or the forces of magnetism, and they are all equally keen and there are no disparities between boys and girls. If anything the girls probably work harder because the boys get distracted and want to pimp up their vehicles too much.

And so when you teach, do you ever think in terms of how you talk to boys and girls, that you treat them differently?
No I think probably, as a human being first and as a teacher second, my students are my students and we look beyond gender. I look beyond gender. I have the same expectations and the same approach. Yeah I mean they are all learners and they have ideas and they have enthusiasm and passion. They are all learners and particularly in the primary years to expose everyone to every opportunity and to maintain equity in all of your approaches means that everyone has got the entry point that they need.

But do you have to follow the same regulations as public schools or is it different?
I don't think we are. I think that the one part of the Kenyan policy that we do adhere to is that we have to teach some elements of Kenyan history and culture. And we teach Swahili as well. So I don't know but I think that they might be government education policies. But, I'm really not sure.

Comment [Office21]: DA: Theme – Oversight among teachers on gender equality.

Comment [Office22]: TA: Modality - expression of certainty. Gender roles develop over time in school.

Comment [Office23]: DA: Theme - Patriarchal ideologies shaping gender roles.
DA: Theme - Expressing some progressions in terms of gender equality.

Comment [Office24]: DA: Theme - No gender disparities in ICT.

Comment [Office25]: DA: Theme - Teachers role in addressing gender disparities.
DA: Theme – Gender neutrality in teaching.
TA: Modality – "I look beyond" gender, "Expose everyone to the same opportunity", "Maintain equity in all our approaches".

I don't know of any Kenyan government education policy that I'm bound to as a teacher. Which is yeah, I mean I'm teaching Kenyan kids in Kenya.

Comment [Office26]: Re: education policies.

Comment [Office27]: TA: Modality – Irony since she doesn't have to follow education policies in Kenya.

Interview 3

Informant 3
Age: 41
Gender: Male
School: Private international school in Karen, Nairobi
Position: Principal

Comment [Office28]: SA: Institutional character.

Comment [Office29]: SA: In position of power.

So are you in charge of setting the curricula, making sure that you are following policies?
Yeah, I'm charge of everything basically. We just started looking at gaps in the teachers practice, and then identified common threads, common gaps, and filling that through professional development and then tracking very carefully how the teachers are improving and which gaps are being filled, which ones aren't. And again, retrospectively we need to put in more professional development and then that is kind of on a teacher level. And then I look at the school in general and try to think what else, what initiatives should be included or brought in, that will improve the quality of the education for the primary sector.

Comment [Office30]: TA: shows an awareness of his power position

Okay, but so do you keep track of what is happening in terms of national education policy in Kenya or is that not really relevant for you?
Well, we do because what is happening is that we have millions of children who are coming from the 8-4-4 system which is the Kenyan curriculum system so of course the teaching is completely different, it's rote learning so the children are just repeating what the teacher is saying. And we have lots of students from that area coming in to us so we need to make sure that we understand where they are coming from, so we do have an understanding of the curriculum. So now they are beginning a new national curriculum in Kenya, and yeah so we have teacher training at GEMS in Nairobi with us where they work quite a lot with local schools.

Comment [Office31]: DA: shows awareness of the education system, but criticizes the structure.

Comment [Office32]: SA: the introduction of a new curriculum and how that influences their school

And in terms of those trainings, do you see that there is a big difference in terms of you teachers and teachers coming from other areas or other schools in terms of mindset, how you talk about subjects, teaching styles, authority?
It's a massive difference. It's shocking actually, it is completely different. Everything basically is completely different. Where to start to be honest, because we have so the "Dream Africa" schools that GEMS support so we went to visit them and see how they are teaching and it is literally, the students are not active participants, that is the main difference. Children in the public system are not active participants of the teaching process, they do not lead their learning and that is what we are trying to incorporate, you try to get them involved so that they are not bored and so that they are enthusiastic. And there it is very much, you need to sit and listen and repeat and learn by heart. And then just copy from the chalkboard what the teacher have written.

Comment [Office33]: TA: 'shocking' 'completely' shows how great he perceives the disparities between public and private schools.

Comment [Office34]: DA: demonstrating differences between the different institutions

So for instance in regards to ICT and the STEM subjects, science, technology, engineering and math do you think there is a difference in terms of how you teach it in your school compared to these other schools that you are mentioning?
Sure, yeah so science and ICT well. I watched one ICT lesson in one those better local schools you know a school that was a bit developed but it is still very poor and it was actually quite funny I didn't realize they were teaching ICT until probably half of the lesson. They were in a classroom and they had, again they had books and the teacher was talking, and they were writing something, they basically just copied, they learned the terminology of the process of how to switch the

Comment [Office35]: DA: demonstrates how local schools lag behind in ICT development
TA: Conjunction "science and ICT".

computer on, but there were no computer. They were in a classroom without any PCs so there was just a big chalkboard. So if you know, you are talking about how to operate, how to do a knee surgery and you don't have the body in front of you and nobody is showing you. But so after then they went, so they actually had an ICT room with PCs but of course there was no Wi-Fi and there were no, it was just funny I was looking and thinking what are they doing. (...) But in terms of what you would expect an ICT lesson to look like, you know where you teach programming or coding, you know more computing rather than just opening Microsoft Word and typing, that is not happening. And then this school was actually very lucky that they had some PCs. So IT I think it's very low in the local schools and that is just because of the resources.

Comment [Office36]: SA: how schools are differently resourced

Comment [Office37]: TA: Metaphor – Illustrate the difficulties in teaching ICT without computers.

Comment [Office38]: DA: shows that low quality of ICT teaching not only depends on resources

So in terms of your school, what have the biggest challenges been in terms of implementing ICT at your school?

In my school very similar because we need to have the budget approved from Dubai and you know, we just bought a new scheme of work which incorporates computing and coding. So what I described before, opening up Microsoft Word and writing something, that is not computing, that is not 21st century. So we bought a new scheme of work which is using applications, using coding programming, and it's fine you know we have the basics that we can get on with. We have a really good IT team that can organize all the programs for us, we are very lucky in this respect. So we can run with that, and it will be okay but we have PCs and what we wanted to buy are of course learn-pads which are like educational iPads so that the student's would be able to use it in a cross-curricular approach. So that they would be able to use IT in science and in mathematics. You know, across subjects that would be, for me in my head IT would be at the core of our curriculum and then you kind of rotate other subjects around it. But, we are not, the budget hasn't been approved and then we wanted laptops like a selection of laptops again for the same reason for the teachers to be able to include IT in a lesson, but again the budget hasn't been approved so the procurement process is the biggest challenge for us unfortunately at this moment. So we are kind of running, we can do that, it is already better than it used to be, but when you have a vision of what it should look like we are about 50% from that vision and it is mainly because of the resources.

Comment [Office39]: DA: show how well resourced schools can integrate ICT fully in the teaching
TA: contrast to lower resourced schools "opening up Microsoft Word and writing something, that is not computing, that is not 21st century".

Comment [Office40]: TA: conjunction between ICT and STEM

Okay, how about the teachers' knowledge, you mentioned before that you work with that as well and filling the gaps of knowledge, in regards to ICT?

Sure, so what I did, I identified one teacher who kind of wanted a little bit more responsibility so I basically told him as long as he is an outstanding teacher he can do that so he worked hard and he proved himself so he is now my ICT lead. Which is very good and we are just meeting next week to start designing trainings for the teachers to introduce them to the new scheme of work and show them what the lesson plan looks like and these are the resources and based on that we will have to have a look at you know, is there a specific program that the teachers are not really confident in applying. I'm guessing that programming and coding will be one of them. So, after the first one we will have to see which way we need to get more trainings. But in this term 3, this semester, this is because I created dates and deadlines for the whole term so we have two sessions for the IT development for the teachers planned already just to get their heads up and yeah we will see. The teachers are quite IT inclined, some of them will be more some will be less, they are okay and they are not afraid of change which could be one of those things that would make them worried. I'm sure there might still be a few but what we then are going to do in August, when I have all my new and old staff returning, we will do another big IT development session before the children start the school so that everybody is on the same page and we will continue with this development in term 1 as well because there will be some, you know things will arise. I know that some things will come up but I don't know as of yet what it will be. But I'm guessing it will mainly be in relation to understanding how to use the programs, because their lesson plans are very clear, very straight forward so that should be clear but it is more the IT aspect and in my head it will

Comment [Office41]: DA: Theme – efforts to integrate ICT in the teaching.

probably be, because we have IT teams that can do the technical aspects, like having individual, smaller group sessions where they can show and do a step-by-step guide for these programs and software so that they understand it. And, yeah the teacher learning will be me dropping in and doing teacher observations and again looking at what their development needs are there.

Comment [Office42]: DA: no mention about addressing teaching approaches in regards to gender and ICT

And so then in terms of when you plan the teacher training in regards to ICT, is there any focus on the gender aspects? Do you teach the teachers also to make sure that both boys and girls are participating in the class and that there is an awareness of that?
Sure. So the gender differences are in terms of ICT?

Yeah.
Okay, well I'm sure it's common and I'm sure it will be so here as well that the boys are more excited about it. However, all of the children are really IT literate you know, everybody has got an iPhone or smartphone, everybody has got an laptop, everybody has got an iPad at home. So even the girls, I think, well I'm presuming, I might be totally wrong but they will be inclined to have a go as well. What we might need to, I haven't thought about it that is the truth, I haven't thought about looking at the differences between boys and girls. But it could be what we kind of do in all in terms of literacy in math or science, we try to think of a topic so you know if you are reading, and boys don't like reading and girls like reading so then you can get books that are about football or something that boys would be motivated to read. So the same with IT, if it is the girls that are not really motivated or not really engaged, then you could think of something, or a topic that can work as an umbrella over this. So, I don't know, but if you are programming a toy. If it's a car, the girls will not be interested. So, they might be programming a toy that is a Barbie, or sorry I don't know any girls' toys. But you know something that the girls would kind of, relate to. But, yeah I don't know like in all areas, in all subject areas that is what you try to do if you are a good teacher and I'm sure we will be mentioning that as well. But there will not be a specific, in the lesson plan there will not be a specific note in terms of what you do for boys and what you do for girls, but as a good teacher this is what you do. You try to see, if the girls are not engaged you try to think of different ways or themes to engage them.

Comment [Office43]: DA: aware of the issue overall
TA: Cohesion – "boys are more excited about it" (ICT).

Comment [Office44]: SA: Socioeconomic status of the students at the school.

Comment [Office45]: TA: Cohesion – "the girls (…) "will be inclined to have a go as well".

Comment [Office46]: DA: not aware of the digital gender divide in his school
TA: Modality – Ignorance: "I haven't though about looking at the differences between boys and girls."

Comment [Office47]: DA: Stereotypes
TA: "Boys don't like reading, girls like reading", "Get books that are about football", "if you are programming a toy, if it´s a car the girls will not be interested", "I don't know any girls' toys", "Something that girls would kind of relate to".

Comment [Office48]: DA: No effort to address gender disparities specifically, but to have a "gender neutral" approach.

But, yeah it is the Kenyan culture as well. Like everywhere, not just rich Kenyans. In the rural areas the poor people, it would be the man who sits and just does nothing. Just sits and watches the world go by and the women, it is just fascinating to watch it especially when you are mountain biking or something you can see it in these villages. And the women they are washing, cooking, looking after the kids and the man just do absolutely, honestly, absolutely nothing and if there is a guy who does something, you know helps out the women that is very rare. So that is kind of the embedded culture and it also relates to money.

Comment [Office49]: SA: influence of the Kenyan culture.

Comment [Office50]: DA: patriarchal ideologies

Yeah of course, but do you talk about the cultural aspects at all in class? Do you problematize it at all or is it just that it's there and that is how it is?
So we do not address it, because it is not an issue. And so we are the ones that are guests in this country and so in my opinion we have no right to tell them what is right and what is wrong. However, what we do, through assemblies or through we have like a physical, social, emotional curriculum. We teach it in a way that you know everybody should be accepted and respected. So I did an assembly on Friday about respect, everybody should be treating everybody in the same way, and so we do not address it because it could come around and bite us. You know. We are not Kenyans and we have no right to do that to Kenyans. But what we are trying to do, we are trying to educate in this way that you should be treating everybody with respect and be kind to each other and help each other, so we kind of address it in this aspect. Just to teach them to be good people to be honest. So, yeah we do not address it specifically but it is being addressed through values that we have as a running weekly theme.

Comment [Office51]: DA: "it is not an issue" – acknowledged that he hadn't looked at the disparities before so he is in fact not sure whether is is an issue or not

Comment [Office52]: DA: neutral in approach to gender inequalities is to not challenge the patriarchal ideologies

Comment [Office53]: DA: refrain from referring to gender

So, in regards to the transition from primary to secondary, *name of other interviewee* mentioned that the students then have the possibility to choose certain subjects such as arts, science and ICT. Do you have any insights on if there is a difference there in terms of boys and girls tend to choose?
It is definitely, well because then you can go A-levels, GCSC and then you can go to B-tech like vocational studies and it is quite clear that the girls do choose more humanities kind of oriented subjects, plus English and literature, and these aspects and the boys do go more into math, science and IT. There is definitely a visible difference.

Do you discuss that with the teachers' team at all?
This aspect? No. Well, not in my primary school no.

So there is no promotion from early age to make girls maybe be encouraged to choose the STEM related subject?
No. Definitely not.

Would you consider that or?
Hmm. I think what kind of. I, ehm. I'm not sure if I would consider it but in primary, as I explained before we try to teach lessons that are engaging so hopefully through this you kind of gain the interest from every single person in the classroom so we do not specifically say now girls should do specific science things, or something, we don't do that because if you teach the lessons in an engaging way then you would hope whoever it is, if it's a boy or a girl it doesn't matter, they will choose the subject that they are interested in.

Comment [Office54]: TA: conjunction between STEM and ICT.
TA: conjunction between boys and STEM and ICT.

Comment [Office55]: DA: awareness of gender disparities in STEM

Comment [Office56]: DA: refrain from addressing the divide

Comment [Office57]: TA: 'definitely' – he will not address it

Comment [Office58]: DA: a gender "neutral" strategy. Implies that the divide will "solve itself"

Interview 4

Informant 4
Age: 36
Gender: Female
School: Private school, Karen, Nairobi.
Position: principal

Comment [Office59]: SA: institutional character

Comment [Office60]: SA: level of authority

In terms of curriculum, being a private school, do you still have to conform with the Kenyan Education System's curriculum?
No, we're doing a Waldorf curriculum. We are not following the Kenyan curriculum system, but there are certain standards that we have to check with the Kenyan curriculum. Because we don't have a high school, so when the children leave here they have to go to Kenyan high schools. And if they haven't reached certain standard, they will have struggles. So we have to look into that, what is it that is required, so we can offer it to our children so they do not struggle. Also, apart from that, we also have to look at the government requirements because if we don't, then they don't recognize us as a school. They would think we're just a home school or a place to play, not a formal school. So, we also have to look at that and so they consider us to be a real school. Because sometimes, people imagine that Waldorf schools are just "happy places" and nothing goes on, we just paint the whole day, and children play, they are happy and go home, which is not true.

Comment [Office61]: SA: Private school not following the Kenyan curriculum.

Comment [Office62]: DA: expressed awareness of the Kenyan curriculum

When it comes to gender equality, is that something you discuss with teachers in terms of how you talk to the children in general across all subjects?
We try to encourage everybody to be good at every subject. We have hand work, like sowing, it's more of a feminine, female sort of thing, but here in this school, even the boys do it. It's not like

the boys go like: you can do something else, but everybody does hand work, regardless if you are a boy or a girl. And then we also have woodwork. Woodwork is more of a "masculine", a male kind of thing, but here in the school when it's time for woodwork, everybody, whether you are a boy or a girl, you go there and everybody is encouraged. So you see the girls using the saw, or hammering or making things. So there is no discrimination. Everybody makes the same thing. If it's time to make a boat out of wood, the girls also make a boat. You don't decide to make a doll or something like that. Everybody makes the same thing. So we try to equalize that everybody is doing the same thing. And when you are going to games, everyone is playing the same games.

In terms of interest, do you notice a certain difference in subject interest between boys and girls?
I just looking at my class, I know one girl is very good in math and one boy doesn't like math. So I wouldn't say there's an inclination towards certain subjects whether boys or girls. I think it's very individual and personal. There are certain people who chose math, and certain people chose something else. It's very individual. I cannot say "all boys like math". I can't say like that. It's a very personal matter.

Comment [Office63]: DA: encouraging gender equality

Comment [Office64]: DA: in contrast to the other principal who argued that "girls are more interested if they do a Barbie than a car"

Comment [Office65]: DA: No gender disparities in her class.

Comment [Office66]: DA: don't see or acknowledge gender disparities in STEM

Interview 6

Informant 6
Age: 48
Gender: Female
School: Public school, Kibera, Nairobi.
Position: Principal

We need ICT so much in schools. We have few computers, we got them from MP, but they took them back because of theft. And we have a big class. We have some tablets from the Ministry for class one, but the teachers don't know how to use it, they lack some skills.

They said you also need training for the teachers to learn the skills?
My teachers are still learning ICT, and they also teach normal classes, so it becomes a big load to them. So I need a teacher, immediately, only for that. So the children, if they can pay something small, like 20 shillings, that would be a salary for the ICT teacher.

What other subjects do you teach on technological side? Math's…?
Most of the subjects, but mostly math's, English, Swahili. Science. This got digitized long time ago. We have the syllabus, we have the Kenya Institute of Curriculum Development (KICD) who gave us syllabus and nearly all subjects. So we follow the syllabus, and teach them using the computers. So I need to get someone who can program, so we programmed everything in the computers. We can do it here, but now because of the vandalism, it has cut off, so they do it on the other schools but we will start it as soon as we have the security and storage. More computers, doesn't matter if we can't store them.

In terms of gender equality between boys and girls and in school and what subjects they do, is that something that you think about?
Yes, so much. That is a big big challenge in our schools. Even with the computers, we find the boys are very faster. Very fast. But girls, they take longer time.

Comment [Office67]: SA: institutional character

Comment [Office68]: SA: level of authority

Comment [Office69]: TA: modality. An expressed necessity of ICT

Comment [Office70]: SA: Lower resourced school. Security risks in the area.

Comment [Office71]: DA: lack of skills in ICT

Comment [Office72]: SA: Lower resourced school. Students have to pay for the teachers' wages.

Comment [Office73]: DA: following the Kenyan curriculum.

Comment [Office74]: TA: Modality – Argumentative. "Gender equality as a big, big challenge".

Comment [Office75]: TA: "Boys are faster" in the use of technology.

Comment [Office76]: DA: awareness of the digital gender divide

So how do you fill the gap?

We need to encourage them to be like boys. You know, boys are go-getters, they are very fast. Also in other subjects. You could look at it in the analysis, and see subjects like math's, when we do it digitally, the boys are doing everything faster than the girls. They're getting it very fast. They girls will take time, because the girls are shy. And the culture, it has told them that math's is made for boys. It is very wrong, so we are trying to get that out of their brain. Then we have subjects like science, they also think that's for boys. But when it comes to English, now girls will be faster. Because they like English. So that are the deviations we have.

So why do is that, that, some of the subjects have been, you mentioned culture?

Yes, culture. This culture, it is originated from culture. Because I think all the time, boys do well and girls have developed a mentality of "boys are good in math, math is not meant for us, this is meant for boys". So it is up to the teacher to encourage them. And when we find again girls are leading in math, we have a celebration! But we have this problem for the girls, the mentality.

How do you work with the teachers to change perception?

We have a lot of motivational talks, we have to do a lot of motivational talks to the girls and a little bit of counselling, so that they also compete with the boys in fields like math so they also can do that. We do the same with teachers; discuss in our group and on staff meetings. But primarily only for math's, so we always meet them and discuss such as how to motivate the girls to be good in math's so every teacher can come up with their own motivational talks and what else can be used to make girls become better in math's. They also need to appreciate them, whatever they get, so tell them and encourage them to come. That is what we use. Girls are good, they are disciplined and like learning.

In terms of the curriculum, you said you use the KICD - is that the government's set syllabus?

Yes, we use that. That is where we get all the syllabus. It is part of the Ministry of Education. We have the Kenya's Institute of Economic Development working together with the teachers' employer (THC) and they work with the Ministry in cooperation. They work as partners. So that's where we get the syllabus and subjects. They display the policies and education act. We get them from there and use them as guidance. We have for instance code of regulation and code of good conduct and ethics, we refer to them if there's ever problem with teachers. But we have very good teachers, with loads of human sympathy and do talk. KICD is the official body of the Ministry where all the curriculum development take place and we meet there with them. They have pilots with schools and call all the teachers and brief them what it is, how is it developed. They train the teachers on the new curriculum in public schools. We are very organized!

So I know there are policies from ICT and Education from the Ministry, but how can or do you try to follow that when you don't have access to computers?

No, I can't follow them, because we have no computers at the moment. And when they are sending the officials from the Ministry and they come and check if we have a secure room for computers or not. They check if the room is okay, then if it is they can give some more tablets. But just a few. I think what we need first is a secure computer room.

Comment [Office77]: DA: Gender stereotypes.
TA: Girls need to be encouraged to "Be like boys".

Comment [Office78]: TA: Related to gender stereotypes. "Girls are shy".

Comment [Office79]: DA: Actively addressing the gendered associations with STEM.

Comment [Office80]: DA: actively refer to culture and how one must encourage girls to become "go-getters".
TA: "Culture has told them that math's is made for boys".
TA: "Then we have subjects like science, they also think that is for boys."

Comment [Office81]: SA: expresses that culture is a problem

Comment [Office82]: DA: STEM as a masculine domain

Comment [Office83]: TA: 'a celebration' – shows that closing the gap is at the agenda

Comment [Office84]: DA: shows an active addressing of the issue. Motivational talks and counselling with the girls. Address the digital gender divide by challenging the discourse

Comment [Office85]: SA: Operational ties to the government.

Comment [Office86]: DA: guided by policy.

Comment [Office87]: DA: see previous comment. 'use as guidance' show awareness of compliance

Comment [Office88]: SA: institutional body who serves as guidance

Comment [Office89]: SA: Financial restrictions to policy compliance.

Comment [Office90]: DA: shows problem of implementation of new policies on ICT.

Interview 7

Informant 7
Age: 34
Gender: Female
School: Public school, Nairobi.
Position: Teacher

Informant 8
Age: 42
Gender: Female
School: Public school, Nairobi.
Position: Principal

Are you following any of the national education policies from the Kenyan government or can you choose freely how to design curricula and set course content?
When we talk about technology in Kenya, it's something that is growing up. Nowadays there is a curriculum aligned to education, as in recent past, we have the government with the Ministry of Education that designed a policy that is going to get ICT in education, that is ICT in education and how it applies to gender.

Do you know if it will come or if it's work in progress?
We have the new curriculum in place that was designed to cater for the technology in education system has just begun this year. So it is in place and schools are being encouraged to use ICT in education as a tool for learning.

So in what way is the new curriculum different to the old ones?
The past education curriculum in Kenya was not designed to enhance an appropriate competitive skills and knowledge to the students. You know we are living in a wide market in terms of technology and it is growing very fast so I think the new curriculum will cater for both. Or where our students will actually get the skills they need in the wider market of technology.

So you are following the national curriculum?
Yes, we are following the national curriculum, although at the moment there isn't a curriculum that is based on ICT. It's actually more used as a tool in education.

Do you believe that there has been a shift on government level in terms of the focus on ICT?
Yes, in the past few years the Ministry of Education have put in place a laptop project. We had a laptop project last year, where laptops were distributed to schools, the rural schools, the rural primary schools. But I think teachers are now undergoing training on how to use the gadgets.

Do you see that children are inclined to use ICT and is it widely accepted that it is a normal part of the learning process? Or have there been any difficulties in adopting ICT?
You know, we are living in a urban set up where our children are very speedy in using technology. I think there is a shift between the rural set up and the urban set up. in our case we don't have many problems concerning ICT, they are very vibrant in using ICT technologies.

Has it always been like that historically, or like the past ten years, that there has been an equal ratio between boys and girl's representation in subjects about technology?
I don't know if I should answer this question based on our school or majorly in Kenya. You see, in the back, the girl child has been neglected. Girls are not encouraged to take STEM subjects that

Comment [Office91]: SA: Institutional character

Comment [Office92]: SA: institutional character

Comment [Office93]: SA: level of authority

Comment [Office94]: DA: shows awareness of the new curriculum changes
SA: Connected to the government by operationalizing the policies.

Comment [Office95]: DA: follows the curriculum. Know about the fact that it caters for ICT in education.

Comment [Office96]: DA: shows a shift of focus

Comment [Office97]: DA: shows that they are guided by national curriculum policies

Comment [Office98]: DA: shows that the government is supporting

Comment [Office99]: SA: Public school in Nairobi.

Comment [Office100]: DA: expresses an awareness of demographic challenges. Rural setup as having more problems with gender and ICT implementation

is, sciences, engineering, physics... so I think parents also play a major role. They need to be the landmark of the children. Both boys and girls should be given same opportunities when it comes to technology. But in the past few years, that has not been happening. Until now, when the government now has decided to give laptops to primary schools in the rural areas, that is maybe when we will have a change in the technology world between boys and girls.

So you think that access there is going to be crucial?
The access will be crucial. Because I think every child in primary school will get access to a gadget, whether you are a boy or a girl, you have to be at par with each others.

In terms of gender, is it the same extent of use between girls and boys or do you see any differences?
No, there's no difference between girls and boys in using technology in our classes. Both of them are working hand in hand to achieve the same objective. Yes. I have not any challenges in the girl child in using ICT.

This is also again, you can answer in relation to your school and in Kenya broadly; you mention that there has been this idea that boys are more inclined to study STEM. Do you think even with access of computers, that there is a risk that that will also happen when it comes to technology and ICT?
Myself, I tend to believe that things are going to change drastically. Because now the girl child is more empowered here in Kenya. Here, people talk about the boy child being endangered because now the girl child is coming up very strongly in terms of education, employment and all that. You can see key ladies being in powerful positions in the Ministries, politics, so I think the girl child is now more encouraged to take also technological skills for the wider market.

Do you discuss issues with gender inequalities within your teacher group as well or do you have a gender policy at school?
The school no, we take every child equal. We give them equal opportunities. Yeah. We give them totally equal opportunities so we don't have problems. I think the problems come up when you go back to the rural areas. You know in the rural areas, they are very marginalized when you look at the Samburrus, the chamkarras, they are really marginalized. You know where people believe that a girl child can't do more than house chores. They believe a girl child, at a particular age, does supposed to be married. The girl child is supposed to be in the backyard doing house chores. So I think the problem begins in the rural set up, but in the urban set up, I think we are good to go.

You say that you treat all learners the same, but is that something that you have explicitly talked about in the teacher group or is this just sort of an understanding that you feel that you have?
We have had conversations; we have had trainings. Even the teachers. You know, you can see even from the lady teachers, they are very positive about it. So as they engage with the children, they also learn from them. Become their mentors.

But do you get any type of support from the government?
Ok, so the government is very supportive, but I think they're focusing more on the public primary schools, because that is where I understand that the major problem is, we are more equipped. But in public schools, children are many. Parents who take children to private schools are fewer; those who are able to pay the school fees. Public schools are free due to policy. So most parents, in the rural areas, prefer taking their kids to public schools. And with limited resources, they won't have access to all these things.

Comment [Office101]: SA: patriarchal ideology influencing the historical focus on gender equality in STEM
DA: parents' role in shaping discourses
TA: Cohesion - "Girls are **not** encouraged to take STEM subjects".

Comment [Office102]: DA: shows how a shift might be taking place when issue of accessibility is solved
TA: Modality – Argumentative: "Both boys and girls should be given same opportunities when it comes to technology".
DA: Shows an awareness that gender disparities have to be addressed.

Comment [Office103]: DA: first order divide

Comment [Office104]: DA: do not express that the digital gender divide is visible in her class.

Comment [Office105]: TA: 'change drastically' – 'girl child empowered' – shows awareness about a shift that depends on the greater empowerment of girls

Comment [Office106]: DA: challenging the patriarchal ideologies

Comment [Office107]: SA: awareness of how politics also have changed in favor of gender equality

Comment [Office108]: DA: does not challenge any discourses. Assume equality.
TA: "We take every child equal."

Comment [Office109]: DA: no need to challenge discourses, since they express that there is no digital gender divide.

Comment [Office110]: SA: patriarchal and cultural values still instilled in the rural areas.

Comment [Office111]: DA: conversations about gender equality. Active involvement of the teachers.

Comment [Office112]: SA: much support means that the ties to the government are strong.

Comment [Office113]: SA: Public primary school as lower resourced.

Comment [Office114]: DA: point out the accessibility problem when resources are limited.

In terms of government policies, there has been a shift in terms of a new curricula having a stronger ICT focus, what is your experience of that shift taking place? Has that shift in policy been clear or had an effect on how you teach at your school?

Well in terms of the effect, for me, I would say, even when they try to create these policies, the implementation is what becomes the problem. Because they address societal issues that will affect girls ability to go into STEM, which are a prerequisite for these policies to be effective. Still, if you look at girls from underprivileged backgrounds, I mean they don't have access to computers, the internet, what about, some of them still not go to school when they are having their menstrual cycle and things like that. So I think that there are other things that interfere, when it comes to implementation. Such as culture. Sometimes the government here has good intentions but they are going way ahead of itself, like, you implement a laptop project, but the students don't have desks or school shoes! So, it's basically that.

What would you say in terms of progress for gender equality within technology, what should be the focus?

I think we should not look at gender, but problems come when we look at the traditional setups. People who live in the rural setup think differently. So we need to look at the roles of girls and women and their contribution. Mainly in rural areas. I think problems in terms of gender inequalities and in relation to ICT comes from perceptions in rural areas. The parents also play major roles in the education. They need also to be sensitized about technology and all that. Because I think there is much more that can be done to encourage the girl child and taking technological subjects from the early stages.

What do you think that comes from, like, historical reasons or…?

Yeah, I think it's just like the rules we are associating with gender. Yeah, but, I think it's more articulated within STEM areas, because in terms of going to school, everyone wants their girls to go to school these days. But at least, there are these organizations that are also encouraging participation of girls in technology and they are realizing that they can also play a role in that as cooperation. So they go to schools sometimes and go to school, speak about careers in that field, internships and things like that. Like Safaricom, for example.

Interview 8

Informant 9
Age: 42
Gender: Male
School: Alternative provision to basic education and training, Kibera, Nairobi.
Position: Founder and principal

This is also an informal institution?

Yes, but I don't know why they call it informal. It is formal education in an informal setting. So, we are in between; we are not private, we are not public, so we are informal. I think, I don't like that word, but I think that is what they like to call us; informal.

What is the government calling it?

Alternative provider of formal education. So we are alternative; it definitely means we are filling a gap for the government and that is why I really think they need to take us more seriously

Comment [Office115]: DA: points out the implementation issue.

Comment [Office116]: DA: first order divide.

Comment [Office117]: DA: shows the awareness of culture as a barrier to successful policy implementation on gender and ICT.

Comment [Office118]: DA: the issue with rural setup and old assumptions about gender roles.

Comment [Office119]: DA: acknowledgement of girls and women
TA: Modality – Argumentative: "We **need** to look at the roles of girls and women"

Comment [Office120]: DA: Rural areas as a more problematic context for gendered associations of ICT.

Comment [Office121]: DA: expressed awareness about how gender sensitization as a necessity.

Comment [Office122]: DA: traditional understanding of gender

Comment [Office123]: DA: Gender disparities in terms of gendered associations with STEM. Not education in itself.

Comment [Office124]: SA: Institutional character.

Comment [Office125]: SA: Position of authority

Comment [Office126]: DA: expresses a lack of recognition from the government
TA: 'they' the government as authoritarian, known as a voice from the outside by putting 'us and them' against each other.
SA: Weak ties

Comment [Office127]: SA: Filling a gap for the government. Weak ties.

Comment [Office128]: DA: shows a frustration over the lack of recognition from government.

Do you think that the government needs to have special policies for alternative and other schools? Like a specific framework or the same framework?

If you look at what is in the policy guideline that the MoE currently constitute, we can't meet the private or the public, but we can meet some of them. So this has to be a middle ground way. As I told you, it is also very important that the alternative schools also have a say. Like, can we ask for more teachers? How do we subsidize so people also can confidently run these schools? In the end of the day, your serving these children. So I think that is why we need a middle ground policy. Otherwise the gap will continue. But if we get good teachers, you will realize that there are no differences between students in informal settlements and other students out there. So please give us something that works for us!

In terms of relationship with the government, do you have any funding or can you apply for funding?

Uhm yes and no. Relationship: we need to be related to the government to run a school. So we're trying to do a lot of necessary documentation to help us provide education that is of good standard that is making sense in terms of what they require. They are occasional times when they've had plans for training and we've sent our teachers to go and get that training. So far, in terms of government funding, we've only got textbooks for some classes at one particular point, at one, there was a program the government was running with some NGO so we sent some of our teachers for that training and after that, they sent us some textbooks after that. In terms of regular funding of money to pay teachers, or the day to day running or for food we haven't received so far. We may receive in the future, but we haven't received so far.

Have your teachers been trained at all?

For what they are teaching, you know here, we train our teachers about things like computer literacy, we trained a number of teachers last year all but one, because all of them just in basic computer knowledge. But in terms of detailed training that they can be able to train others, not much I wouldn't say they have that serious knowledge that they can be able to transfer to others.

Is that something that you would like to be able to do?

Like yesterday, for we would like to have done that yesterday, because if you're hoping to live here for the next five years, there is going to be very important. And we had an incident here, one of the students was trying to help a teacher on how to operate a laptop. And that was a bit funny; it was not expected. Because some of these children seem to be more exposed, so if you want a situation to be able to get the right content but also train the teachers, it makes a lot of sense. If they would offer a training like that; I would say we need it not tomorrow, but yesterday. Because it's something that we need if we are going to make it. Now, a lot of the research, a lot of the things, some of these books, they print them today and their outdated tomorrow so you need access to see what is really happening.

So where do the children learn ICT when they can show the teachers the laptop?

Some of the students, you know, we are mixed. We have a few of the children that are not exposed, but we have a number of children that are living with families that are coming from, they have TVs they have some very serious funds that they are able to access so much and being exposed from home, during holidays, they visit different places and you can't really figure out "this is where" but that was an incident that really sent me thinking that "if a child, a student is teaching a teacher in how to use a laptop, then it really means so much even in terms of loyalty, in terms of thinking how do that work, because a lot of what we do is just not formal education, we also need to do a lot of guiding in terms of morals, social issues… so there's probably a lot more that the children know. If you are to talk with children you really need to know "what is it that they know?" so that you can be able to approach them from there, cause otherwise you're assuming they know nothing.

Comment [Office129]: DA: struggling to comply with policies.
DA: awareness of policies.

Comment [Office130]: DA: expresses issues with policy implementation

Comment [Office131]: DA: compliance with policy

Comment [Office132]: SA: lack of funding from the government.

Comment [Office133]: DA: issue of knowledge transfers on ICT.

Comment [Office134]: DA: acknowledges the importance of gaining skills in ICT.

Comment [Office135]: TA: Modality – Necessity "We need it not tomorrow, but yesterday" in regards to knowledge and skills on ICT.

Comment [Office136]: DA: if not on track with digitalization now, there will be skills gap in the future. An expressed importance of ICT.

Comment [Office137]: SA: the differing resources among students.

Then you're in the 19th century. Technology is moving so fast. China is a blessing in this case, everything that you can access from an iPhone, you can be able to get a phone for 3500 shilling and access the same things. The idea is that when you have parents who are not very well educated and they have a phone, it happens that the children then get to know what is in the phone and they are able to download stuff that you wouldn't been able to do as a mother because you grew up in a different age group. So what we are trying to think is that if you can be able to get people, some of them thinks that they have already gone passed, they are no longer on school, what are the basics that you can say to parents? If you can give them some training in ICT; I think you're able to help and grow the discipline. Because it has to be very high even for the children.

Comment [Office138]: DA: The importance of ICT for the future of development

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Interview 9

Informant 10
Age: 43
Gender: Male
School: Alternative provision to basic education and training, Kibera, Nairobi.
Position: Founder and principal

Comment [Office139]: SA: institutional character

Comment [Office140]: SA: position of authority

Informant 11
Age: 34
Gender: Male
School: Alternative provision to basic education and training, Kibera, Nairobi.
Position: Teacher

Comment [Office141]: SA: institutional character

What kind of educational services are you providing?
If you look at the children that we are serving…. especially those who are coming from the informal settlement, guys, girls or women of the community...This slum is so huge, there is no school around this place. You find that this school is supplementing what the government is doing. So the government should come in and bring in some resources or restructure on how the schools that are within the informal settlement, can be incorporated or can be funded and again, be regulated.

Comment [Office142]: SA: weak ties to the government
DA: expresses that the government do not give enough support

But so in terms of regulations now, do the government have specific policies, are they still mainly divided in terms of public and private schools?
That is where the born of contention is. Because that is, when, in the 2015, early or 2016 - between 2015 early, immediately when the Minister of Education, the previous, Machiani, when he came in, there was a policy that we did with the Ministry and we thought that after doing this, like, coming up with a standard revelation for the informal schools, then, he signed it to be a document that can now be used by the Ministry of Education as a policy document that can assist the schools in being registered and recognized by the Ministry by Education. If you look at the education policy act 2013, it somehow oversaw that and they said that they only have public and private, and now we're wondering: where are we? Because we don't want to be private, but neither do we want to be public. But we want to be called a school that is serving the low income families. So how are we...that is why we wanted to come up with a minimum standard that can suit these schools and they can run easily. And the Ministry of Education can be able to regulate and see how they are performing in terms of teaching and so it can be able, so it can be integrated into the national umbrella. So, they haven't done that, when Mr. Machiani signed the document, it become a document just governing the Ministry of Education offices, but no one implementing it. We have a desk - yes - of the same department but it not...is ill-funded. So it means, it is just there. So if, when they hear there is a funding, then they would *revive* it! (laughing) You see, so that was the main aim was, just to look at it, and again learn from it, what are the gaps, what can be done, how can

Comment [Office143]: SA: policy changes reflect the increased acknowledgement of APBET schools
DA: Expressed an awareness of education policies.

we do about it and what are things that assist both schools, students, and that is what I thought should be done. Because if this was about making money, I don't think we would be sitting here today. It almost eating us. If I was to make money, I should be sitting somewhere doing IT. Those businesses that started 18 years ago, they are flourishing. But this one, I don't think, sometimes we talk to friends, we go into deficits, sometimes it's so hard to run a school. You know how schools work, if something, a small thing happens to a school, then also other things are being affected. So it gives us a lot of challenges.

So, in terms of teaching there, who is teaching?

We have a volunteer person who normally helps us, because we can not afford to pay someone teaching ICT (laughter). Sometimes, when we have some of the brokages, we have put them there, maybe god knows we get some money there, if we don't, we still stalk them and see if they can be able to maintain. Because maintenance is not so like we can get a profit on the money, so that is how we operate it. We have volunteer teachers that come. They come from the community. Usually from Saint Lucia, it was founded by Catholics. There is a partnership we enjoy with them and every year they give us volunteers for 6 months. Some of them are computer specialist, and some are just regular.

Is it the same for other subject?

Yes, we bought some e-learning material for biology, mathematics. And it can show exactly how it should be done and you can see how it can be done. But that's not a practical one! So far ICT has as a school, been the very start. Because you see the government are giving a lot of incentives to their schools. They provide teachers for their home schools, they supplement with money, and even give computers and tablets so you find that these kind of schools don't get the same opportunities. But you see, ICT is very important, when we have the information in the tablets they can stay for a long time, longer than the books. Because books stay for a year then they get lost. When it comes to registering children, we don't write it manually, but on tablets. We need those facilities, and many of these schools, you need to go to the center to register and for us, we can do it here. That is an advantage. And when it comes to setting exams, we can set so many questions in different subject so when we do an exam, they can just do a selection. It is not time consuming. So we embrace it, but we have loads of challenges. Even the public schools are experiencing the same. It is not successful, because the power is a problem, electricity and security to protect. They are being stolen. That is also why we let the community come here and use the computer, because for us, we have a few tablets here, but you can borrow it home and then parents can also learn and help. But since they are being donated, they have been used before so not all are working, but it's still a good thing.

So have the teachers also received education to use the tablets?

Yes, we insist that they should be trained. We want them to make use of the tablets. Because right now, they are not seeing the need...but in the future. You know everything is going digital, and you have to embrace the digitalization. Even if you like it or not. In the past we didn't have the phones, but now most material you need is in the Internet. In fact, if you can go to a school that can offer you training, they should appreciate. But you see most of the time, the teachers just want to concentrate on examinable subject and they don't think it's the best way…even kids being very talented, like I saw a boy, a six-year-old, he could easily navigate into that kind of form and you wonder, at that age, maybe I am not even aware! The teachers also need to upgrade their skills so they can encourage the children, even if they like it or not. In the end of the day, to properly teach a child, you need to be digital. Because nowadays, we do not have space to keep papers. Even data, data could be saved in the internet!

Comment [Office144]: TA: 'we have a desk' and 'ill funded' shows the negative view on the government's efforts to create a formal branch for the APBET schools in the Ministry of Education.

Comment [Office145]: DA: Expresses the vast challenges of funding

Comment [Office146]: DA: lack of formally educated teachers. Depends on volunteers.

Comment [Office147]: DA: ICT as an enabler
TA: Modality – Argumentative: "ICT is very important"

Comment [Office148]: DA: ICT as a necessity

Comment [Office149]: SA: how other external factors such as electricity shortages and security interfere in access and use to ICT.

Comment [Office150]: DA: the great need of teachers' skills

In terms of technology and ICT, Clara told me you've just got a computer room?
Yes, we're having a computer room. The main aim of putting up a such kind of a building was to come up with an ICT center. So that the community around, embrace it, and the children also learning here get some of the skills.

So they set the demands, but do not provide the resources?
Yes! (laughing)

So in terms of ICT, is that included in what you have to teach or have you decided?
For us now to survive and make sure that children are on track, we need to have it. Because children in the public schools, they have it. In the private schools, the academies, there are also provided. So for us to be on the right track, we just have to get in it. These are the resources we don't have, but it's good if we have them.

But is it included in the governments directives?
Yes, it is there.

So this the computer room?
Yes, but some are broken down, these are not functioning. So, they also gave us, something like a server, a localizing server, so whenever we sync with the Boston school, then we get all content to that server. Then to be shared, it functions offline. It is just within that platform, but it is accessible at the server within here. Because the internet is so expensive for the school so it's really good. Apart from that platform, we also manage some software. Our physical apparatus was not functioning, but we have a software, an interactive software that can be used in class with some practical tools. Then we also teach basic computer knowledge to all our learners and also in primary. So they need to be taught on how to use computers. We give them some basic computer skills and basic things that we teach them are about introduction to computers, processing some spreadsheet and some basic presentation and some basic internet. And then the secondary students now take computer science as a subject. But at primary, there is not yet a given curriculum that has been provided by the Ministry that we can use to teach computer, so now we only teach some basics.

It's not the government that has a curriculum for the primary yet?
Yes, the government has provided some gadgets for learners, mostly class 1s, where teachers now use tablets and computers to illustrate classes. You also find that teachers can develop content and use these gadgets to teach. So, the computers in this case are used to enhance the learning because we believe that as a school, learning takes place when the sense of touch, sight and so the learning outcomes are engaged so they can grasp the concept.

Do you find that the interest of using computers and tablets, is it equal between boys and girls?
Uh I find it that girls are interested in using computers more than boys. Boys will only come here to play games, but girls want to know what is going on more than boys. Also within the primary students.

So in terms of curricula, I know that there have been some changes in recent years with an increased focus on gender equality and ICT. Are you directed by the government through these new policies?
That is a problem, because these people, doing this they just sitting in an office. They don't consider your opinions, they just want you to use it. That is a problem that require a lot of resources for it to be implemented. You see, there's no option. The policies say that if you want to operate a school

Comment [Office151]: DA: demonstrate the weak ties to the government

Comment [Office152]: DA: how ICT is needed in order to stay on track with other children in Kenya.
SA: The APBET schools are the lowest resourced amongst the Kenyan schools.

Comment [Office153]: DA: shows that they can only provide basic skills in ICY
SA: Curriculum guidance on ICT for secondary students but not primary.

Comment [Office154]: DA: shows that the government is supporting in the process of ICT integration

Comment [Office155]: DA: express a reversed digital gender gap
TA: "girls want to know what is going on more than boys"

Comment [Office156]: TA: the words 'these people' 'just sitting in an office' show a general distrust to government officials.
DA putting a 'we and them' discourse by stating 'these people'

Comment [Office157]: DA: a feeling of not being heard

in Kenya, you have to follow the Ministry of Education's guidelines and rules. So if you don't comply, you'll be knocked out. They will tell you we don't think you are doing what we expected. The Kenyan setup kind of education has some components in it; like values. So they say you we have to go with what they want you to do. If you want to operate a school in Kenya.

Do you see that as a problem or do you let the boys and girls choose themselves what they use the computers for?

I don't know. For the primary I don't think it's a problem. Because it's just basic. But for the older students I think, because if they want to be examined they need to know some things. So then we have to tell them.

Is that a difference you have noticed in other subjects as well?

Well, you must know that in Kenya, our culture, girls did not always go to school. But now they do and it is very important. But some subjects, like math's and science, it is more popular for boys. And the girls like English and social studies better. But we try to change it and show that science and technology is for girls too. We have this one girl that is really good and so we try to tell the other girls that look, you can also do that. But it is difficult to change things that have been like that for a long time.

Yeah I understand. Are you talking with the teachers about that?

Yes, or, we have thought about it. But it's difficult. We know that it is important that girls also learn these subjects. Also now when you need to be digital it is important that all children learn the same. But it's a process. We haven't come there yet.

Comment [Office158]: DA: have to follow policies unless shut down
SA: shows authority of the Ministry – follow the policies 'or you'll be knocked out'

Comment [Office159]: DA: digital gender divide important when students are to be examined.

Comment [Office160]: DA: Show how persistent ideologies are difficult to challenge.

Comment [Office161]: DA: attitudes and perceptions about gender roles in STEM and ICT instilled in cultural values. Expresses an awareness and attitude that it will be changed. Discourse is challenging.
TA: Conjunction between the different STEM subjects.

Comment [Office162]: DA: addressing an awareness that they

Comment [Office163]: TA: 'not yet' shows that the disparity in girls and boys relationship to ICT is a secondary problem after granting accessibility to ICT.