

Masters in Education (Research)

Dissertation

**Understanding the career choices of grade 12
female learners studying technical subjects.**

by

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ABSTRACT

Technology related subjects and careers have historically been dominated by boys and men and these careers are highly valued and well remunerated. The objective of this study was to examine the career choices of grade 12 female learners studying technical subjects. This necessitates understanding of and taking into account, the intricacies of growing up as girls and women within the South African socio-structural and historical context.

The study was located at a technical school in KwaZulu Natal and employed mixed methods within an interpretive research paradigm. The sample comprised twenty four grade twelve female learners who completed the questionnaire that explored reasons for selection of technical subjects in school and their subsequent projected career choices. On the basis of their responses on the questionnaire 7 female learners who indicated projected choices of non-technical careers were selected for participation in semi-structured interviews that explored reasons for this.

This study draws on social constructivism as a theoretical approach that guided its design, methods and analysis of data. The data from the questionnaire and interviews were interrogated in response to the three critical questions addressed in this study, namely: Why do grade 12 female learners choose technical subjects? What are the projected career choices of grade 12 female learners studying technical subjects? Why do grade 12 female learners studying technical subjects intend choosing non-technical careers? The main findings suggest that there are multiple social and institutional forces that shape female learners choices and experiences in a traditionally male dominated field of study and work.

The data from this study suggest that interventions should not view young women in isolation but in continual relation with the female learners' background. Both are a source for female learners' challenges and opportunities. There is a need to acknowledge the fluidity of gender constructions by accepting that they are not static constructions but rather dynamic interactions.

DECLARATION

I, Veronika Slabbert, promise that this work is my own effort and that I, as far as I am aware, encompass no material formerly reproduced or transcribed by someone else except where due acknowledgment regarding the source of the work has been made.

Signature:.....

Date:.....

DEDICATION

To my parents who have always supported my struggle with regard to stereotyped masculine behaviour in my work milieu. I love you very much.

To my son Lorcan, thank you for the many evenings that I could sit in front of my computer or in front of a book instead of being there for you. Thank you for your support in my struggle to stand firm as a woman in my stereotyped school. I am truly sorry that you had to endure the repercussions of my struggle. For that I love you to the end of the moon and back.

To Carolyn, thank you for your continuous support. You inspired me to never give up when at times, life's difficulties grounded me to a halt. I thank you.

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This study would not have been possible without the dedication and support of my supervisor Dr. Shakila Singh. I would like to thank her for her patience and unyielding support regarding my research. You were an absolute source of inspiration and your motivational tenacity is admirable. I have learnt so much.

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GLOSSARY OF ACRONYMS AND ABBREVIATIONS

AAUW – American Association of University of University Women

ADD - Attention deficit disorder

BAMOT - Girls for Science and Technology (in Hebrew)

Bugs – Bringing Up Girls in Science

C2005–Curriculum 2005

CAPS - Curriculum and Policy Statement

CAPS – Curriculum National Policy Statement

DHET - Department of Higher Education and Training

DoE – Department of Education

FET - Further Education and Training

GEM - Girls' Education Movement

GET – General Education and Training

HET - Higher Education and Training

IQMS - Integrated Quality Management System

Maths – Mathematics

NCS – National Curriculum Statement

NCV - National Certificate (Vocational)

NEPA –National Environment Policy Act

NSC - National Senior Certificate

OBE - Outcomes-based education

OECD –Organisation for Economic Co-operation and Development

OSW - Office on the Status ofWomen

RNCS – Revised National Curriculum Statement

SACE - South African Council of Educators

SAQA - South African Qualifications Authority

Science – Physical Science

SETA –Systems Engineering and Technical Assessment

STEM–Science, Technology, Engineering, Mathematics

UKZN – University of KwaZulu Natal

Umalusi - Council for General and Further Education and Training Quality Assurance

UNICEF –United Nations International Children’s Emergency Fund

Uweso - Uganda Women's Effort to Save Orphan

CHAPTER ONE

ORIENTATION OF THE STUDY

1.1 Introduction

Technology related careers are far more likely to be taken by men than women (Bogyay, 2012). Science and Technology have historically been dominated by male participation (Baruah, 2010). Careers related to these fields are highly valued and also better remunerated. Some imposing institutions take narrative views of women. Women in technical careers have been subjected to the divergent needs to maintain gender equality, hence it influences the prejudice which have drastic influences on them (Farmer, 2008). As an example, the lack of promotion for women have caused disparity in the workplace.

In the struggle for a democratic South Africa gender parity has always been of core significance in this struggle. The county's governance development (with the founding of the latest dispensation in 1996) instantly adopted this value of anti-gender discrimination and this has been included in the 1996 Constitution of South Africa. In the course of the 1996 Constitution, the citizens of South Africa devoted themselves to, amid others, the ethics of human decorum, the accomplishment of parity as well as the development of civil rights and independence (Kornegay, 2003). Programmes have been implemented by government to advance female learners. Minister of Women, Children and People with Disabilities, Xingwana stated that education was a key priority of the South African government and that education needs to be use as an instrument to decrease the susceptibility of female learners and empower them (Xingwana, 2011). As an educator in a co-educational technical school, I have observed that there has been

an increase in the number of females enrolling for technical subjects. However, through casual conversations with some of my former students about their career choices, I have become aware that although some female learners excel in the technical subjects many of the female learners do not continue to pursue a technical career. As our nation becomes more technologically developed and employment requires supplementary associated skills, it is vital that female learners take advanced levels of technological education.

My interest is: Where do these female learners who take technical subjects in school plan to seek employment once they leave school? It is my main objective to research this phenomenon of female learners not planning to continue with their school technical qualifications into technical fields.

1.2 Motivation for this study

I teach in a school of Technology. For many years I have seen female learners endure all the difficulties associated with their being in a masculine environment. I myself experience enormous difficulty as the only female Technology educator in this school. It is therefore sad for me to see these female learners who choose not to continue with a Technology career choice when they complete their schooling. As an educator, and specifically a female Technology educator, I am curious about the reasons that female students who enroll for technology subjects in school, intend not to pursue technology related careers.

1.3 Critical Questions

- 1.3.1 Why do grade 12 female learners choose technical subjects?
- 1.3.2 What are the projected career choices of grade 12 female learners studying technical subjects?
- 1.3.3 Why do grade 12 female learners studying technical subjects intend choosing non-technical careers?

1.4 Brief review of literature

According to Farmer (2008) the majority of employers adheres to inflexible notions of gender-appropriateness and subtly discriminates against female learners. When these female learners are in employment, they are entrusted with jobs involving a lesser amount of skill and also remunerated far less than their male counterparts. Farmer adds that prejudiced practices have been eminent in hiring, salary and management level allotment in favour of males in the majority of the countries. Without the dynamic contribution of women and the integration of women's insight at the entire level of decision making, the goals of equality, expansion and tranquility cannot be achieved. To suitably assess if equal opportunities for women has been implemented in the workplace, one would have to investigate the key essentials that would be needed to empower women. A study which incorporated male and female engineers were grouped into pairs. The data indicated that the female engineers had a more ambivalent mind-set with regard to technical capability opposed to the male engineers.

Technical and Vocational Education in South Africa education has been subjected to influences of apartheid policies. Minister of Higher Education and training, Dr. Nzimande confirmed that tertiary education has been reviewed largely to rationalise the system. This was done to eliminate remnants from the past (Nzimande, 2012). To acquire this, he continued, economic development would rely on innovation and skills incorporation. He made it very clear that a shortage of qualified skills impeded on the advancement of technology inclusion in South Africa. Since 1994, knowledge creation has been drastically increased. The South African government still lacks the ability to commence with research expansion in terms of skills development and lacks in world trade due to the lack of skills. Dr. Nzimande has indicated that he wants to open an Institute for Vocational and Continuing Education and Training. According to the Green Paper (Hlongwe, 2012) there is dire need for an establishment that would uphold the FET colleges as well as the improvement of skills which would support extensive education to adults.

According to ex Minister of the Public Service and Administration, Fraser-Moleketi (2006), the primary mechanism of improvement as well as production change would support the formation of employment. She also stated that due to the great number of women in the South African

labour force, mechanisms must be designed to attract women with science and technology education (Magno, 2008). This would not only improve their efficiency but would amplify the quality of inventions in South Africa. She was adamant that women should be vigorously drawn in with the planning, growth, execution and gender-impact assessment of policies that are associated to financial and communal changes (Frazer-Moleketi, 2006).

The South African Bill of Rights indicates that the South African government must make education increasingly accessible to all South Africans (Kornegay, 2003). It is this construction that explains South Africa's visualisation for gender impartiality and how it intends to realise this principle. The South African Bill of Rights allows to be taken which is able to renovate the historical legacy. This is possible by providing novel conditions of reference for communicating and interacting with one another in both the communal and private settings. By suggesting and motivating an institutional support it would assist the female learners with equal access to education. This Bill of Rights will also attempt to make certain that the process of eliminating gender stereotyped learning which is the foundation of the transformation progression in South Africa.

In the labour force, many women have reflected the lack of consideration of female technical employees. This implies an ambivalence of women to increase technical proficiency (Barauh, 2010). Many institutions purposely and intuitively look out for the wellbeing of men and therefore it is suggested that these institutions transform their gender awareness and promote engaged allowance of women in decision-making. This would result in the move of women's requirements from the boundaries to the centre of growth development and resource allotment.

If the discourses which inform gender equality policies are to be critically analysed from a social justice perspective, then feminist theory is useful for this task. Butler (1990) exposed the ways in which the very opinion of what is probable in gendered life is foreclosed by certain consistent and vicious presumptions. Her text also required to undercut any and all efforts to exert a discourse of truth to de-legitimate marginal gendered and sexual practices. Also using a (pro) feminist theory will help build on the perceptive of discourses and policy processes to analyse

the ways in which discourses about femininity have cultured recent policy trends and more particularly gender equity policies themselves (Butler, 1990).

Women continue to be underrepresented in the area of research and development, be it in academic world, the community segment or private companies (Farmer, 2012). She states that causative reasons for this attrition comprise of: segregation in a male-orientated background, problems that occur in the integration of work and family life, and conventional outlook of women as less capable in these areas. According to the Commission on the Status of Women to encourage women's and female learners' admission to learning, training, science and Technology (Bachelete, 2011) women comprise of a noteworthy share of business owners, particularly in developing countries, and can consequently add to science, technology and improvement as well as to employment establishment.

The Joint Monitoring Committee on the Improvement of Quality of Life and Status of Women has been placed in South Africa's Parliament. This committee seeks to support female technical workforce in their struggle towards the issues of understanding. In the regional legislatures, the standing committees are there to focus on gender (Abbot, 2010). A number of policies have been introduced in which education inclusion has been introduced in the policy framework in South Africa cite some. The White Paper (Ngubane, 1996) necessitates that education be altered and democratized in accord with the principles of non-sexism. The National Education Policy Act established national control over the education policy, so that the national policy overrides any provincial policy. Justness and restore on gender issues are in particular noted as a key constituent of this education policy.

The unequal distribution of boys and girls in certain subjects studied at school and its consequent unequal distribution of men and women in the occupational structure suggest some failure by schools and teachers to institute adequate measures to ensure learning equity (Mutekwei & Modiba, 2012). According to the National Youth Development Agency numerous adolescent persons in South Africa struggle to have admission to trustworthy and present information whereby they are able to make knowledgeable choices about their careers and their futures (Bapela, 2008).

By possessing a good education, employment opportunities for women are not guaranteed. Although women may be entering the labour market, the work does not assure their right to highly regarded work. Women may well find the conversion from education to employment more complicated due to inadequate access to social networks, information channels and employment exploring mechanisms. Existing literature which is mainly based in the United States of America and Australia shows the differential performance and even participation of female learners and male learners. When the female learners leave their technical school their lack of research information regarding female learners' career choices as well as vital gaps in literature and the realisation of mandatory skills is needed to encourage and promote women in Technology fields.

1.5 Objectives of the study

- 1.5.1 To understand why grade 12 female learners choose technical subjects.
- 1.5.2 To find out about the projected career choices of grade 12 female learners studying technical subjects.
- 1.5.3 To understand why grade 12 female learners studying technical subjects intend choosing non-technical careers.

1.6 Theoretical approach

This study draws on social constructionism which will be used as a theoretical approach that guides the analysis of the data. This theoretical approach is useful to understand gender interactions and the emergent relations of the female learners. This type of research is concerned with understanding social phenomena from the participant's point of view, and understood to be experience as unified. The study is inspired by a conviction that an equitable society, which includes gender equity in the education system, can be achieved through a critical understanding of the current social context combined with social action.

1.7 Location of study

The interviews took place at a Technical High School in central Durban. This school is not community based and the learners originate from the central city to the surrounding areas of Durban.

1.8 Sample

The learners represent a mixed cultural and ethnic learner combination. The school caters for both male and female learners. Participants were between the ages of 17-19 years. The participants were in grade twelve and were in different academic classes. The participants were well represented in the three technology subjects; Civil, Electrical and Mechanical Technology. All the female learners were asked to take part in the research. Twenty-four female learners took part in the questionnaire and eight female learners were interviewed.

1.9 Ethical considerations

The female learners were called to a meeting where the research process was explained to them. Consent forms were handed to each learner and they were asked to let their parents sign if they, the female learners were willing to take part in the research. The reason for the study was explained to them, what was being studied and why their input was needed. It was explained that their participation would be voluntary. The female learners were briefed about the procedure that was going to follow as well as to their rights before, during and after the questionnaire and interview. The female learners were assured of their right to withdraw at any time. It was also explained to them that the interviews would be conducted in a private setting and that the participant's identity would be kept confidential and that pseudonyms would be used. All the female learners were informed that participation would be voluntary and that the interviews would be recorded and transcribed. It was also explained that data would be kept safely and out of reach of people. They were assured that the interviews would be conducted in a private setting (my classroom).

I applied to the University Ethics Committee for permission to do the research by sending them a proposal of my study. I received permission from them to conduct my permission.

1.10 Methods of data collection

A mixed methods approach was used. A mixed methods approach was used. The mixed method consisted of a survey questionnaire with the entire selected class followed by interviews conducted with the female participants who indicated that they were not going to continue with a technical education or career after completing grade 12. The qualitative method facilitated broader understanding of and frequencies of particular responses and the qualitative method enabled in-depth understandings of participants choices. The survey questionnaire and interview was conducted at the school. The questionnaire was administered to the entire group of twenty eight (who agreed to participate). On the basis of the answers provided in the questionnaire, a second schedule was formed. This consisted of smaller sample group of eight female learners who were selected on the basis that they had decided not to continue with a technical career after completing grade 12. Interviews were conducted with these participants. Each interview continued for approximately twenty to thirty minutes. Adding to this, transcripts were taken throughout the interviews to support the voice transcription and elucidate misconstructions.

1.11 Methods of analysis

Data collection was completed by means of qualitative and quantitative data collection methods seeking frequency analysis by means of a questionnaire and interviews with the participants. All data has been recorded in this study by means of a questionnaire and interviews. The data collection method comprised of an assessment of all documentation and voice recordings. Audio recordings were transcribed into written text and all the questionnaires were printed and binded into a booklet. The different questionnaires were scanned for similarities as well as differences in responses for each of the questions asked. The questionnaire was analysed by making use of colour highlighters to code themes in the notes and labelling pages with coloured sticky notes while coloured page sticker were used to label the different pages of the themes.

1.12 Limitations of methodology:

It took a while to get the Gatekeeper permission letter from the school headmaster. The ethical clearance letter that the university gave was delayed as well. There were some participants who did not mind completing the questionnaire but they did not want to be interviewed. It was difficult to control whether the participants provided thoughtful consideration to every questions that was required to be completed by the participants in the questionnaire. Being an educator in the same school could have had an influence on the outcome of the questionnaire. Some of the participants were prefects that had duties to do during break; hence some of the interviews had to take place after school.

1.13 Outline of chapters

Chapter 1: Orientation of the study - Affords the background framework and a prologue to this study.

Chapter 2: Literature Review - Review the obtainable literature of significance to the current study. This Chapter will critically review and synthesise the literature relevant to this study. Theoretical Framework - This study will draw on social construction of gender theories. This structure focuses on the advancement of a person's well-being, which encompasses continued existence, protection and independence.

Chapter 3: Methodology- I depict and explain how I implement my research methodology.

Chapter 4: Data Analysis- I present and analyse the data from the questionnaire and the interviews. Having used quantitative and qualitative methods of research, I have chosen to present and discuss the data as a mixed method approach.

Chapter 5: Summary, recommendations and conclusions

CHAPTER 2

LITERATURE REVIEW

2.1 South African Education history

In the previous chapter I looked at the broad continuum of this study. This chapter contains a review of the obtainable literature which is of significance to the current study. This Chapter critically reviews and synthesises the literature relevant to this study and allow the researcher to:

- Understand historical inequalities in access to careers
- Examine literature on young people and curriculum choices and/or careers;
- Review the available research on gender and curriculum choices ;
- Understand the history of technical curriculum in schools;
- Synthesise the literature on female learners/women in technical careers;
- Review the literature on career choices of female learners;
- Develop a Theoretical Framework of social construction of gender as a basis for the methodology and analysis of this study.

The early apartheid government had constructed an education system that produced an ethnically and culturally preserved labour market. Bantu Education secured unskilled labour for black learners as limited educational instruction took place in classrooms. Instruction took place in Afrikaans and not in their home language. Having limited or no formal qualification, black learners, leaving school, relied on skills learnt and experience obtained over time. While learners, leaving school, managed to get qualified due to secured privileged education structures,

thus enabling them to get skilled employment. This skewed education arrangement provided to dissimilar national groupings was intended to create an ethnically twisted labour marketplace that ensured that superior positions in the labour force went to white South Africans and the lowest-paid positions to black South Africans (Jewison, 2008). This arrangement was intentional to safeguard the discrimination of apartheid. Once the Apartheid constitution was abolished, the democratic government was resolute to ensure the advancement of a liberated, self-governing and just South Africa. The South African Schools Act of 1996 was designed to present a standardized arrangement of schools in terms of school arrangement, control and funding. The objective of this act was also to ensure learners the right of entry to prominent education. Learners' entry age for school was set at 7 years and their exit age was either 15 years or the completion of grade 9. This act synchronised national and provincial education.

The Minister of Education, Frazer-Moleketi, was supported by The Department of Education (DoE) which was established in May 1998 (Mouton, Waast, Boshof, Grebe, Ravat, & Ravjee, 2001). Schools now offered the learning path of Grades 7-9 which constituted the General Education and Training (GET) whilst Grades 10-12 constituted the Further Education and Training (FET) route of eventually achieving a National Senior Certificate (NSC) (Taylor, 2011).

Technical schools and technical colleges presented The National Certificate (Vocational) (NCV)). This is a specific course of study intended to prepare learners and students for career-specific preparation. The NCV was intended as an identical path to the NSC. After 1994, the National Qualifications Framework was established due to the need to develop the education and training policy in South Africa. The NQF would incorporate all matters relating to the need for superiority, impartiality, enhanced admission, redress, portability of credentials, and acknowledgment of preceding education that had to be attainable within a unified system of integrated education and training (Jewison, 2008).

2.2 National Qualifications Framework

The National Qualifications Framework (NQF) was a system that was designed to integrate secondary, tertiary as well as industrial training. It was the government's intention to reform all

deficient and inequitable education and training structures that existed in the Apartheid era. The NQF had to institute a lucid, integrative education and training structure that provides a policy for a unifying move toward consistent qualification outcomes. This structure is based on both national and international established and realistic standards. These educational outcomes would be significant to individual as well as socio-economic progression as the amount of learners, students and employees try to boost their education. All qualifications achieved at schools are recognised by the NQF in South Africa. This recognition continues to follow through to college, university as well as qualifications acquired through learner ship programmes and on-the-job training. One is accredited for various types of qualifications or gauges their potential for entry into a specific learning programme, through the recognition of prior learning (SAQA, 2000).

The intention of NQF is to gauge training and learning in terms of skills and knowledge against ‘socially agreed standards’. The framework provides NQF levels which were published in the *Government Gazette* in October 2007:

NQF BAND	NQF LEVEL	EDUCATIONAL GRADE / QUALIFICATION
General Education and Training (GET)		Grade 1 - 8
	NQF 1	Grade 9
Further Education and Training (FET)	NQF 2	Grade 10
	NQF 3	Grade 11
	NQF 4	Grade 12
Higher Education and Training (HET)	NQF 5	Bachelor’s degree (3 years) Diploma / Higher certificate
	NQF 6	Honours degree Post-graduate degree / certificate
	NQF 7	Masters degree
	NQF 8	Doctorate

Table 1: The National Qualifications Framework structure

In 1995 the South African Qualifications Authority (SAQA) was established. SAQA harmonised and governed the NQF. This framework acted as an instrument that would unite the formerly separated education and training sectors as one. In 1998 the Employment of Educators Act was implemented to regulate the education body. This act regulates the certified, ethical and honorable duties of all educators and their competencies necessities.

2.3 Sector Education and Training Authority

The Skills Development Act was designed in 1998 to extend skills development in the South African workforce and to amplify the levels of financial outlay in education and training in the workforce (Republic of South Africa, 1998). SETA is able to respond to the need of labour-market and socio-economic needs of South Africa which would enhance not only productivity but service delivery. Foreign investment would be enhanced due to the positive image the country would be portraying towards fair labour practice.

The act provided the following:

- (a) to expand the skills of the South African work personnel;
- (i) to develop the value of existence of personnel, their projection of employment and labour mobility;
 - (ii) to develop productivity in the place of work and the competitiveness of employers;
 - (iii) to endorse entrepreneurship; and
 - (iv) to develop the deliverance of communal services;
- (b) and to progress the gain on that outlay;
- (c) to persuade employers -
 - (i) to use the place of work as an dynamic education location;
 - (ii) to offer workers with the opportunities to obtain new-fangled skills;
 - (iii) to offer prospects for new participants to the work force to increase employment knowledge; and a person who represents the interests of the youth (Republic of South Africa, 1998).

2.4 Educational progress

In 2001 the Education White Paper 6, on Inclusive Education, was implemented (Department of Education, 2001a). The Department of Education wanted to eliminate learning barriers and to assist in the inclusion of susceptible learners as well as learner from socio-economically deprived areas.

The Department planned to connection the academic contribute to learners who did not need rigorous help, to the broad reformation of the further education and training sector by creating, full-service technical colleges (Department of Education, 2001a). The focus was on creating sustainable structures and mechanisms that would advance the preservation of learners. This was especially relevant to learners opting to drop out of school early. In 2005 the Curriculum 2005 (C2005) became the first distinct curriculum for South African learners. The first nine years of schooling became compulsory (Department of Education, 1997). The GET and FET phases continued to be implemented.

That system allowed South Africans from all socio-economic backgrounds to take part in lifelong learning. It stated that a national register for nationally and internationally agreed upon reliable standards, expressed as learning outcomes, be used (SAQA, 2000). SAQA stated that it was important for allowing entrée, mobility and advancement in the system through the communication and possibility of attaining credits. The acknowledgment of learning achieved via different educational methods as well as guidance assistance would enhance the acceleration mechanisms which would rectify preceding unjust discrimination.

In 2002 the revised National Curriculum Statement (NCS) was adopted (Department of Education, 2001b). The aim of the NCS was to extend the holistic potential of learners in the new self governing South Africa and encourage life-long learning. The continuing implementation of the NCS's new curriculum was concluded in 2008. The function of The National Protocol on Assessment was to oversee the recording and monitoring of education outcomes for grade R to 12 (Organisation for Economic Co-operation and Development, 2009).

Given the history of women in South Africa, socio-cultural attitudes dictate that most women are inferior to men in both their public and private lives. Men are seen to lead in decision-making. This inheritance of patriarchy has prejudiced human relationships with a noticeable brunt at the workplace and schools. The Gender Policy Framework (Kornegay, 2001) was initiated in attempt to create gender parity. At this time, transition was in process in South Africa. To shape this broad transformation project all government policies, government procedures as well as its agencies and parastatals, had to be reviewed. This also included the community and the private sector advancement issues.

In 2003 the Girls' Education Movement (GEM) was launched by the South African Minister of Education, Professor Asmal, in the Parliament. UNICEF supported this movement in all of the nine provinces. This movement not only supports learners and adolescents by bringing change to deprived and rural schools but supporting communities as well.

The "National Gender Machinery" was implemented to alter gender relations and assist the progression of women's empowerment. This was also done to assert an energetic national gender programme promoting gender equality in South Africa. The United Nations Decade for Women (1975-1985) had also led to demands for the generation of data on the status of women, for policies to address women's needs in development, and also for setting up national machinery to promote women's integration into development (Manjoo, 2005).

The National Office on the Status of Women is situated in The Presidency. The National Policy Framework for Women's Empowerment and Gender Equality indicated that the OSW would have a fundamental function to participate as the primary coordinating configuration for the National Machinery on gender equality (Department of Human Development, 2009). It stated further that it creates structures and administers their execution and that it is accountable for developing national gender tactics as well as national strategies to implement them.

Gender equity in a fast-forward moving South Africa's economic growth is not only a fiscal issue but a societal necessity. According to the South African bill of Rights every South African has the right to fundamental education. Education and skills development is a means to eradicate

the history of South Africa and enhance future prosperity. The thriving integration of adolescence and gender concerns required the recognition of apparent and pragmatic preferences and objective as well as a capacity to gauge advancement towards those goals (Pigou, 2001).

The South African Constitution has allowed for The Commission on Gender Equality to encourage social equality. It is their responsibility to recommend on various aspects that affect the status of women in South Africa thus promoting gender equality in legislation. Converting the South African public, by introducing laws and policies as well as by promoting the adjustment of gender stereotyping and chauvinist attitudes, will aid in instilling a high opinion for women's rights.

The South African government therefore tried to make education for all a top priority and placed education and skills development at the center of its policies. Due to many issues like for example gender, that will be discussed later, a myriad of female learners are left to their own restricted resources to devise a plan for their prospect careers. An enormous demand was made on the capability of the South African education and training machinery to increase suitable skills and capacities in the existing youth populace (Meyer, 2011).

In America the federal act affecting career and technical education was signed in to regulate fund expenditures and the law also ties student career and technical education student performance and achievement to a school's eligibility to receive Perkins funding (Perkins, 2006). The government monitors school performance when learner performance reports are compared to comparable schools performance. It has been suggested that these assessment be industry-based and that learners perform to industrial compliancy. It is imperative that educational policymakers focus on supporting and retaining, rather than merely recruiting, women in STEM fields (Hayes, 2013).

Constructivist learning includes the following essential factors: (a) education must be obtained in reliable and real-world locations; (b) education should engage communal compromise and arbitration; (c) curriculum and dexterity should be made applicable to the learner; (d) curriculum and dexterity should be comprehended within the construction of the learner's precedent

understanding; (e) learners should be evaluated formatively, serving to update prospect knowledge understandings; (f) learners must be motivated to develop into self- rigid, self-interceded, and self- conscious; (g) educators function primarily as guides and facilitators of education and not tutors; and (h) educators ought to offer for and promote numerous viewpoints and depictions of the curriculum (Powell, 2009, p243).

In 2008/9 a number of school subjects were ceased in the latest school curriculum, restricting the options accessible to learners attracted in vocationally-oriented school education. It is now possible for many of these subjects to be selected at FET colleges, as well as bricklaying, motor mechanics and metalwork (Stumpf, 2012).

The Department of Higher Education and Training (DHET) was created in May 2009 as a innovative department. The purpose was to combine collectively the entire tertiary education and training institutions. This would include all higher education establishments, colleges and adult learning establishments (previously with the Department of Education) and the skills levy institutions, previously under the Department of Labour (Nzimande, 2012). He stated that this arrangement would donate to conquer the structural difficulties that are faced within our culture by intensifying admittance to education and training prospects and growing impartiality, and accomplishing elevated stages of superiority and advancement.

He continued to explain that the Department of Higher Education and Training, supported by the establishments which it is accountable for, would be positioned at the nexus flanked by the prescribed education arrangement and the employment sector. The Department was accountable to guarantee that individuals entering the employment market would be qualified and knowledgeable to start working in the work environment and that earnings producing that exist, as well as prospects will be created so that circumstances are present as the economy expands and transform the future.

Mr. Nzimande said that skills expansion prospects such as learnerships, apprenticeships, internships and graduate assignment would be produced while within the institutional background this will also lead to the formation of educational and maintain services employment

prospects (Nzimande, 2013). He further stated that adolescent trepidations are as assorted as governance itself, together with aspects such as: education and training; health, safety and security, environment and tourism, science and technology, welfare and community development. The government intended to set comprehensible quotas for youth involvement. The Green Paper offers a visualisation for a solitary, consistent, distinguished and exceedingly expressed tertiary teaching and instruction arrangement that will add to conquering the structural problems that is existing in the society, by escalating admission to education and training prospect and growing impartiality, as well as accomplishing elevated stages of superiority and originality (Nzimande, 2012).

In 2011 a programme called “Techno Girls” by Women, Children and People with Disabilities Minister Xingwana was initiated (Perse, 2001). This programme is supported by the Department of Basic Education, UNICEF and Uwesoo Consulting. The focus of “Techno Girls” support young female learners in grade 9-12 from disadvantaged communities in subjects like mathematics, science and technology. During the female learners’ school holidays, they are positioned in various companies. The job-shadowing programme allows the female learners to obtain firsthand experience into the operation of the corporate industry. These learners will be able to make more informed decision regarding their career choices.

In 2012 Curriculum and Policy Statement (CAPS) was implemented in a few grades to replace the NCS. Completion of the other grades of the Caps curriculum is to be finalised in 2014. The objective of changing the curriculum is to limit the administration load of educators. These all-inclusive and concise guiding principles will support educators in teaching and assess each grade and each subject individually.

Work experience for grade elevens has become a requirement in the curriculum. This provides a further set of influences upon career choice (Roger 2000). Female learner’s choices for work experience show customary gendered outline, particularly in male-dominated mechanism, maintenance and restoration as well as technical and scientific profession (Turner, 1990).

Funding for government schools has become victim to budget cuts. Schools would lose professional development opportunities, students would have less access to the latest technology and equipment, and fewer courses and services would be offered as the integration of academic and technical courses will be lessened.

When learners leave school without completing a National Senior Certificate there are few educational opportunities and therefore the learners do not meet the admission and selection criteria for higher education resulting in chronic shortages of artisanal and other mid-level skills in the workforce (Department of Higher Education, 2012).

In 1997 the Curriculum 2005 was launched by improving on the old curriculum and management of the education system, to complement the ideology of the country's new Constitution. It was the first education system in South Africa that to be all inclusive and consisted of an incorporated education and training arrangement. This system's principle was outcomes-based education (OBE) which focused mainly on "competency" approach which was very learner-centered.

2.5 Post 2000

When the national curriculum was reviewed in 2000, the traditional academic structure was reframed into an integrated information system. Subjects were replaced with learning areas. Each learning area contained 'range statements' that, in turn, aimed at outcomes. The learning area was designed to contain twelve critical outcomes that formed the origin of the whole learning system which embraces problem solving, working co-operatively, time management, communication in a range of modes and using technology successfully.

The new technology learning area integrated most of these critical outcomes, which – together with the need for technical skills in the workplace - assured that its place in the national curriculum was retained post-2000. Despite the best efforts of educators, the implementation of the technology learning area has not been completely successful. It was criticised for being too elaborate, in that it involved new material and multifaceted terminology. It also necessitated a certain level of resources, textbooks and classroom space, which many underprivileged schools

simply did not have. While historically advantaged schools had greater success at implementing the curriculum, disadvantaged schools floundered, potentially widening the gaps between schools.

Educators experience many problems with the OBE system and the only outcome was to review the National Curriculum. In 2008 the Revised National Curriculum Statements (RNCS) was implemented which reduced administrative tasks as well as the curriculum paraphernalia of educators considerably. The conclusion was that the American system of “no child left behind” could not function in South Africa, due to the lack of learner’s early analytical evaluation and pace setting. Due to this new curriculum, many learners were sent to private schools because the education system was distrusted and excellence in education was seen as being profound in private schools (Malada, 2010).

In the preceding regime, a Senior Certificate was awarded to grade 12 learners. Learners could take subjects on Higher, Standard and Lower Grade. In 2008, all grade 12 learners received the National Senior Certificate which was a means for learners leaving school and thus a yardstick to further education. In this curriculum, there was no differentiation in terms of subject grading (Nel, 2009). The intention of C2005 was to boost the standing of technology subjects with regard to academic subjects and to advance and promote the subject at schools. When the different grading of subjects was eliminated from the curriculum, learners were then able to achieve admission to a university by means of combination subjects. Hence the university incorporating their own stringent entrance exams into their universities (Nel, 2009).

The ex model-C schools had by now been implementing the C2005 system (Harley, 2004). The implementation of this system for disadvantage communities was complicated despite the fact that they saw it as a means to an end. Educators had limited curriculum resources. A limited to no textbooks were available in disadvantaged areas as opposed to a variety of textbooks suppliers in developed areas. Migrant learners and poor control of text books complicated the control of school books.

The General Education and Training Band (GET) and Further Education and Training (FET) levels were formed to provide focus on technology education. The GET (grades 7-9) Technology

offered general technology as opposed to the GET that offered Technology focusing on new subjects like Engineering Graphics, Mechanical Technology, Electrical Technology and Civil Technology. The GET phase consisted of three years formative all-purpose learning opposed to the FET phase that offered specialised learning and consisted of three years (Grades 10-12) that also provided additional technical and work-based learning and instruction. This endorsed learner's comprehension, practical capability in skills for future careers or advancement to higher education.

Every year Umalusi would monitor all the final assessments by validating the outcome thereof. The department continually monitors and improves the credibility of the curriculum with industry. In 2015 the restructuring and unmerging of the combined Mechanical-, Electrical- and Civil Technology subjects will take place by reforming to subjects like Electricians work, Fitting and Turning and Mechanics. This will allow for much better trade orientated outcomes when learners leave school.

The youth tended to leave school without the relevant skills and foundation knowledge that was necessary for successful job operations (Snow, 2013). Having selected a subject arrangement that compliments the perfect profession is crucial in terms of long term career contentment. Various factors influence these choices (Bandura, 2001). The career a female learner chooses is based on two key belief systems – the system related to her confidence in being able to succeed at this career, and the system constituted by the relative value she attaches to each career she is considering, particularly in light of what other things she hopes to do with her life (Eccles, 2012).

2.6 Educational hardship

Boys and girls receive different messages in school, so schooling fails to afford girls opportunities for competing on an equal footing with their male counterparts and influences education, career aspirations and choice (Mutekwei & Modiba, 2012). For many female learners, the notion of gender characteristics are in place do to various stereotyped factors, but these notions are flexible and vigorous. (Girls Inc., 2000). Due to the apartheid influenced spatial

history of South Africa, the socio-economic remains of this system still limit youth of opportunities which intensifies their marginalization within their own society. Female learners from lower socio-economic households are unable to make informed and autonomous decisions regarding their career choices. These learners also tend to make delayed career decisions (Mudhovozi, 2012).

Career and technical education was designed to prepare youth and adults for employment (Snow, 2013). South African learners have not been trained in the required skills to make educated career decisions thus leading career choices are being made on a trial-and-error basis. Hence learner s would never be able to comprehend their full prospective ability in a career. The government and industry has made a surplus of bursaries accessible to formerly disadvantaged learners to facilitate learners to study at tertiary institutions. Many learners are in doubt of the career path that they intend to follow and often accept the bursaries purely because of monetary consideration. Thus they follow these careers that are not suitable for them with catastrophic consequences. Efficient career counseling for learners at school should help youth make informed career choices.

Many parents perceive technical studies as unbecoming of their children due to a stigma coupled with artisan training. Many parents and care-givers would rather prefer their children study in an age appropriate institution as learners from the age of fifteen years and up are able to study at the technical colleges. Parents perceive technical subjects as “non-academic”. However the technical subjects provided a prolongation of their child’s high school education as they are able to continue with own employment due to their Technology subjects. Parents feel that their child will be able to pursue an area of interest whilst easing the changeover into secondary education at a technical college (Stumpf, 2012). Peer pressure forces competent learners not to pursue vocational subjects thus adolescents may be in special need of close adult relationships outside of the home (Eccles, 2008). In larger families, less money is available to further all of the siblings’ education.

Owing to socio-demographic and socio-economic factors, learners from underprivileged communities tend to avoid choices that entail pro-longed study (Mudhovozi, 2012). Parental or

guardian financial constraints thus limit their career choices. The occupations of parents manipulate the aspirations and ambition of learners. These learners are completely dependent on monetary aid to further their studies. In many cases, parents expect financial support from working adolescents to help support the remaining siblings. Parents intend to influence their children not to make the same errors that they, the parents have made (Southwick, 2000). However, in disadvantaged countries, youthful inhabitants portray a somewhat valiant representation of scientists as people; opposed to this is not being the case in extremely developed western societies (Chang, 2009).

Existing gauges in vocationally-oriented education has revealed that more female learners selected engineering graphics and design while a limited decline in the data choosing Electrical and Mechanical Technology were noticed (Stumpf, 2012). This report showed that the grade twelve learners selecting Mathematics declined and that the number of learners grade twelve learners selecting mathematics literacy increased. This indicates that the learners who have selected Mathematics Lit would not be able to follow an engineering career (Stumpf, 2012).

Ever since accomplish democracy in 1994, noteworthy attempts have been made to enhance a national youth expansion policy which includes:

- the acceptance of a national youth policy and the formation of the National Youth Commission to observe and promoter for its implementation;
- the noteworthy reformation of the schooling arrangement and investment in at amalgamated learning scheme;
- the expansion as well as the execution of a national proficiency expansion structure;
- the placement of lucid allowances for youth involvement in numerous government interventions;
- the implementation of a social grant support network that would benefit children in particular (Meyer, 2011).

Effective implementation of policy also requires improved synchronization between the national and provincial governments in youth programme delivery, as well as guaranteeing government arrangement and conformity with the National Youth Policy in programme delivery of

government departments and managing the rollout of National Youth Service projects and associated legislative processes (Department of Human Development, 2009).

In order to advance youth employability in South Africa drastically the following gaps should be addressed:

- the provision of interventions to keep learners in school;
- the implementation of second-chance learning programmes;
- the expansion of soft skills linked to vocational and skills programmes;
- the expansion of transitioning skills, and the provision of job intermediation and counselling centers;
- the mentoring of new and emerging businesses by existing businesses;
- the need for employment creation programmes, which are tailored to meet the specific needs of young people;
- the promotion of communally helpful careers past the restrictions of the budget cover as a way for the youth to attain workplace experience;
- the need for a clear occupational framework that signals the value of different qualifications;
- the need for tailored support programmes and options for rural youth;
- education and training should progressively be made accessible to all youth without discrimination;
- the number of youth at risk of premature exit from the education system prior to completing their NSC should be reduced. (In cases where learners leave school ahead of time, a wider and more flexible range of out-of-school pathways, such as vocational training and similar interventions, should be introduced to enable them to complete their secondary education and obtain their NSC or equivalent qualification, or to offer them second-chance opportunities that will ultimately enable them to participate in the labour market);
- the DoE and relevant partners should strengthen participation in science and technology education and training, and develop learner support material;
- the government should extend to secondary schools the rollout of measures intended to increase effective learning of young people, such as the expansion of no-fee schools, nutrition programs, transport subsidies, etc.;

- the DoE should increase learner success rates by providing needed resources to poorly resourced schools; improving the quality of teaching; and providing supplementary support to learners who perform poorly;
- the government, in partnership with relevant partners, should promote access to education through mobilising scholarships and bursary schemes for the youth to enable them to access education;
- the DoE should reintroduce career guidance, with particular emphasis on the promotion of scarce skills;
- the DoE should support and coordinate with the Departments of Communications, Minerals and Energy, Science and Technology, and Water Affairs and Forestry in promoting career guidance among learners to address the problem of scarce skills, as well as to encourage research (Meyer, 2011).

School influences such as the nature of the school type, syllabus, selection procedure, subject options, school amenities and staffing are dominant when gender disparity in Technology is under deliberation (Ogunjuyigbe, 2006). The gender differentials in Technology are as a result of the consequences of socio-cultural and monetary factors which is vital in the understanding of the problems associated with gender. Due to the fact that vocational advancement begins earlier in the learners' life span than normally expected the learners learn about employment and careers which will have an insightful consequence on the career choices that they make as school leaving adolescents (Hartunga, 2005). Assertions that female learners and women are to a lesser amount attracted to Technical than non-Technical careers are in general untrue (Eccles, 2012). Women have made remarkable progress in the workforce in the history of the United States as well as many additional nations (Leaper, 2012). Recently, numerous efforts have been made to augment female learners' and adolescent women's involvement in Technology (Steinke, 2004).

Girls are no longer formally excluded from what were previously considered to be masculine technological domains (Stepulevage, 2001). The core objective of any process to address existing and emerging manifestations of inequality and discrimination, is by taking into account effects of policy and government actions (as well as inaction) on both men and women (Enquiry, 2001). The enquiry states further that redressing inequalities is necessarily a shared responsibility in

government and in order for gender mainstreaming to be effective, a comprehensive, cross-cutting and gender-aware approach is very important.

When a female learner's suitability is to be found in a male-dominated domain, her advancement of expertise may disturb the current gender arrangement of male authority (Stepulevage, 2001). Research has shown that gender discrimination could be linked to career satisfaction and persistence in academia and female engineers who reported experiencing chauvinism on the job were more likely to think about leaving the field than female engineers who did not report these experiences (Hayes, 2013). Men and women assume very different decision processes in evaluating new technologies (Venkatesh, 2000). This phenomenon not only narrows the possibilities of choosing a career but also leads to a specifically female pattern of unemployment and limits women's quality of life (Mammes, 2004). Research also suggests that girls and women from differing ethnic groups can have fundamentally different experiences in Technology (Robnett, 2012). The effect of the technology education intervention supports the idea that intervention measures should be implemented at the earliest opportunity in order to level out gender-specific differences in technological interests (Mammes, 2004). Gender differences that values fairness and elasticity to having family time means in general more to women than the value power and money (Hayes, 2013). The need of career knowledge is demonstrated as much (or more) by female learners' career choices as by those of male learners (Francis, 2010). Women's inadequate right of entry to and contribution in specific educational area of expertise in higher education, create and be responsible for the presented isolation of women and men in profession (Charles, 2002). Concern regarding inequities in mathematics, science, technology, and engineering exist for female learners of all ethnic backgrounds. This might be additionally relentless for female learners of colour (Frost, 2007). Research point toward that gender remnants exceptionally prominent in scientists' clarifications of the gender differences amid disciplines, signifying that even those women who continue in technology continue to be diverse from their equals who are men by the they clarify their career choices, especially their choice of an occupation in a specific discipline as an alternative of a different discipline (Ecklund, 2012).

The thrust for transformation has been held by individuals significant in higher education mostly because the outcome of the status quo is poor enrollment of capable learners in deficient subjects (Roger 2000). South Africa is often praised for their political management that has accepted responsibility for the enduring oppression of women. A variety of authorized credentials form the foundation of the South African government's obligation to gender parity as well as the abolition of intolerance against women.

South Africa observes gender fairness as essential to the balanced gratification of all privileges and freedoms by every woman and man. The Gender Policy Framework recognised procedures for South Africa as a country to take action to correct the precedent inheritance by defining novel requisites of reference for cooperate with each other in cooperation with the private and public realms, and by advising and advocating an institutional structure that assists with equivalent right of entry to goods and services for both women and men (Kornegay, 2003). South Africa's approach to human rights is informed by the understanding that human rights are universal and indivisible and that promoting, protecting and advancing all human rights for all the country's people is the only guarantee for a better life for all South Africans (Xingwana, 2006). She explained that South Africa has initiated numeral regulations that offer an outline for eradicate prejudice on the ground of gender and other grounds or amalgamation thereof while assisting in the achievement of optimistic procedures to deal with current presented systemic disparities. In South Africa the notion of 'gender machinery' evolved as a creation of an accord which assisted and ensured the mainstreaming of gender issues and helped outline women's struggles against supremacy and discrimination

When the American Association of University Women Education Foundation (AAUW) carried out its initial investigation in 1885, and established that higher education was not detrimental to women's health, divergent to accepted belief (AAUW, 2001). Unfortunately, this report indicated the low representation in avant-garde fields like engineering despite the fact that female learners have made enormous strides in careers such as Life Sciences. Advancing women's skills was one of the aims of the government. Mr. Mandela said that: "The cause of women's emancipation is part of our national struggle against outdated practices and prejudices"

(Mandela, 1996, p.23). He further stated that the struggle would demand equal effort from both men and women alike.

Mohammed (2013) spoke about quota and questioned whether isolating women whether it would build them as being gender-equivalent or gender-divided. She continued to state that one would need to sanction women and offer civilisation grounds to value women. She was of the opinion that here were adequate endowed women who could not be singled out.

In the same Lecture series Machel (2013) stated that South Africa's Parliament managed gender matters in a conventional way by concentrating its focus on traditional law and conventional courts, which viewed women as inferior. She continued to explain that absent fathers, varying family configurations, enduring income discriminations and women's varying communal household tasks that endure hardship from a number of extremely tough and obsolete stances towards disparity in genders and the privileges of men and women. The experiences of female engineers today indicate a less male-centered work practice (Holth, 2011).

In John Gray's *Men Are From Mars, Women Are From Venus* he states: "We're neither Martians nor Venusians, but Earthlings, and we have far more in common than we have different, and the differences among men and among women are much more interesting than the differences between them" (Gray, 1992, p 13). There is a significant 'gender gap' in South Africa. This is due to the history and remnants of an essential social concern. The daily lives of females in South Africa will be dynamic converted if gender parity were possible. The relations of ethnic, gender and race is able to construct female learners and male learners' attitudes in the direction of academic attainment (AAUW, 2001). When women manage to achieve the pinnacle of their career, many men become suspicious of women who manage to do so. The men condemn the women of twisting regulations or by making use of sexual advances. The men show antipathy towards the women and ambiguity is remnant as to some women making headway in work.

When male learners act out in a masculine manner it is said that "Boys Will Be Boys" and if the female learners act out in a feminist manner it is said that "Girls Will Be Girls". However, when girls contend in an aggressive or competitive way, girls are not referred to as "Girls Will Be

Girls". The problem highlights the reasons why this stereotypical behaviour is any less a bona fide ingredient of gendered identity (AAUW, 2001)? As male learners mature they experience sturdy propaganda by well-denoted fathers, mothers, educators and instructors who employ embarrassment and mortification to compel them into an image of what he describes the boy code. (Pallock, 1999). Pallock continues to define this belief so as to there being merely one way to vigorous masculinity and that a male learner ought to never act like a girl. Pallock believes that this boy code precludes male learners from articulate their feelings in class or to other people in general. Pallock feels that they are embarrassed of interests they may have in almost anything outside of sports; that they should be as dissimilar to female learners as possible resulting in the male learners feeling humiliated of confiding in their mothers and consequently mortified of having some friendships with female learners. Due to the fact that women tend to shy away from competition more than men, tends to be the reason why the minority of competent women do not reach the top (Bertrand, 2001) and why the increase of pace of the gender income gap in the upper tail is so small (Albrecht, 2003). Research has proved that for women the performance in (Uri, 2009) as well as the selection into competitive environments (Niederle, 2007) are sensitive to the gender composition of the group. Research illustrates that, within a cluster, women are concerned about how STEM will be implemented to build diversity in the world, by way of using engineering to construct prostheses, whereas men are frequently enthralled with the technology itself, such as how huge a hard drive is and how promptly a processor operates (Galloway, 2005). The female mechanic or industrial worker can be perceived as a representation of the contemporary and open-minded (Hedlin, 2011).

Many women portray their fathers as the most important individual who familiarised them into the conventionally masculine technology environment during their upbringing (McEwen, 2013). McEwen continues to explain that additional male relations had influenced the women often in the similar means as fathers had done and that the main significant conclusion was that the women may have experienced themselves as capable and deemed themselves at ease in technical backdrop. The progression of women in technical fields will have a substantial bearing on the growth of nations (Mason, 2001). Mason states further that this will enhance the country's knowledge base, invention competences and competitive progression. Any community or country who has sturdier scientific and technical understanding are able to be more technological

competitive with other countries and increasing local invention prospective (Hays, 2000; Mason, 2001). More lately, images of female scientists have been presented in television programming and in admired movies (Steinke, 2004).

At the end of high school young people have an image of what they want to become and pick their high school courses accordingly (Eccles, 2012). Female learner's motivation regarding Technology depends on whether their educational inspiration, attitude relating to their abilities and capability to thrive in Technology become strengthened (Larose, 2006). Female learners can build up a relationship with Technology that enables them to have a basis for a long-term interest in technology and technological artifacts (Mammes, 2004). Mammes further states that it is this interest which influences the subsequent choice of occupation.

In Texas a Technology preparation programme is used to underwrite an arrangement between high school and tertiary education. This comprises of proficiency in math, science and technology instruction for both educators and counsellors to encourage and apply the Technical preparation programme as well as maintaining equivalent admission for all populations (Roger 2000). This programme continues to empower and sustain educators in expanding the opportunities for female learners in the curriculum as well as developing inclusive instruction methods and the involvement of their parents (Roger, 2000).

In 2009 the Swedish National Agency for Education held courses that were intended for female learners in obligatory schools and the rationale was to motivate female learners' awareness in natural sciences and technology, and also to reinforce female learners' self-assurance in the field (Hedlin, 2011). The research school is currently involved with the Swedish Education Department in an exchange program which allows for many female learners to experience the different countries' curriculum. This is done by actively getting involved in the classroom and workshop. The female learners build various projects as prescribed by the counties' Education Departments. They are given a certificate of competency on the completion of programme.

The interaction between the main elements behind technological competence with regard to female learners that find themselves in a position whereby they have to select Technology as a

school subject followed by a possible career in Engineering (Autio, 2011) is shown in the diagram that follows:

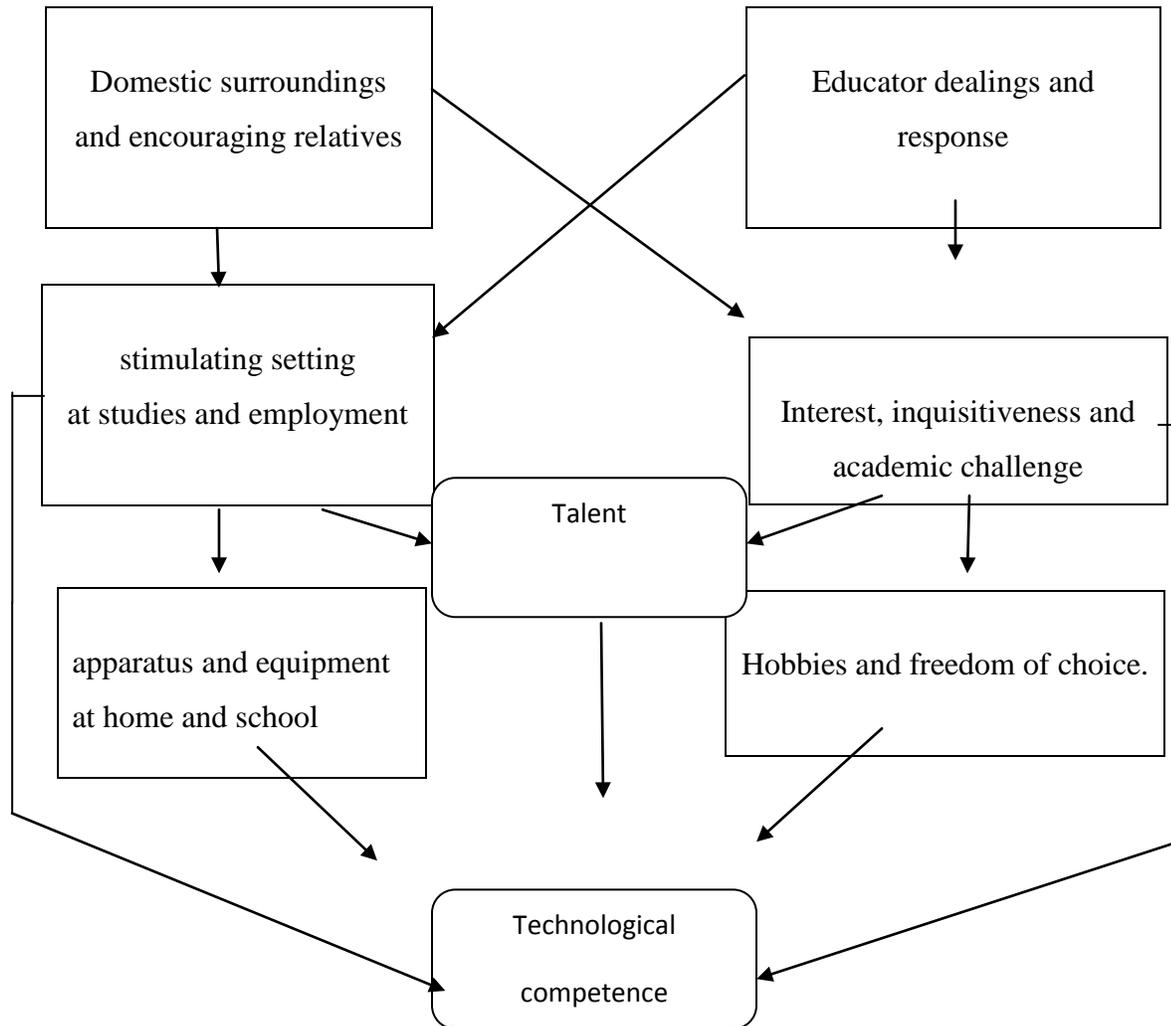


Figure 1: Technology motivation chart

Female learner clusters in research from single-sex instruction in school surroundings have normally been described as being accommodating and obliging but they were occasionally rather troublesome in the technology center (Salminen-Karlsson, 2007). Female learner's insight of Engineering were not knowledgeable by teaching or familiarity, but were alternatively created by accepted fallacies and disbeliefs (Andrews & Clark). Education about feminism and supporting gender parity were certainly related with female learners' inspiration in technology (Leaper, 2012).

2.7 Female learners in Technology in Africa

Given that women shape the bulk of African populations and they are explicitly concerned in matters concerning farming, wellbeing and the environment. It is vital that local and national growth efforts purposely aim at female learners and women thus endorsing independent scientific and technological growth (Hoffmann-Barthes, 1999). The broad tendency is that enrolment rates for female learners have improved over the years in Kenya, where the amount of female learners joining the programmes in technical and vocational education has grown (Hoffmann-Barthes, 1999). She continues to state that two serious aspects manipulating the low representation of female learners in technical and vocational education is that: i) there are limited female educators in technical education or the figure is very small, and ii) technical schools are usually located in local towns and housing amenities are rarely available.

Early introduction to career options will not merely keep female learners from snubbing STEM careers merely owing to no information or conventional views, but to assist female learners to investigate probable career possibilities (Tyler-Wood, 2012). She states that it is vital to offer female learners with prospective networks and to sustain clusters (Tyler-Wood, 2012).

Great progress has been made in Africa in terms of female learners and technology:

- In Ethiopia optimistic procedures are currently taken to persuade more female educators;
- In Botswana, Ghana, Kenya and Zimbabwe, camps are arranged to draw female learners technical education and careers;
- Countries such as Zambia, Zimbabwe and Malawi have made science compulsory for male and female learners at secondary level;
- In Ghana (Technology and Mathematics Education Clinic for Girls), more female learners are aspirant to vocation areas formerly engaged by men.
- Zambia has promoted many women in the areas of science and technology, thus providing role models (Hoffmann-Barthes, 1999).

2.8 Female learners in Technology internationally

The Canadian International Development Agency (CIDA) supported the Technical Institutions' initial encouragement programme to lure females into nontraditional employment. The programme embraced support to Parent-Teacher Associations, association of workshops to sensitise technical educators, supply of enticements such as fee-free lessons, tools and weekend remedial lessons in Mathematics and Science (Hoffmann-Barthes, 1999). In India numerous women's engineering colleges have surfaced as well and the enlarged amount of women in engineering seems mostly remarkable since their existence in this field was impossible before their independence (Gupta, 2012). Gupta continues to state that an engineering degree entails matters linked to a orchestrating marriage in terms of seeking competent groom, and no returns on investments in the daughter's education after her marriage for both the parents as well as for the woman herself if she has to stop working. Girls' improved ambition for their prospect occupation may impact on other gender issues (Francis, 2010).

Women who merge motherhood and educational work may be astonishingly gifted and dedicated and could sturdy individual support systems to assist with family being, or organize their family lives in such a way that curtails inconsistency with work (Grant, 2000). Academic women who are married and have children tolerate substantial pressure and time-management demands in their daily lives (Armenti, 2004).

Institutional help to alleviate this divergence are often non-existent (Stewart, 2007). Efforts to employ extra women into academia, especially into STEM disciplines, ought to persist in efforts to recognise and eliminate gender prejudices influencing women, despite of their family configurations (Kimberly, 2012). Female learners' improved ambition relating to their prospect employment may also be described by novel materialism and realism (Francis, 2010). Women who valued power and altruism perceived more gender discrimination within their department (Watt, 2013b).

Gender disparity in earning prospective are significant because women are expected be single, widowed, or single heads of households hence needing to sustain themselves and additional dependents monetarily lacking support from a partner or significant other (Meece, 1990).

In nearly everyone parts of the world, women lack representation in engineering, which has commonly been considered as a masculine domain (Gupta, 2012). Female learners should be prepared to challenge the social consequences of studying technology and they should to be reassured that selecting Technology does not represent a loss of femininity (Roger, 2000).

From a feminist perspective, conclusion advocates a move in students' views concerning gender and aptitude at a range of subjects and to a smaller degree, regarding their subject preferences (Francis, 2010). Female learners' improved aspiration, joined with a sentiment that opportunities in the place of work are slanted against them, has offered female learners with novel inspiration for attainment at school (Francis, 2010).

Paying more attentively, acutely, and candidly consideration to female learner's voices and desires, as well as involving them as combined stakeholders in choices that family need to make regarding career choices for themselves. It would be expected that opportunities be generated for these learners to converse about sexual characteristics individuality within the school. Adults can arbitrate to encourage harmonious conclusions to these considerations.

Learner's academic experiences drastically influence self-efficacy and outcome expectations, ability and aptitude (Ferry, 2000). This will influence the learner's occupation and educational progress and will have an effect on the subject selection which will in evidently influence the learner's occupation choices. According to McCoach (2001) these educational self-perceptions along with inspiration and self-ruling according to emerge to be a stronger forecaster of educational attainment as opposed to the learner's approach towards school or educators. They continue to say that learners with poor educational self-images, inspiration and self-control will unfortunately be under achievers opposed to learners with good educational self-images, inspiration and self-control will be top achievers. Learner's self belief manipulates their actions, approach, attempts, determination, contemplation and emotional response.

Lewis found that some learners prefer high school vocational technical education as a result of numerous years of ineffective educational experience, which has influenced them not to aspire to college (Lewis, 2000). A negative experience in a particular subject may have the learner avoid continuing that educational path. Lewis explains that the learner's educational surroundings in the technical lessons places the learners in a content environment oppose to the academic surroundings. Lewis (2000) continued by saying that the technical learners were not fond of or underperformed in the academic subjects resulting in a low self-esteem coupled to poor performance. These learners would steer clear of careers that required university degrees.

Numerous young women are unwilling to surrender their individual lives in search of their careers (Milgram, 2011). Female learners' observations of Engineering were not informed by teaching or skills, but were as an alternative fashioned by accepted delusions and misbeliefs (Andrews & Clark, 2012). Andrew continues to state that the nearly all prominent aspect determining female learners' awareness of Engineering is lack of information and exposure to the discipline. When unconstructive messaging is combined with the present workplace realism, a small percentage of women in technology careers will find it easy to observe the value of having an outreach campaign targeting women and girls in STEM (Milgram, 2011).

Stereotypes describing Engineering and Technology as male fields permeate the social and cultural surroundings in which female learners live (AAUW, 2000). They need to take delivery of the significance that women know how to work in STEM careers, be successful and content in their employment being while still having a personal life. They need to take delivery of this message repeatedly. Educators provide privileged behaviour to boys in science lessons, using instruction methods that support the male learner's academic styles. Female learners are seen to have limited capability to accomplish in science (Reay, 2001). Hardly any women scientists are successfully portrayed in science textbooks.

Andrews spoke to female learners that said: *"I didn't really enjoy physics... It wasn't as interesting, it just wasn't. You learn physics but it's not practical based as much and it's not as interesting... It's things you can't see whereas I prefer things you can see...."* (Andrews & Clark, 2012, p.2). According to Andrews and Clark the education system is as a pipeline that

leaks and that the causes for this leaky pipeline is the shortfall of specific information relating to these subjects, negative stereotyping about technical workers. Sanders reminiscently included technician-level occupations in pipeline deliberations, given that nearly all women are not college educated (Sanders, 2006).

Data for South Africa show that about the same number of female learners as male learner attend schools (Department of Education, 2004). Female learners working in single-sex groups tend to be well-organised, forthcoming, and helpful. They tend to converse more freely and believe that educators show additional support and provide dedicated time for them. The female learners feel that boys disturb classroom discipline (Salminen-Karlsson, 2007). Female learners like working in single-sex groups. Some of the girls declared feeling more comfortable with women than with men (Bamberger, 2014). Mixed groups are seen to be extra enjoyable since learners had a broader range of diverse personalities to work with (Salminen-Karlsson, 2007). Salminen-Karlsson (2007) continues to explain that the female learners enjoy the communal contact in the group and take pleasure in getting occupied in the decoration of the artifacts and it seemed that they are more interested in the appearance of what they produced, while the function seemed to be more important to the boys.

Boy groups that have male educators (the majority technology educators at school are men) see it a normal to have a male educator. Female educators in a male dominated subject like Technology experience problems of authority. Supporting good inter-personnel skills between female and male learners will be advantageous in their future technical instruction and careers. This will enable older female learners to become spokespersons to other young female learners coming through the school system. One way of promoting women in technical careers is to place pictures in the classrooms and notice boards that represent women in technical careers. Displaying practicals that female learners have made in classrooms will also motivate learners to perform well.

This increase in female ambition can be explained by some of the various economic and social changes which have taken place (Francis, 2010). In the previous decade, change has been incremental and irregular in spite of an international tendency towards the mainstreaming of

gender equality. The issue would be to construct procedures into all policies and administrative rather than being focused in a special-purpose programme (Hersperger, 2013).

Female learners complain of pestering and repeated contact with male egos. Brutal and obscure language of technology like “hard drive” as well as “hard disc” are seen as bothersome to female learners but seem to be invisible to male learners. Essentially, it is not the technology as such that female learners evade but the cutthroat, masculine surroundings that encase technology. Male educators tend to have appealing debates with learners as opposed to female educators who acted as supporters. In a masculine field like technology, females are seen as intruders. When women control male learners, they tend to question the technical skills of the females, especially by the older boys (Salminen-Karlsson, 2007).

To prevent any contact with female learners reserved male learners would withdraw from groups, advocating social and personal factors influencing girls’ motivation in domain-specific ways (Leaper, 2012). Gender awareness and attitudes influences the support that female learners have of understanding technology subjects and careers. Personal influences include gender-related variations in self-schemata and attitudes that can shape girls’ motivation in STEM or non-STEM domains (Leaper, 2012).

It has been stated that more developed countries have an adolescent population that do not regard Technology in a positive way in contrast to less developed or poor countries where adolescents have iconic opinions of a person who has become a scientist or engineer (Chang, 2009). The stereotyped discrimination against female learners which incorporates the underuse of female learner’s competencies could be overcome by arranging various actions to eradicate the barriers that prohibit or delay their development. By eradicating intolerance and enforcing equivalent employment projection. This happens mainly in promotion positions where female learners would be able to achieve greater academic achievements.

2.9 Parental Influences

Both parents but mainly fathers, explained the content of interactive science exhibits more to sons than to their daughters, even to children as young as one (Sanders, 2006). Opposed to this, he continued to explain, that parents were twice as likely to explain the content of interactive music exhibits to daughters as to sons (Sanders, 2006). By discouraging their daughters in the field of science and mathematics at school, some parents adhere to stereotypes. Parents find it difficult to have significant relationships with their adolescence teenagers, hence parents being unable to communicate meaningful with their teenagers. However, the amount of women working in science, engineering and technology shows the consequence of the support provided from parents in the quest of their careers (Steinke, 2004).

Teenagers have great difficulty to steer gender uniqueness and mostly with regard to their own confusion concerning sexuality, their thought and meaning within their family. In the modern society parents lead such demanding lives that adolescents' lives are so devoid of keeping in touch with these adults. It is said that when you are a teenager, you are only able to make contact with your parents on the fly (AAUW, 2001). Affluent parents are able to afford to stimulate their children by involving superior schools, au pairs, additional lessons and extra-curricular activities. Affluent parents are able to indulge their offspring with the most recent technological gadgets like i-pads and high-quality computers as opposed financially deprived parents who are not able to provide their offspring any variety of technology gadgets. The financially deprived parents are also entirely reliant on community education and they depend hugely on family and friends for support.

Children grow up in surroundings filled with stereotypes, including gender stereotypes (Steinke, 2004). In South Africa the downfall of public structures places more strains on families. This causes a greater rift between children and their parents. Parents need to dedicate to concentrated and unselfish communication and contact between them and their adolescent children. Dwindling community spaces and resources for children in the community exacerbate the cultural alienation or disconnect between adults and the adolescent subculture (AAUW, 2001). Otto explains that parents influence learner's career choices the most (Otto, 2000). He states further that the

learner's mother would be the more influential of the two parents. The professions of parents manipulate learner's career aspirations (Walls, 2000). Financial income of parents can hamper learner's further education due to the lack of earnings being able to fund the learner's further education. Otto found that more female learners tend to discuss this matter more openly.

Parents provide guidance in a roundabout way or try to persuade learners into specific career choices as many parents want their children to follow in their footsteps. Adolescents turn to parents as a most valuable resource for courses and high school programme enrolments. A constructive affiliation between parent involvement and educational accomplishment is desired. The problem is that often adolescence is the time where learners get into serious conflict with their parents, having learners feeling alienated from school and their parents, resulting in poor academic performance and a lack of enthusiasm for school. Subject choices selected by adolescents in the FET phase of high school may have a severe consequence on the career that they select as well as their being. In some cases these choices are irrevocable. Careers counselors are in some cases restricted to school leavers or learners with problems, reflecting an instrumental view of careers advice, slotting pupils into perceived vocational paths (Roger, 2000).

Female learners are said to have an unrelenting awareness of technology careers when their parents are professed to have an optimistic approach toward Technology (Farmer, 1995). Learners from lesser socio-economic status families enrolled in vocational classes as an escape of poverty (Lewis, 2000). Vocational information about careers in science, engineering, and technology frequently posted on internet sites via detailed documentations on detailed careers, biographies of proficient women and online guidance which is managed via chat rooms and information notice boards (Steinke, 2004). Steinke continues to state that female learners seek information regarding the lives of various individual and skilled female role models. Research has recognised the significance of female role models to the female learners' and their scholastic and professional accomplishment.

If all the parents, guardians, employers, social media and the community maintain an added constructive vision, female learners would connect with technology more willingly. The female

learners will be able to seek own gratification and contentment and will not have to struggle against opposition or mockery when the female learners select science and technology vocational paths (Roger, 2000). Affirmative action programs allow for more women, especially women of colour, to enter the world of Technology. Due to non-responsive chauvinist attitudes, the achievement of such programmes are confined to the employment setup. Career counseling would sustain the deficiency in awareness that the female learners have concerning career succession in particular in terms of the female learners' potentials and their motivation.

2.10 Gender stereotypes

Internationally the socio-cultural framework of a society's gender segregation is well-established in discrimination that often allows women to have privileged learning and professional opportunities. This is in strong contrast to the possibilities where Engineers are able to perform employment with others and hence assist within the society (Eccles, 2012). Eccles continues to say that in communicating with female learners about what the diverse STEM careers involve and how they are able to permit social involvement (Eccles, 2012). She further states that awareness should be given to potential place of work environments. The purpose of this would be to make the female learners more obliging and well-suited with female learners' and women's goals (Eccles, 2012).

Learners are segregated according to gender parities in school. This starts in front of a classroom when learners line up to enter a classroom. Male learners line up on the one side of the class whilst the female learners line up on the opposite side of the class. Learners still have gender integration in classroom lines (Karlsson, 2002).

Many youth have little to no adult supervision, with single parent and child headed households being in the majority so deprived levels of welfare and health, not excluding high levels of anxiety prevail. High-risk behaviour such as HIV, rape, alcohol and substance abuse, hostility and exploitation leads to lawlessness and the total neglect of the youth. Many youths lack basic literacy and numeracy education and are generally unskilled resulting in limited financial opportunities. General moral standards lead to youth hanging out at shebeens and clubs. This has

left an extensive gap between policy makers and the implementers there-of. This burden is thus passed on to the youth by means of redundancy and unemployment.

An optional course called Techbridge in California, exposed ethnic tensions that appeared within the course group (Sanders, 2006). Sanders states that it appeared that the female learners self-segregated into ethnic groups when they were working in groups and when staff tried intervention activities, it was noted that girls with lesser technical skills and lower self-confidence were at particular risk of dropping out from attempts to force them to cross ethnic lines. Therefore, the main endeavour of the Department of Education is to offer the poorest quintile schools with assets for effective teaching.

Male learners are labelled as being attention deficit disorder (ADD) far more frequently than girls. These boys are commonly placed in individual tutoring programmes; hence learner isolation persists in their choice of subjects and career choices. In some instances the atmosphere of disregard, hostility, and annoyance amongst peers makes education complicated for female learners. Educators are unable to categorise challenging indicative behavior in learners to be receptive to learner needs due to some of the educator's restricting efforts to truly converse with and paying attention to these learners. These learners are therefore missing the support to develop their strengths and skills.

Not only do the female learners face difficulty at home but at school as well. In terms of Technology being a male dominated subject, antagonisms related to gender disparity is reluctant to dissipate. With the implementation of democracy in 1994 as well as modern tendencies towards gender parity, male learners are experiencing feelings of resentment and disloyalty towards female learners who now fill seats in classrooms. According to (Connell, 2006) the conservative policy discourse has great difficulty to integrate this aspect and he states that this should not be overlooked. Connell continues to refer to the current conversion of poignant pattern as the depolarized workplace where the downward trend in the salience of gender divisions and gender solidarities leads to a decline of traditional loyalty. Gender inequalities are embedded in numerous ways in the work progression, society, and schedule practices of schools.

Male and female educators have equivalent elevated motivations including capability values and unselfish “social effectiveness” motivations to tutor at a technical school even though women are more exceedingly inherently motivated than men (Watt, 2013b).

2.11 School influences

The school ambiance fosters a favorable educational location which allows not only a source of social modification but enhances learner successes. An unpleasant educational atmosphere results in an insufficient educational product, lethargic learners and annoyed educators. Some learners go to school exclusively as a consequence of social chance (Moye, 2008). Hence, the firm collective sources that a school is able to afford to its learners, bar academics. Contrasting to this, a school is able to obstruct community amendment. Addressing school environment situations as well as the societal and emotional progress of learners remain the secondary target of many schools (Preble, 2011). The societal benefit of Technology is that learners are presented with a chance to work in groups giving them a chance to jointly complete the task at hand, thus creating an opportunity to speak to each other. This not only improves school socialization, but it helps to “fill” possible academic “gaps” in learner’s education.

Industry is currently experiencing a professed shortage of technologically skilled labor force so focus has shifted to taking an interest in the schooling of primary and secondary school learners by industry. Technology centers are recruiting females thus filtering the poor female representation out. Most of these centers produce the curricula to fulfill their own needs. At the school level, the technology must be offered adequately and fascinatingly to the learners. If not, no learners will involve themselves in the activities. Technology makes use of mathematical and scientific theory to allow learners to judge and solve problems and not only making use of their specific skills but also experience.

In South African technical schools all grade 8 and 9; the learners are exposed to Technology that combines Mechanical, Electrical and Civil Technology. At the end of grade 9, learners must specialise by selecting one of the trade subjects and continue with this subject till the end of matric. Mathematics and Engineering graphics is compulsory. Bar the technical subjects,

Computer Aided Technology (CAT) can replace with Science and Mathematics Literature can be replaced with Mathematics. This means that the school limits the learner's subject choice for subjects such as Life Science and Geography.

Decisions made at the school mirror the management's ideas of what would benefit the learners as well as the possible trends that occur within the school. One year Mechanical Technology is extremely popular and then the next year it is Civil Technology. The school needs to adapt staff and lessons to accommodate the trends.

A school could manipulate subject choice by framing subject packages in specific categories. The manner in which timetabling is structured for Science shaped a gendered set-up in various subject combinations (Connell, 2002). Timetabling of subjects like Science could assist and support gender segregation in subject choice packages which allows comparable learner intakes to differ considerably in the percentage of the learner cohort selecting specific subjects (Davies, 2004). In some female-only schools technological subjects are not offered but rather 'accomplishment' subjects such as Art and Music (Raftery, 2001). Technology is therefore gendered in these schools, resulting in gender characteristics being entangled with the labeling of Technology as a masculine subject.

Educators manipulate learner's perceptions of diverse subjects. In technical schools, the female learners often rely on recommendations from school staff when they make subject and career choices. Recommendations given from the educators could support or dispute gendering of Technology. Educators control the accomplishment of learners. Learners viewing their educators in a helpful manner lean towards displaying mentored behaviour (McCoach, 2001). Learners will educationally lag behind their peers if educators teach in an unsuccessful way as this will discourage learners to continue in a technology career. In many socially traditional schools, educators aggressively discourage female learners to follow in technical orientated careers. Some educators withhold information about technical careers to manipulate the learner's career choice.

Learners enthusiastically and frequently build their gender identities within fastidious societal settings (Connell, 2002). Learners must be given the opportunity to be provided with

opportunities to explore various options and understand the correlation as to what they are being taught at school opposed to what career paths are available. In this way, stereotyping of certain careers being masculine will be able to be challenged by female learners. Employing female educators will facilitate the mentoring that is needed to show female learners that Technology is not gender prejudiced.

Technology educators should congregate to confer on guidelines regarding gender equity. This could be done by diverse forums, mentored workshops being supported by external departmental facilitators and subject meetings, instructional lessons and restructuring of laboratories. DVDs and promotional resources that intend to expand female learner's knowledge of school knowledge vs. career choices in technical career should be integrated into the curriculum. In 2003, Cell C introduced a special day into the school curriculum to help educators provide tools to assist learners with knowledge about the world of work, as well as with basic skills to enable them to face their future with confidence (Selibi, 2012). Female learners are taken to various engineering companies where the learners are shown videos of the company and they are then taken to sites where engineers show them what exactly happens on these site. These companies offer a forum to the female learners to ask questions and talk to workers regarding pros and cons of the career at hand and they also offer support groups for the female learners.

Educators would have to be trained and obtain new resources to be able to focus on amending the curriculum to encourage female learners to choose a specific Technology subject. Educators must not be oblivious to male learner's unacceptable behaviour towards female learners therefore class rules and equal opportunity for both genders must be implemented. Educators can make use of innovating ideas like competitions and expo's to promote individuals to perform within their own spectrum of capability. Annual Open Day are offered by technical schools where grade 7's visit schools to see what the school offers in terms of technical education and learner's projects are displayed for everyone to see.

Information evenings for the various grade parents at the beginning of every year provide parents with information about what is expected from learners that year. In the FET phase, parents are informed of subject choices, the career possibilities and what symbols each subject requires for

various career opportunities. A career evening is held whereby a variety of companies exhibit courses and career choice opportunities as well as offering applicants possible bursaries to study. Technical companies are invited to talk to learners about career opportunities. Including female engineers in the talk shows learners that gender stereotypes are challenged and that women can be successful in a technical field. One of the most popular questions that the learners ask is one of financial projection and promotion implication of the specific career.

More information regarding the various electives that are available to female learners must be presented to them by guidance counselors. The learners must be directed as to how their subject choices will benefit them need to be explained to them. Many female learners are unable to go to universities and it is therefore vital that they are encouraged in choosing technical subjects especially if they show an interest in technical careers. Guidance educators need to liaise with technical educators so that they compliment and support each other. They are also able to advise learners to apply for possible bursaries.

Team teaching to introduce female Technology educators to more learners could help break down stereotyped behaviour. So much more needs to be done, especially in encouraging young scholars and institutions that offer career and technical education to voice their opinions and concerns affecting their practice (Asunda, 2008).

The gap between academic and vocational subjects inhibits learner's choice of careers (Southwick, 2000). Learners acknowledged the unrelenting gender-typing of certain areas of the curriculum and career paths as an impediment to boys' development (AAUW, 2001). Many learners turn to technical subjects or a technical career due to failed learning experiences. Learners are unable to cope in an academic school, opting vocation and trade related careers (Lewis, 2000). Technical schools have a poor reputation and learners are normally classed as "practical" or lower functioning learners.

Technical education has always been highly specialized and directed towards a specific career with a clearly identified basis of knowledge and skills (Chang, 2009). Rapid shifting advancement of technology requires the alignment of the educational curriculum. Replacing the

Apartheid curriculum with an education that was human rights-based created a pressing progression test for the post-Apartheid regime with regard to technology.

Historically, technical schools qualifications existed as an entry level to further post school education. Learners would continue with an apprenticeship in a specific trade which combined trade related theoretical and practical components. It was common knowledge that if learners completed matric in a technical school, that depending on how well they passed matric, the learners obtained a qualification from N1 to N3. Should learners have left school earlier, for example standard 7, the learner would have had to start at N1. This type of education prepares the learner holistically for a trade.

Educators are the active agents in the perceived and operational level of curriculum and they are thus the transition between the intentions of education and its recipients (Chang, 2009). The curriculum content and the way the educator interpretation thereof, formats the learning experience of technical learners. Educator's curriculum understanding involves identifying fitting methods to present the subject material to learners and the interpretation of the subject material purpose.

Previous policy makers did not consider all the factors that influenced teaching when they tried to implement a homogeneous curriculum, national assessments and manage educator's productivity (Van Driel, 2001). Educators limited working conditions and their interpretations of the syllabus could possibly influence deviation amid the educator's own intention and what was ideologically stipulated to be taught by the curriculum.

2.12 Tertiary Education or Employment

Due to a varied academic outcome from school throughout South Africa, universities made use of examination boards to reassess their applicant's academic ability. Universities make use of entrance requirements to filter access learners from a specific career course. Men still epitomize a majority of the workforce, particularly in technology-oriented areas; the number of women in these areas and all levels of the organizational hierarchy continue to rise (Venkatesh, 2000).

While participation rates for girls in technology subjects are low having traditionally been identified as "masculine" subjects, the teaching methods and classroom atmosphere in technology education differ significantly from math and science classes (Silverman, 1996). Excluding theoretical instruction, the practical part of Technology is taught in a workshop and in very hands-on projects in terms of learners using tools, machinery, equipment and raw material. Depending on the task that has been set out, learners work independently or in groups to complete a project. Female learners portray technical career barriers as being historically sexist. Schools need to provide female role models as well encourage educators to conquer stereotyping technical subjects so that more female learners would be able to foresee themselves working in technical careers.

Female learners feel that the male learners are given the opportunity to be "technical" from an early age and that it is socially acceptable. Very few women are portrayed in technical careers technology seems to attract very few women. Some of the female learners felt that within a cultural context, technology is still seen as a non-traditional career for women. Although many female learners feel that they have no prior experience of technology, Due to urbanisation, many female learners who live in flats in the city, lack technology experience. The female learners do not spend lots of time with their fathers who would have been able in assisting the female learners learn more masculine skills like changing a tyre or using any tools. Therefore many learners lack confidence in their abilities to take part in Technology practicals. Female learners see Technology as "dirty" careers as the technical career entails hard labour and getting dirty and "working with their hands".

Female learners are not aware of what Technology careers embrace. During a Work Experience programme that the school introduced for the grade 11's, they were expected to find a technical subject related part time job at a company. The learners work there for a time period of a week and management has to forward a rating document to the school regarding the learner's work ethic. Due to numerous problems like transport and safety, many of the female learners failed to complete the technical work experience.

Job shadowing during this Work Experience time period allowed female learners insight into technical careers. They observe that a technical subject is multi-faceted and that multiple career opportunities exist within one technical subject. If a learner does not like the one type of career, the subject offers many other career opportunities. The mentors may encourage and impact on the interpretation that female learners have of technical careers. A new found interest in technical careers can be created when the female learners are afforded the opportunity to see the reward of selecting these careers in terms of finance, particularly learners from disadvantaged communities. These female learners, who hail from low income communities, and chose technical careers, may be of benefit to the low income communities (Schuette, 2009). These technical qualified female learners contribute in shifting educational attitudes within these communities.

Technical educators, especially female technical educators, as well as mentors from technical companies, are able to change the stereotyped image of women in technical careers. The companies that the learners of this research project worked for during their Work Experience, decided to recruit the learners that impressed the company. In many cases limited work experience does not engage in steady, dynamic involvement in the actual which results in the female learners losing focus and interest in the technical career. Continuous mentoring will uphold long-term involvement and encourage female learners to continue in a technical career. These mentors creates a societal framework that fosters awareness, involvement, and self-realisation associated to Technology by encouraging the female learners to think contemplatively, query efficiently, and extend individual accountability for her personal learning'' (Esprivalo-Harrell, 2004). Female mentors would not only strengthen the self-reliance of female learners, but aid female learners in comprehending miscellaneous delay and coping strategies by discussions with the mentors.

Due to the lack of prospect for qualified female networking as well as being deferred in being part of the masculine network, restricts the insertion of female learners into possible technical careers. It is vital to offer female learners a chance to network and sustain networking systems. In Coleman's article on the 'global glass ceiling', she states that corporations should not try to reinvent methods that have already been perfected by others to simply appear innovative and

committed, but that they should look to partner with the many excellent nonprofit organizations that have been working on issues of women's empowerment for decades (Coleman, 2010). She also states that it has become accepted wisdom that improving the status of women is one of the most critical levers of international development.

Many female learners receive very little to no career counselling regarding technical career paths. The lack of technical experience and application outside female learner's school environments (home) made it difficult for these learners to have a clear insight into technical careers which would suite them. Some girls reported that they were discouraged from taking technology education (Silverman, 1996). In the researchers school; the technical subjects are separated into class sizes for each technical subject. These technical subjects can vary from school to school within the district. In grade 8 and grade 9, each learner has the opportunity to experience the theoretical as well as the practical side of a technical subject such as Mechanical Technology, Civil Technology and Electrical Technology.

Female learners who decide to study in a technology related career discard the stereotype that these careers are masculine and reserved for their male counterparts. These female learners see themselves as "path breakers" and that they are as capable of succeeding in this non-traditional career. Female learners are frequently unwilling to take subjects where there are limited female learners. Some female learners find it unbecoming to imagine themselves in nontraditional careers. Many female learners fail to recognize their abilities as their self-confidence is hampered by their peer and relatives possible reactions. The high risk combined with the physical burden of their career choice, the fear of not being able to move or lift heavy objects and possible injury limits their career choice.

The historical discrimination against women in technical careers does not encourage female learners to select a technical career. Their monetary reality of underpaid female technical careers places another limitation on the career choice. Female learners seemed unaware of salary or promotion prospects of traditional careers for women and are less concerned with economic realities than male learners. Female learners have misconceptions about the extended time period

that women are likely to spend working, the level of income they can expect and the comparative salaries of customary employment for women (Silverman, 1996).

Bringing Up Girls in Science (BUGS) was an afterschool programme that incorporated 4th and 5th grade female learners that provided reliable education experiences in ecological science as well as expansive female mentoring opportunities to try and amplify the participants' scholarly attainment in Technology (Tyler-Wood, 2012). The outcome showed that the female learners who participated in the programme had advanced perceptions of technical careers.

Promises of a technological revolution and rapid economic development will seem hollow if children and adolescents are dissuaded from scientific / mathematical fields of career by teachers who chose teaching as a fallback career when they were not able to get into their preferred degree programme (Watt, 2013a). Many educators who teach Technology, have no formal training in technology and teach the subject purely as filler to an incomplete teaching time table. The department offers in-service training to educators teaching Technology. Due to limited numbers of educators at certain schools, educators are forced to teach a variety of subjects.

Men and women choosing to become STEM educators do not differ along gender lines any more than other potential secondary educators (Watt, 2013b). Variations in textbooks and educators own interpretations, limit the clarity of curriculum that has been laid down by the department. Schools also have limited access to resources or purposely designed and equipped workshops. This type of study inhibits practical education thus lessening the learner's options of possible employment due to the lack of proper technical training. Another problem that occurred was the resignation of educators during the progression of the new education system due to poor functioning circumstances, lack of discipline and low morale. Many were highly qualified and experienced. Redeployment of educators became necessary, especially in poor and rural areas, but educators were unenthusiastic to go. Educators preferred to move to the former model C schools which were the best equipped with reputable academic reputations and well established programs.

Advantaged school Governing bodies were able to employ additional educators to preserve small learner and educator ratios. In disadvantaged schools, considerable overcrowding of learners and

educator ratios existed to the lack of funding for additional educators. The lack of parental support and attrition of discipline management did not favour good education in classrooms (DoE, 2002) Curriculum 2005, the arrangement of continuous assessment and the Integrated Quality Management System (IQMS), have made great demands on educators' time, with educators feeling that their workload has increased "a lot" since 2000 (HSRC, 2005).

When educators improve on their qualifications (by attending and completing courses or education modules) educators progress in points which would allow for increased salary or promotion opportunities. These courses must be re-organised by the Department and monitored by the South African Council of Educators (SACE). The government has introduced a system called Integrated Quality Management System (SACE) to observe and evaluate educator output. Educators need not to be promoted to have an increase in salary on an annual basis but a numeration increase is linked to the educator's evaluation. This system, the Occupation Specific Dispensation (OSD), was initiated by unions to support educators financially.

Should educators be supported with multiple resources and information about career opportunities in SET, these educators would be able to do more to overcome the unwillingness of employers. These employers are seen as key cohorts for schools and some are prepared to perform as cohorts in expanding the pool of probable workforce (Roger, 2010). Many women in the construction industry are busy breaking down some well-established societal and cultural barriers. This is fundamentally owing to unanticipated and volatile changes in the national and global economy (Baruah, 2010).

To keep learners informed and motivated, it is vital to try and ensure that the learners leaving school are connected to possible careers opportunities. Associations and partnerships between schools and industry should be ensured. In grade 11, learners are instructed to obtain "Work Experience" in their December holiday. This is normally done for a week to two weeks at the learner's choice of company. An appraisal form has to be completed by the company and brought back to the school on the first day of their return to school. Technology departments motivate learners to obtain more experience in the different electives of the subject. In 2004, the Israeli Ministry of Education announced the BAMOT (acronym of Girls for Science and

Technology, in Hebrew) project, aiming to encourage female students to choose science and technology by using the collaboration of secondary schools and high-tech industry companies (Bamberger, 2014).

Owing to high unemployment in South Africa, it is wise to create a “contact” with industry by impressing them with a learner’s work ethic. This has in the past stood in good stead for many learners where they were offered learnerships and bursaries to continue with their studies.

Practical education in a classroom does not accurately reflect a true simulation, thus the experience that the learners obtain is seen within a “working” parameter and not in a school context.

Through lectures and tours in laboratories, the students were exposed to the women’s work (Bamberger, 2014). Bamberger continues to state that following these visits, the girl students expressed appreciation to the women scientists as smart and creative but their beliefs in their capability of dealing with STEM in the future were reduced. The bridging of this type of information gives a learner continued motivation to study at school. There is some evidence that long-term exposure to engineers in the classroom seems to improve students’ perceptions of engineering (Fralick, 2006). Industry must therefore liaise with the Education Department and schools, for them to create a joint venture for both theoretical and practical in curriculum design. In my school, industry is invited to give talks to the learners regarding various career opportunities and studies. Some companies donate various machinery and equipment that is used for educational purposes. The onus is also up to the educator to approach industry and request donations or help of sort.

With the current world economy, funding and resources are being reduced or cut altogether from almost every avenue of life (Roger, 2000). Some research found that career and technical education (CTE) provided occasion for learners to complete high school, gain workplace readiness skills and transition into post secondary education (Bray, 2010).

The provision of skills training and certification for women in the construction sector is a important step forward. There is definitely cause for cautious optimism that women will be able to transform their training into sustainable employment opportunities. However, it would be

essential to exercise caution in this regard as many attempts in the past, in both developed and developing countries, have tried to generate opportunities for women to obtain skills. Although there is no doubt that this can be done, a great deal of evidence suggests that it is easier for women to acquire the skills than to subsequently find employment as skilled workers (Baruah, 2010). There has been remarkable economic growth in India over the past decade. As a result of the present construction growth in urban India, skilled women workers are increasingly finding work at comparable wages with men (Baruah, 2010).

Under the banner of Gender studies it has become many peoples' intention to show how the construct of gender affects idealism. It is my understanding that gender can be viewed as a social construct in terms of women in development. This study will draw on social construction of gender theories. This structure focuses on the advancement of a person's well-being, which encompasses continued existence, protection and independence.

Gender as socially constructed rather than as biologically determined has been the focus of much research. The stereotypes of macho masculinity and girly-girliness seem to be seen by learners as default positions which signify that learners construct their identities in conformity with these stereotypes, unless they have strong reasons to do otherwise (Paechter, 2010). According to Archard (2013), constructions of femininity suggest that women should be communal, relationship and family orientated, and as such, women are expected to lack the aggression and power synonymous with men's masculinity. On the other hand men are predominantly portrayed as well-rounded, active, hard-lined and involving the leadership of others; while femininity is mostly constructed as well-rounded, 'healthily empowered', romantically wistful, pure, seductively attractive and involving the selfless service of others (Wardman, 2012). Skelton (2009) argues that the tensions in adopting the masculine position of educational achievers in line with being a proper school female learner is exposed in the comments of the high achieving female learners and preference is given to locating themselves within appropriate gendered subjectivities.

According to Fox (2001) the existence of a gender hierarchy is due to the fact that women and men are not merely social groups who are impartially distinguished from each other but they are

differentially ranked and evaluated, usually according to standards of masculine norms and behaviour. Gender stereotypes imply that the male and female learners exhibit idiosyncratic characteristics which suggest their taking on definite conduct performances and having diverse capabilities. Rydstrom (1999) states that this would result in limited expectations of female learners of themselves and the diminishment of their self-esteem which would instil a heightened sense of obligation to their families (Rydstrom, 1999). Naugah (2013) explains that these gender differences are a common factor in socialisation which emphasises assumptions and expectations of female learners as future wives, mothers and employees. It is the parents who set the bar for these learners regarding expectations and wishes having considered the apparent association with conventional orthodox thinking of masculinity and femininity.

Wardman (2012) implies that it is these stereotypes that market the product of schooling to potential clientele. To alter the gender discrepancy, one would have to permutate different socialisation processes and equal opportunity policies (Wajcman, 2007). Picho (2013) explained that great progress with regard to revealing the factors that intercede and moderate stereotyping have been made but feels that the literature is plagued with insufficient replication studies investigating these factors more fully. According to Maass (2003) the stereotype hazard seems to be a forceful and prevalent phenomenon but that individuals are not uniformly vulnerable to its debilitating effects (Maass, 2003).

Many feminist agree that women function diversely to men. The women's way of knowing can support several changes needed in the prevalent phenomenon. Ingram (2014) stated that female learners exposed their awareness of how education is both empowering and a means to a better life, as well as a hierarchical structure that reproduces societal inequalities. Physical differences caused by inherited or genetic factors are not the motivation for inequalities, but rather the gender differences cultured through socialisation. A phase shift in social trends including labour markets and gender ideologies have redefined the description of an intellectually educated female learner (Clark, 2009). Many feminist have proved that the social construct of women is to focus on the tangible and convenient ways of solving issues on a daily basis disallowing these women the opportunity to venture into other realities (Susinos, 2009).

If young female learners are to continue to exist in a society where gender segregation and stereotyping have to be challenged or altered, Croll (2007) states that reorientation in familial entitlements or expectations and the increase in female learners' rights needs to take place to ensure development, protection and participation of the female learners.

In most countries, children's policies highlight issues like educational access for all children (Russel, 2003). Unfortunately, many children are limited by socially mediated regimes of meaning and representation, by dominant and normalizing value hierarchies (Seele, 2012). He continues to state that a range of influences occurs and that the learners have to vigorously deal with them. The learners would have to inventively investigate with assorted norms and methods to establishment their societal worlds.

In most countries, children's policies highlight issues like educational access for all children (Russel, 2003). Unfortunately many children are limited by socially mediated regimes of meaning and representation, by dominant and normalizing value hierarchies (Seele, 2012). He continues to state that an assortment of influences occurs and that the children have to dynamically deal with them and that this occurs by the children ingeniously testing diverse norms and manipulating and arranging their social world.

Learners from various backgrounds are not all able to achieve enhanced assessment grades (Richards, 2012) therefore Camfield (2009) stated that policymakers should investigate context-specific interventions to "open the window of education".

Various class and ethnic backgrounds are influenced by high-quality education. Clark (2009) stated that both the parents and learners express a common concern about good education structures, whilst Skelton (2009) implied that the notion of social class and ethnic minority status shapes educational experiences. The aspect of how the social construction of a school and the professed patrons of the school will shape what is understood as desired femininities is questionable (Wardman, 2012). Gender stereotyping has shown that female learners were labelled to excel in subjects like nutrition and fashion compared to male learners who are seen as intelligent in the sciences and agriculture (Picho, 2012). In many of the cases where female learners enter the non traditional subjects, they feel that they have to renounce their femininity to

take up these subjects (Wajcman, 2007). Many individuals create their self concept via relations with other individuals in a social milieu. This creates and involves aspects of belonging and connectedness as well as distancing and drawing boundaries (Seele, 2012). Archand (2012) stated that many female learners find it challenging to cope with experiences that are outside their expected gender domain with stigmatisation of these female learners creating exposed and influential impacts of stereotypes (Maas, 2003). For these female learners it becomes a matter of manipulating and bargaining their position in existing gender norms (Russel, 2003). However, many will not be able to modify the stereotyped “norms” of learning and employment (Fox, 2001). In both developed and under developed countries many attempts have been made to incorporate women’s empowerment as an essential element of monetary strategies (Banerjee, 2012).

Croll (2007) explained that the concentrated prejudice against female learners became a focal point in 1990 when many attempts were made to focus awareness to the extent of discrimination. Croll continued to state that a generation division amongst women is one of the causes why the amplified interests to the rights of women were not as effective. Although education is a right to female learners, it also enables these learners to access enhanced wellbeing, monetary outcomes and potential opportunities (Mango, 2008). In response to multiple factors, male and female learners create their own identity (Warrington, 2011). A phase shift in developing learners to become dedicated to society and taking accountability for themselves has become an expectation in schools (Skelton, 2010). Male and female learners construct and negotiate their identities in response to a whole host of factors (Warrington, 2011). Skelton continues to state the irony of this is the social constraints that are still evident when female learners try to choose nontraditional career paths.

Many female learners augmented ambition regarding prospective careers has been related to materialism and realism (Francis, 2010). Constrained by gender, many ordinary and underperforming female learners aspire to superior living standards (Skelton, 2009). In many cases, poverty and gratitude becomes the lumber of these female learners (Croll, 2006). Families place pressure on the female learners to contribute and these female learners feel that they are indebted to their family. Hence, many female learners who attain academically tend to leave their

residence which leads to a belief of seclusion and depressingly affected interaction with their families and acquaintances (Richards, 2012). Croll (2007) also stated that families hold different valued approaches to a daughter as opposed to added members such as a daughter-in-law or wives.

Career choices made by female learner are still of great concern. Croll (2007) explains that internationally female education has received complex support from the United Nations, the World Bank and other development agencies. Gender dichotomy in employment and career choices is of concern due to the assumption that gender rather than capability is the reason for specific career choices which by implication, influences female learner's prospected existence (Francis, 2010).

Many schools can sway subject choices by framing different subject packages as well as educator interaction which represents school gender regimes (Connell, 2002). Smyth (2009) explains that the many various subjects, the way it has been combined and a school's timetable outlay can moreover support or defy current gendered patterns of certain subject choices. Schools and educators are responsible for embracing change and enforcing tolerance. Inclusivity would be possible if the educators commit themselves to the formation and cultivation of a setting where differences are embraced (Warrington, 2011).

Croll (2007) implies that schools support and tolerate gender prejudiced concepts and that they have exploited female learners. Hence the media underreporting this type of occurrence of perpetuating gender stereotypes. Schools tend to focus on educational rather than vocational attainment. Female learners are limited to stereotyped subject and career choices which hampers their career options and aspirations from a very young age (Richards, 2012). Limited information regarding required and specific qualifications for vocational training and careers impacts on the perceptive knowledge needed to make informed choices regarding vocational careers for female learners and influences their career choices (Francis, 2010). According to Richards (2012), female learners who are given the opportunity to ascertain what their own needs and desires are and how this is influenced should commence in primary school and followed through to the high

school. Female learner should be informed about trends in career choices as well as employment sector (Francis, 2010).

Ireland has been a prime example of high schools having a certain degree of discretion in deciding what subjects to offer and the configuration of subject choices for the learners (Smyth, 2009). Budget restraints of schools often limit supporting programmes based on the requirements within the society and attainment of the paramount result for the utmost amount of learners (Hersperger, 2010). Female learners are officially included to former stereotyped masculine technical domains (Stepulevage, 2001).

Smyth (2009) states that gender disparities with regard to subject choices are seen as mirroring the diverse stages of interests and apparent abilities within specific subject areas. Smyth continues that the historical heritage of female education and gender stereotyped subjects have been one of the reasons why single-sex girls' schools do not offer Technology subjects. Female learners taking Technology subjects are seen to taking on a masculine identity due to the language and expressions used in engineering (Walker, 2001). When children hear and see specific gendered behaviour they tend to reflect the stereotyped notions by acting in a male or female notion (Smyth, 2009). Both male and female learners enjoy technology subjects and can be fascinated by them due to the practical, creative and self-regulating assessment processes that embrace this subject (Zuga, 1999). When female learners do not take part in technology subjects, they lack developing and processing skills which could be of benefit to them later in their lives.

It is no new concept to educate women in technology, to support their personal conducts of knowing and capability. It is mankind that alters the disciplines of the subject matters and it needs to be restructured as to meet the ever changing needs of those involved. Educators need to be in the frontline of change by constructing classrooms whereby active learning takes place. It is vital that the educators meet the needs of learners in the classroom. As facilitator, the educator should keep up with societal fluctuations and integrate those ideas into their classrooms. Mentoring learner's individual progress will support change in their attitudes and behavior. Hill (2003) states that various countries and provinces use Technology as a combined subject with Science and this could lead to learners perceiving Technology to be an applied science

subject. Technology is not subsumed in this way. However, both parents and learners gauge this as a lower career in the hierarchically employment rankings (Clark, 2009).

Owing to the disparity between male and female learners, a national phase shift has been implemented whereby female learners doing Maths and Science, has been acknowledged for their achievements (Terrazzas, 2011). The curriculum now provides a compulsory work experience which promotes further support for the subject choice (Roger a, 2010). Lamb (2000) explains that when syllabi adjustment is as rapid as legislation allows it to be, new stereotypes in new-fangled ways will present itself to the already excising old stereotypes. The way in which women understand has great significance for technology educators and is able to present reservation and disperse the supremacy of masculine rational within Technology.

Primary school educators experience problems in terms of the technology aspects that encompasses this unified curriculum method. The educators' lack of knowledge, familiarity and comfort level hampers their performance and the learning experience of learners in their classes (Hill, 2003). Due to the lack of training these educators experience, they are forced to take ownership of the subject by way of their own individual experience and understanding of gender issues (Skelton, 2010). In many urban schools, learners in a classroom are subjective to various social backgrounds, cultural, tribal and social stature. This places a huge demand on educators who have to integrate all these social issues into a technology experience (Chetcuti, 2012)

It becomes the concern of a school to mediate the strains that occur amongst the resident cultures and academics and to establish a philosophy that would allow learners not only to maintain the tolerable images amid learners but also to achieve academic excellence (Warrington, 2011). The seemingly different way in which female learners learn, approach work and succeed in Technology must not be misjudged by educators (Ginns, 2010). The school and its educators should be able to challenge the school diminuendos that influence the creation of gendered prejudices and eradicate any possibilities of inequality (Susinos, 2009).

Numerous women from many different academic careers have teamed up with educators to introduce feminist ethics in their schooling. It is the lack of this support that would buffer the concept of social uniqueness that advocates close, helpful bonds to learners in STEM subjects

(Robnett, 2012). Project designs that incorporate awareness and understanding of female learner's ways of knowing should be considered when educators plan lessons. Educators should be able to recognise and consider ways of engaging female learners in the understanding, practices and philosophy of Technology (Ginns, 2010). Technology educators should investigate various and exclusive methods that would allow the female learners to express their ideals in non-intimidating behaviours by means of a permutation of various educational activities.

Home orientation influences female learner's ideas regarding gender-appropriate roles (Schuette, 2009). Croll (2007) explained that in a community, the various scholastic and health amenities are not as important as the approaches, conduct and selections that parents have towards the need for food (Croll, 2007). Due to the fact that female learner's stay at their family home is seen as short-lived, luminal and provisional. Male learners therefore enjoy diverse privileges in the same home setup.

What is imperative to emphasise the domestic aspect which is habitually absent in policy and curriculum construction or application (Croll, 2007). Female learners value their parent's opinions more than their own (Watt a, 2013). Due to modern values systems the primary role of mother has now been extended to in some cases as the bread winner, as well as the role of the father who has become more 'hands on' in the family setup (Skelton, 2010). This offers a source to create a conglomerate where the mother, father and rest of the family mutually propose educated provision for the female learners, guaranteeing that the suitable assessment and vocational directions are chosen and appropriate skills are provided (Roger 2000). Clark (2009) explained that his research showed that educational selection was a sensitive and tailored matter that often called for parental ambitions and anticipations. Naugah (2013) also stated that where a parent stalwartly embraced science and technology this could lead to the growth of constructive outlooks to science and technology by female learners.

Richards (2012) explains that prevailing societal influences can influence female learners' ambitions. Robnett (2012) also states that peers influence female learners who pursue STEM subjects in secondary and tertiary education. Their peers judge these female learners as being 'different' in terms of gender norms by doing 'male' and doing 'female' activities in school

(Warrington, 2001). The observation of appearance, character, comportsment and skill is part of peer judgment. Continued peer observation in terms of skills development focuses on these female learners' educational performance and ability to cope and regulate their personal education program (Archard, 2012). Ginns (2010) reported that female learners tend to pursue holistic and profound understanding of possible repercussions when they work on fine to detailed technology projects opposed to the added forceful and troublesome conduct of male learners (Arms, 2008).

In all single sex schools, the likelihood of female learners transforming to gender stereo-types anticipations are limited and they are therefore capable of more competitive performance amongst themselves (Archard, 2012).

Education departments should be able to assess whether female learners learn contrarily to the male learners in technology subjects. The education department should then address the variances in education so that the stark lack of female learners could be increased. Arms (2008) explains that the identification and recommendation of female learners in vocational education is entrenched in societal values where male learners are put on a pedestal as being rationally and socially in a greater position to achieve in Technology than female learners. Technology educator's possible lack of observation of the female learner's philosophy to enable the female learners to be inclusive in Technology schooling and fashioning Technology needs to be examined. The more female learners enroll into vocational schools, the more advancement towards attaining gender-equitable schooling (Jones, 2011).

Internal and external factors have an influence on the way female learners cope with subject disappointment hence impacting their ability to control these influences (Archard, 2012). Educators should limit the threat of female learners being branded, ostracised or excluded but rather teach them to understand gender issues.

Most work examining the roles of occupational values, discrimination, and mentoring in shaping academic and vocational goals and trajectories has examined these factors in isolation, and thus almost nothing is known about the possible relations among them (Hayes, 2013). The South African history is a fragment of the suffering of race and class that influences female learners

(Bhana, 2008). Muslim women have limited access to statistics involving shared *patta*, moving about spontaneously due to their standing in their family hierarchy (Banerjee, 2012). Karniol (2009) stated that female learners are more likely to engage in undertakings that are traditionally connected with male learners than male learners rather engaging in undertakings that are traditionally connected to female learners. Technology still represents gender disparity and separations and therefore social influences are scrutinised.

The dominance of male learners in technology is supported by the manner in which gender is entrenched in the technology (Wajcman, 2007). These eliminating and isolating constructions can be dissolved by converting it into tangible communications and by changing the depiction of the circumstances or implementing various classifications as more significant (Seele, 2012). The women's way of thinking and knowing has steered changes in the way which technology has been intellectualized and directed to eliminate the intrinsic gender bias in Technology.

Francis (2010) stated that the female career choices have provided reason for apprehension. Owing to the fact that Technology denotes masculine tendencies and the school setup is not always compatible with femininity (Wajcman, 2007). By making use of feminist, ethnic, and status theories in the Technology curriculum it would give voice to the apprehensions of female learners.

By comparing the continuing evaluations and debate of Technology, it would permit female learners to diverge coherently about Technology, hence selecting resemblances and alterations. Technology is represented in a stereotyped way by means of signs, comparisons and ethics that all have masculine implications (Wajcman, 2007). Wajcman (2007) continues to state that feminist policymaking is documented as the fundamental element to gender equality change opposed to Technology being attributed as the leading instrument of transformation. The result would create resilient development of female learners in both the primary and secondary education (Susinos, 2009).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the researcher depicts and explains how the research methodology has been implemented. The necessity for this study was delineated in the opening chapter. This chapter discusses the nature of the research and the resources of organising the quality of the study delineated. This type of research is concerned with understanding social phenomena from the participant's point of view, and understood to be experience as unified. All procedures used for data gathering are identified and the data analysis methods are distinctive. Exploration into factors influencing the career choices female learners make has been done before and the researcher's specific involvement as a technically qualified female educator is the reason why this research is grounded in her individual and empathetic concern for these female learners.

The study is inspired by a conviction that an equitable society, which includes gender equity in the education system, can be achieved through a critical understanding of the current social context combined with social action. This applies particularly to gender, which is constructed socially, culturally, historically and politically and which is subject to change. I am confident that gender associations should be modified in order to attain gender impartiality. This study adopts a systematic approach to examine gender bias in the education system, as well as patriarchal oppression in the broader culture and within educational institutions. It is hoped that the research results will contribute positively to the knowledge of educators and policy makers, and to processes of social change.

The interview and discussions took place at a Technical High School in central Durban. This school is not community based and the learners originate from the central city to the surrounding areas of Durban. By using my classroom I can ensure a relaxed atmosphere, secure and conducive location that would be inspiring to the participants (Cohen, Manion & Morrison, 2011). The learners represent a mixed cultural and ethnic learner combination. The school is co-ed. Participants were between the ages of 17-19 years. The participants were in grade twelve and were in different academic classes. The participants were well represented in the three technology subjects; Civil, Electrical and Mechanical Technology.

All the grade twelve female learners were called in to my classroom where I explained to them what I was studying and why I needed their input. I explained that their participation would be voluntary. I briefed the female learners about the procedure that I was going to follow as well as to their rights before, during and after the questionnaire and interview. The female learners were assured of their right to withdraw at any time. It was also explained to them that the interviews would be conducted in a private setting and that the participant's identity would be kept confidential and that pseudonyms would be used. I informed all the female learners that participation would be voluntary and that the interviews would be recorded and transcribed. I also explained that data would be kept safely and out of reach of people. They were assured that the interviews would be conducted in a private setting (my classroom).

Both the parent and learner permission letters were given to the female learners who were willing to participate. These letters were returned within three days. The survey questionnaire and interview was conducted at the school, in the classroom, to ensure that the participants are comfortable in familiar surroundings and used to gather data from the female learners with regards to career choices they have made when leaving grade twelve. Using the aforementioned venue schedule, participants sat in my class and completed the questionnaire. By using my classroom I ensured a relaxed atmosphere, secure and conducive location that would be inspiring to the participants. All the grade twelve female learners were asked to participate in the first questionnaire. The questionnaire was administered to the entire group of twenty eight (who agreed to participate).

On the basis of the answers provided in the questionnaire, a second schedule was formed. This consisted of smaller sample groups of 5 female learners that was be selected on the basis that they have decided not to continue with a technical career after completing grade 12. These designated learners were then contacted to ensure their preparedness to partake in the interview sessions. Individuals and pairs of female learners were interviewed. Specific questions were asked, as well as open-ended questions. The interview questions allowed the female learners to explain in detail what the factors were that influenced their subject choices. This type of research is concerned with understanding social phenomena from the participant's point of view, and understood to be experience as unified. These results lead to in depth interviews. Additional questions were introduced to probe further responses. Prompts allowed the participants to expand their own thoughts and views about the questions asked. This lead to the collection of rich data due to the fact that more data and improved clarity was gained from these interviews

The questionnaire took approximately fifteen minutes. The female learners had to fill in a sheet with questions on it. First or second school breaks were used for the initial questionnaire. Prior to asking the questions, I allowed participants the opportunity to read the interview questions before the interview started. The question paper was left in front of the participant, should she want to read it during the interview. The questionnaire comprised of open and close ended questions and was administered to the entire group of 28 who agreed to participate. It was done in my presence and I collected them. I looked at the responses of the questionnaire. Simple frequency analysis was carried out to establish the factors that affect the choices of the participants. This created an opportunity for wider sampling. This result yielded many insights about the topic to ascertain the understanding of career choices made by the grade 12 female learners.

This also gave an overview of everyone that has chosen their career. I then invited all of the participants who have indicated that they intend to follow a career that is not related to the field that they have studied to participate in the interview process. After school time allocations were used to complete the interviews. Appointments with the participants were made so that they could be prepared. Data collected was processed for simple frequency analysis as well as thematic links that would generate open ended questions. Information described in themes and

patterns was limited to the set of the participants taking part in the next process. Interview questions were formalized with semi-structured, open ended questions.

Preceding the interviews, consent documents were filled in by parents, gaurdians and the participants. All the female learners preferred to be intervied at school in school time. The questionnaire took place during the longer first break. Most of the interviews also took place in the first break. Two interviews took place after school. All the interviews were recorded with a voice recorder. In the group interview, two voice recorders were used to insure that the audio would be caught up in the bigger group. I made short notes during interviews and prompted participants with additional questions.

All aspects in terms of ethical considerations were adhered to. Written consent was given by the ethical clearance section (UKZN), the headmaster of the school (Gate Keeper), all participants' parents and the participants themselves. All ethical facets were cautiously observed. Participants were assured of their right to withdraw at any time and that their participation was voluntary. All participants' identities were to be kept confidential and pseudonyms were used. Data would be kept safely and out of reach of people. Biographic details of the participants of the interview questionnaire:

Table 2: Participant information

Number	Pseudonym	Age	Race	Intended career
#1	Shinaua	17	Black/Asian	International Studies
#2	Thembheka	18	Black	Business Studies
#3	Phumbi	18	Black	Anthropology
#4	Sarie	19	White	Forensic Investigator
#5	Bambi	17	Black	Draughting
#6	Samantha	17	White	Interior Decorating
#7	Lucy	18	White	English Educator
#8	Thandi	18	Black	Industrial Psychology

3.2 Data collection and analysis

Data collection was completed by means of qualitative and quantitative data collection methods seeking frequency analysis by means of a questionnaire and interviews with the participants. All data was been recorded in this study by means of a questionnaire and interviews. When the interviews were conducted, I listened courteously to the distinct versions provided by the female learners. My position as researcher involved sensible with precarious and hypothetically cognizant researcher perspectives. I focused on getting the accuracy of the participant's experiences, sensitivities and attitudes - the voices they represent. My questions were structured in arrangements that would capture specific data which could be arranged, branded and codified. It was my intention to clarify the female learner's understanding of connotation. Each interview continued for approximately twenty to thirty minutes. Adding to this, transcripts were taken throughout the interviews to support the voice transcription and elucidate misconstructions.

I tried to make each participant at ease by motivating the participant to exchange information about the matter and the participants without protest focused their conversation on their experiences to me. The audio footage of this discussion was then transformed from the articulated to the transcribed form. The new-fangled transcripts were interpreted as part of the interpretive process. With diagnostic concentration, I perused the transcripts for possible emerging themes or trying to find evidence to substantiate notions that I have pre-established prior to perusing the transcripts was necessary.

The data collection method comprised of an assessment of all documentation and voice recordings. After interviewing the participants, I transcribed audio recordings into written text. The interview transcripts was transcribed the day of or the day after the interview was conducted. By being unreservedly betrothed on the interpretations of the female learners, multiple re-reading session were needed to identify important issues and themes that emerged from the data. Various sub themes were identified which made it easier to draw propable conclusions. All the questionnaires were printed and binded into a booklet. I scanned the different questionnaires for similarities as well as differences in responses for each of the questions asked.

3.3 Analysis

The questionnaire was analysed by making use of colour highlighters to code themes in the notes and labelling pages with coloured sticky notes while coloured page sticker were used to label the different pages of the themes. I systematically and logically worked through all the questionnaires and placed each questions' answer in the appropriate answer space in a new summary document. I was then able to evaluate the whole document to filter un-important data. Some of the themes overlaped. The data was then categorised according to the three research questions. By using previous chapter's research knowledge, it was possible to relate the research to the research questions.

The interview questions were coloured coded into diverse variables for analysis with highlighters. By using this tentative raw data, I would then refer to literature group or categorise the related information into thematic headings. By using thematic analysis, various themes that were drawn from the interview questions had been prepared in the form of raw data. The interview themes were tabulated into a summary document and assessed for possible overlapping and relevant themes. This would eliminate any possibility of ommitting any significant data from the document.

I pursued profound commitment to condense what participants testified as well as capture possible undocumented connotations that appeared amid the participant and me. The purpose of this research was to link meaning of the participant's point of view and understandings as they are theorist within themselves. With this information, I hoped to supply realistic validation that possibly will advise resolutions for conceivable expansion on Technology education concentrating on affective influences of knowledge.

3.4 Validity and reliability

Validity refers to the degree to which data offers pertinent information about the research situation being investigated (Cohen, Manion, & Morrison, 2011). It is impossible for research to be one hundred percent valid. What the female learners have expressed in the questionnaire and

interviews can be seen as being from personal experiences of these learners and therefore it is seen as trustworthy. These experiences are personal and private. The validation therefore of the data collected from each of the female learners can be seen in the light of their experiences.

To assure validity I considered the following factors: Participants must have been knowledgeable about the rationale of the research they are being asked to partake in. Language barriers could pose possible problems as I might misinterpret what is being said. To eliminate that, I provided participants with a copy of the transcripts. I listened and rephrase what I thought they said in my own words.

I audio recorded the interviews and wrote all the information down to avoid misinterpretation (incase the voice recorder did not record the interview data). When conducting interviews, I protected the participants during questioning of sensitive information. Participant felt comfortable and did not dread any negative consequences of the interview. Making the participants feel free and at ease to make an independent decision regarding information provided was vitally important.

The plausibility of the collected data was checked with the female learners in an informal discussion that was held after the interview sessions. I transcribed all the questionnaires and interviews verbatim. Once the transcription of the data was completed, I took the transcriptions to most of the participant to confirm that I have accurately transcribed what each participant has said. This led to an informal discussion regarding their choices made. Due to the fact that I teach some of these female learners, it was my concern that power relations might lead to them being afraid to speak to me in order to avoid being judged. I guaranteed trustworthiness by finding themes independently I was aware of ensuring that the field notes and transcripts did not contain personal identifiers links. The data must be truthful and extended to the results that are replicable. All unprocessed and processed data was protected and kept safe.

3.5 Challenges experienced

Due to various male dominant issues that occurred at the school, it took a while to get the Gatekeepers permission letter from the school headmaster. The ethical clearance letter that the

university gave was delayed as well and I had to urgently phone and ask for the process to be seen to, as the grade twelve learners were in the last few weeks of the academic school year. Once I received the ethical clearance I immediately called all the female learners to my class.

There were some participants who did not mind completing the questionnaire but they did not want to be interviewed. Participants needed to ask their parent/guardian's permission to take part in the research. Once permission was given and the participants would exercise their right to withdraw it could result in time wasted to find a new participant. Prior to handing out consent forms I allowed participants the opportunity to read the interview questions. It was difficult to keep up with all the aspects relating to the interviews. Some participants who were prefects, had to do prefect duties while some participants were trying to catch up on homework not done the previous day would ask to see me another day.

It was difficult to control whether the participants provided thoughtful consideration to every questions that was required to be completed by the participants in the questionnaire. The participants could have regard the completion of the questionnaire as a wearisome task resulting in possible superficial results. Being an educator in the same school could have influence the outcome of the questionnaire. In one or two cases, I modified the original question due to participants having answered the question in a previous question which made it difficult to ask the same question again.

The interviews were challenging as I needed to be quick thinking to try and think of questions when the participants would talk about topics that I had not included in my questions to get as much information out of them. The open ended questions allowed me to ask more information from the participants. In two cases I interviewed two participants together which allowed for more relaxed answers from the participants.

My questions had to be very structured to keep all the interview records up to date, collecting the information and filing the documents. Transcribing the interviews was time consuming and I had to attempt to transcribe the day it was conducted. At times I had to listen to the interviews multiple times as some of the female learners spoke too softly or too fast. I had to keep

pseudonyms so as not to confuse myself. The first interview was difficult for me as I had not done this before but as my confidence increased and the word went around the female learners in the school that the interview questions were 'ok' and the initial doubt and hesitance to participate dissipated, it became easy to conduct the interviews. If the participants misunderstood or were unsure about a question I clarified in simpler terms. Some participants went off on a tangent, but I could not stop them as it might have silenced them and detracted from the richness of data.

I had to try to eliminate the participant's sense of trying to please me and encourage them to provide a true reflection of their voice. In order not to offend my fellow colleagues, the questionnaire and interviews could not be completed in lesson time. Time to do the research was limited to breaks or after school.

Some of the participants were prefects that had duties to do during break; hence some of the interviews had to take place after school. Some of the participants took part in sport training after school resulting in an appointment schedule that would limit time wastage. Participants were often absent from school which would lead to the rescheduling of appointments. The examination was around the corner, so the participants asked their subject teachers for help during the break and/or after school. Participants were able to choose which information about themselves they wished to withhold. Time to construct trust with the participants was vital. Supporting the interview interaction could have been testing. Learner participation was made as easy and pleasant as possible.

3.6 Ethical considerations

Due to the human element involved in this research, I needed consent from both the parents/guardians as well as the participants. The school principal provided a gate keeper's permission letter in which he stated that the school was well informed, well cognisant of the research and noticeably understood the reasons for my research.

The Education Department scrutinized the research proposal to ensure that the research would not invade the temperaments of the female learners, condemn the educational culture

implemented by educators and ensure that learning amenities offered in the school were not interfered with in any way. Confidentiality was guaranteed in the course of transcriptions of questionnaires as well as interviews analysis. The Participant's anonymity was guaranteed and their names concealed. No participant was incriminated in any way.

CHAPTER FOUR

DATA ANALYSIS

In this chapter, the data is presented and analysed from the questionnaire and the interviews. Having used quantitative and qualitative methods of research, I have chosen to present and discuss the data as a mixed method approach.

The data from the questionnaires and interviews will be discussed simultaneously within the themes. The objective of this is to comprehend the phenomenon that is being studied. This section presents and discusses the data from the 24 questionnaires and eight interviews which contains both closed and open ended questions.

The sorting process of the data was followed by cross-checking common arrangements. The emerging themes from the research were categorized within the critical questions. The main themes that will be analysed in this research in each question are as follow:

Critical Question 1: Why do grade 12 female learners choose technical subjects?

- 5.1 Parental Influences
- 5.2 Subject packages and career guidance
- 5.3 Practical and Theory
- 5.4 Curriculum

- 5.5 Subject satisfaction
- 5.6 Gender and Technical subjects

Critical Question 2: What are the projected career choices of grade 12 female learners studying technical subjects?

- 5.7 The participants' career choices
- 5.8 Technical Career choices
- 5.9 Non Technical Career choices

Critical Question 3: Why do grade 12 female learners studying technical subjects intend choosing non-technical careers?

- 5.10 Female learners' challenges:
 - 5.10.1 The institutional factors
 - 5.10.2 The interaction with boys in the class and workshop.
 - 5.10.3 Educators attitudes and expectations.
 - 5.10.4 The subject matter.
- 5.11 Female learners' identity:
 - 5.10.5 Constructions of femininity.
 - 5.10.6 Freedom of choice and ability to challenge parents' decisions.



QUESTION ONE

WHY DO GRADE 12 FEMALE LEARNERS CHOOSE TECHNICAL SUBJECTS?

To understand the data presented, one needs to understand the background as to the admission requirements into the Technical school. When the learners are in grade seven, the parents have to apply to the school for a grade eight placement. Before the female learners are accepted into the school, parents have to bring the learners to complete a technical aptitude test at the school. This is a pre-requisite to enter the school as the result of this aptitude test indicates whether a learner has the ability to think ‘technically’ or not. If not, the learners are denied access into the school and the parents are advised to rather let the learner pursue an academic school. Many high schools visit various primary schools to advocate their school and invite the grade sevens to the high school’s ‘Open Day’. The learners encourage their parents to come to this as this day showcases the specific school to the public and an incitement, to come to the school, is abundant. The annual Open Day interested most of the learners with all the technical presentations that displays diverse practicals that were made in the different grades. This technical school normally

attracts most of its learners from this day.



The reasons given by participants for choosing to study technical subjects at schools are discussed within the six themes below.

4.1 Parental influence

This theme discusses the role parents play in the selection of schools and subject choices:

Thembeke: I chose it because I was influenced by my parents.

The responses to the questionnaire indicated that 88% of the participants had selected technical subjects due to wishes of their parents. This data suggested that it was not always free choice of their own but instruction from parents, often against the wishes of the learner. The female participants own experiences presented thorough the questionnaires and interviews explained the factors which determined their selection of certain subjects and career choices.

The interview data showed that most of the female learners attended the technical school because of parental coercion. They suggested that the parents enforced their ideas upon their daughters.

Thandi: ... it was already said that you are going to this school while I really have no love for

it...when your parents tell you to do something, you can't back out and you have no say...

When Thembeke was asked why she chose her technical subject, she replied that:

Thembeke: ... they were the ones who chose the school for me... mostly you are a child so you listen to your parents...

Sometimes the choice of school was simply out of convenience and not curricular motivations. This was evident in the interviews question that asked why the participants chose the technical subject that they were currently studying. In the interviews a few participants indicated that they were forced to come to the school because of convenience for their parents in terms of transport as the participants lived in the area.

Shinaua: Oh my mom decided that I rather go to a school that is walking distance so that I don't go through the whole problem of transport and taxi strikes...

Sarie: ... it was the closest to where I live.

Samantha: Any school would have done and this one was in the area.

Bambi: I couldn't choose another school because my dad works here...

Thembeke: I told him that I didn't want to carry on with it... he said that you must carry on with it...

Convenience was not always the motivation, as in the cases of Lucy and Thembeke who travelled far to school, spending much time on the road.

The participants endured the challenges of the Technical subjects due to parental pressures. Still answering the same question regarding choosing her subject, Shinaua stated that she asked her mom to change schools but her mom decided that she had to stay:

Shinaua: My mom is afraid of changes; I don't want to pressure her too much so I stuck with it.

Parents intend to prevent having their children making the same career mistakes that they did in their lives (Southwick, 2000). The same interview question's data exposed the status representation of engineers that replaced prestige careers like:

Shinaua: ... initiated this whole, be a doctor, be a dentist... be a lawyer... and my mother didn't

really.

The interview question regarding the selection of the Technical subject proved to be a melting pot of diverse data information. Almost all of the interview participants indicated that their parents were resolute on the idea that their daughters were to become an engineer. Parental expectations and demands were evident:

Thembeke: ... technical was not what I liked... I did it because I was influenced by my parents.

Shinaua: I did not want to pursue anything in a technical field but she said no...

Thandi: We all want to please our parents.

want me to...

Walls (2000) stated that the professions of parents as well as the financial income of the parents manipulate the participant's career aspirations and found that female learners were willing to discuss this matter more openly. The same interview question indicated that the potential of high earning careers and the uniqueness of a woman as an Engineer, stirred parents to encourage their daughters to choose Technical subjects against the participants' own wishes:

Thandi: ... my parents really loved um ... this engineering field and I was not into engineering.

Sarie: ...apparently the girls are getting paid a lot more than the boys...

Thembeke: I liked Civil but my father convinced me to take Electrical as he had all the 'contacts' that would help me in the future.

This above data shows that, the dominant notion was status and finance and that materialism was collectively held in high regard to their being subjected to their parent's ideas of career choices:

Phumbi: ...my daughter is studying this...engineering is money...prestige, it is the prestige... so focused on my kid to be an engineer...

Otto (2000) indicated that parental influence is the principal factor that directs learners into specific careers.

I did it because I was influenced by my parents... My father had all the connections in Electrical Engineering... (#21)

Data from the same question showed that parents motivated the participants to come to the school as family members were in Technical careers who could offer possible employment:

I have an uncle who is an architect ... go there so you can work with your uncle...

As revealed previously, the interviews provided rich data that indicated that many participants were content to be subjected to go along with what their parents had decided for them.

In the interview, Thembeke indicated that her father tried to persuade her to change her mind regarding her own career choice stating that her selected specific career choice lacked career opportunities and minimal scope of finding employment (Catsambis,2001).

Thembeke: ... if I start with Business Management....

She argued that her own uncle could not get work as an engineer and that when she went onto the internet that she was able to find work in her career choice but that it meant that she would have to move province. She made it clear that:

Thembeke: it was not your parents that were going to be there when you study and work in the office.

The same question was asked to Thandi who explained that her parents used to put pressure on her to select the engineering field:

Thandi: ... my parents loved the engineering field and I was really not into engineering... when your parents tell you have to do something you can't back out and you have no say...



4.2 Subject and career guidance

The data indicated that a significant number of the participants stated that the guidance they had received from the school in terms of the subject selection and how these subjects were associated to certain career opportunities, seemed to slant towards the female learner having to fend for themselves concerning concentrated career information. Only one participant (#9) thought that the guidance was excellent.

The data continued to reveal that some of the participants indicated that the grade eight and nine introduction to the different Technology subjects was good enough to make a choice:

We were given two years (grade 8 and 9) to decide (#15).

Lucy: I enjoyed Electrical more than Mechanical and Civil and in grade twelve I struggled with Electrical.

In question four of the questionnaire the participants were asked why they chose their technical subject. Some responses were:

... I wanted to pursue a career in this field (#12).

Some subject information was provided by family or professionals who helped to steer the participants into selecting a specific subjects. One participant stated:

I've been given advice from my brother who used to be at the school as well as an actual Mechanical Engineer. (#2)

My parents played a greater role than the school in informing me on what the different subjects choices had to offer. (#21)

Data showed that some of the participants were interested in Technology.

Samantha: I thought that Technology was for me.

The questionnaire's question ten asked why the participants chose to study a Technical subject. The participants reasons for studying a technical education subject were technology based.

<u>Reason for studying Technology:</u>	<u>Number of participants:</u>
I would like to study engineering	12
I would like to study architecture	3
I would like to open my own business	5
I enjoy working with my hands	6
I enjoy working in a workshop	5
I wanted to learn technical skills	9
I enjoy working in the practical environment	11
I am a creative person and I like making things	4
There are skills shortages in this field	5
Other reasons not specified	10

Table 3: Participants' reasons for choosing Technology and the number of responses

The above table indicated that fifty percent of the participants wanted to study engineering. Forty six percent of the participants enjoyed working in the practical environment. Thirty four percent of the participants enjoyed learning technical skills. This data showed that most the participants seemed to enjoy the Technology subjects and that the enjoyment of the Technology subject featured the highest on the rating scale.

Question four of the questionnaire asked why the participants chose the subject.

I chose it because I was comfortable with it. (#3)

At the time it seemed like the best subject... (#4)

I found it different because very little girls do it. (#6)

I chose it because it was something different. (#7)

It was something different and not a lot of girls did the subject. (#8)

...there was a demand for females. (#9)

...there is a lot of money in electrical engineering. (#11)

... had lots of job opportunity. (#14)

... demand of engineers in South Africa. (#23)

Many learners do not bother to hand their subject choice list in to the school. It then became the school's prerogative to place the learners in a subject where the body count is lower than that of the other subjects. This happened in the following case:

I did not choose my Technical subject. (#17)

The data showed that Participants did not really want to choose a specific Technical subject:

I didn't want to do Electrical or Mechanical engineering therefore Civil was my only choice (#15).

I chose the subject because I did not want to do Mechanical or Civil Technology (#16).

Andrews and Clark (2012) indicated that the lack of Technology knowledge as well as the

exposure to the field was a concern. It is known that Technical education is extremely specific and focused towards a definite career which combines a noticeably recognised platform of knowledge and skills (Chang, 2009). Thirty-three percent (8) of the participants felt that the guidance for selecting a technical subject was satisfactory, stating:

We were taken through orientations in every field but we were never really explained to about what the different fields would entail in the future (#13).

It was satisfactory because there is not much information given out about the careers (#23).

Question two of the questionnaire asked if the participants had received any counselling or guidance regarding their subject choices. Forty two percent (10) of the participants specified that they received counseling concerning subject choice from the school whilst fifty eight percent (14) indicated that they received no counseling at all. The data indicated that twenty-one percent (5) thought that the counselling regarding subject choices was poor.

Examples of participant's responses:

I still don't know which career path I could take with Mechanical and I don't know about Mechanical Engineering. (#6)

If they really wanted students to go into the technical world they would do more to encourage the students. They could do much better. (#4)

I haven't had much guidance with my career choice... (#20)

The reasons why the participants felt like this was that no explanation as to what the different career fields entailed in the future and that careers possibilities were not explained in depth. The participants stated:

I chose to do any Technical subject I thought I would cope with... (#3)

It was my own personal choice. (#7)

I came already aware of what I wanted to pursue. (#10)

I researched the subjects myself and made my own assessment. (#11)

I knew from grade eight which subject I wanted to choose. (#20)

No, it was something that I wanted to do since I was in grade six. (#22)

I was told what the subjects were about and I made my choice from there. (#23)

Only forty-two percent of the participants felt that the guidance was good:

Representatives from different colleges and universities who come to our school and tell us all we need to know about technical career paths and give us guidance. (#19)

Question two of the questionnaire that asked whether learners had received guidance regarding their subject choice emphasised the comradery amongst the female learners in the school and how the seniors ‘looked out’ for the juniors. Robnett (2012) also stated that peer influence female learners who pursue STEM subjects in secondary and tertiary education.

I was told that I should take Civil (told by a matriculant) but I didn't like it so I took up Electrical. (#14)

I asked experienced learners to tell me about the subject and explain more in depth (#8).

This study had verified the need for early intervention regarding curriculum needs and the implementation of supportive and effective educational resources that would compliment Technology.

4.3 Practical or theory?

The questionnaire responses revealed that twenty-one percent enjoyed the theoretical aspects; twenty-five percent enjoyed the practical aspect and fifty-four percent enjoyed both theoretical and practical aspects of Technology.

The data in this theme highlights the participants’ inputs on the practical and theoretical aspects of Technology. Sarie suggests a gendered performance in the practical and theoretical aspects of Technology in the following statement:

Sarie: maybe the guys do slightly better in prac, but I know that us girls we hit them in the

theory.

The learners who enjoyed the theory facet of the curriculum more explained:

The boys ... they know everything... and I don't have anyone to teach me (#2).

I understand the theory... the practicals can sometimes be confusing (#5).

I generally prefer the theory. (#15)

I am generally more theory minded. (#18)

It's best to know how things work... (#23)

Sarie: I do much better in theory than practical... not good with my hands.

Pumbi: I am more theory orientated

This conformed to the popular belief that girls are better in theory than practical aspects and that this contributes to marginalization of girls in Technology especially since many girls internalize these differences. However this was challenged by other girls. Some participant clarified that they were theory minded as oppose to other participants who indicated that they chose the subject because of the practicals.

I am more theory minded than practical. (#18)

... in being able to do practical things... (#9)

Question eleven asked what aspect of the subject the participant preferred: the practical, theory or both. Twenty-five percent (6) of the participants preferred practical work, twenty-one percent (5) theory work and the rest (13) enjoyed the combination of theory and the practical facet of their Technology subject. The learners, who enjoyed the practical facet more, explained that:

I don't like learning it by book, I learn whilst doing the practical (#1).

I work better with my hands. (#4)

I enjoy working with my hands and I am creative... (#8)

Practicals are more fun (#11).

The trial and error aspect of the practicals made it interesting. (#23)

Thembeke: I am much better in practical than theory and I see myself as a creative thinker. My creative talents make my practicals so much different from the others.

As most of the female learners were not exposed to a masculine technical environment at their homes, the participants are less likely to be familiar with technology at home; hence the participants lacked practical experience and therefore had great difficulty in overcoming these barriers.

The learners who enjoyed the practical and theory facet explained:

The practicals proved the theory when they applied the theory in the practicals. (#3)

I sometimes battle in theory... or I battle in practicals... it depends. (#6)

The practical work helps me more to know what the theory is talking about. (#7)

Acquiring knowledge about both enriches your understanding. (#10)

Practicals are more fun and theory challenges the brain. (#11)

I wanna have a balance of both. (#12)

I love applying theory to the practical. (#21)

By having both, you have a better understanding... (#22)

The data indicated a problem experienced by the participants with regards to all the theoretical time spent in the subject:

All we do is read about it, we don't do the actual work that is being done and we don't know how to apply the theory in the real world (#23).

Question twenty-five of the questionnaire asked if the participants felt that the technical syllabus /curriculum was relevant to the needs of the participants. Eighty-eight percent of the participants responded that the syllabus was pertinent as oppose to thirteen percent of the responses which indicated that some of the practicals were not relevant to the syllabus at all.

To some extent as girls as you are expected to know about cars... (#1)

No, we need theory along without practical work, if we do not even learn how to lay bricks how do we get skills from theory. (#21)

Yes, the level of learning is increased every year. (#6)

When learners leave the school they have no problems with apprenticeship and jobs (#9).

No because we won't actually work out forces of the building... (#22)

No, because there are no practical just theory. (#23)

Considering the male learners, the participants expressed their opinion regarding the educator need to make the practicals gender impartial.

The boys always get better credit because they are good at working with their hands. (#8)

Our school is male dominated and sometimes the boys get their practical tasks done faster and easier than the girls. (#19)

Question twelve of the questionnaire asked how the participants rated the Technical subject education they received at the school. The data is provided in the table below:

	Excellent	Good	Satisfactory	Poor
Theory	13	10	1	
Practical	8	7	4	5

Table 4: Theory/Practical motivation

Question twenty-three in the questionnaire asked if the participants would select the same technical subject again if they had a choice, numerous participants stated:

The other subjects are too advanced... lots of homework which I hate (#3)

I feel that I have learnt a lot of interesting things. (#6)

I chose it because I loved it (#9).

I enjoy it... my marks are high (#11).

This is consistent with Eccles (2012) who explains that unqualified people have an assured perception of what they would like to become and therefore select their high school subjects consequently.

This theme showed the strengths and weaknesses regarding the subject that the participants selected in the school. Due to the subject having both the practical and theory aspect as compulsory, the data illustrated the difficulties that the participants experienced within the subject choice.



4.4 Curriculum

In this theme I looked at the effects that the curriculum had on female learners and how it was used in the broader sense so that it suited the broader sense of material, the educator and assessment. Francis (2010) explained that, due to the female learners increased ambition and feeling of twisted workplace opportunities, new motivation for achievement at school has transpired. Lewis (2000) implied that many learners are unable to cope in an academic school

resulting in the learners opting for vocational or trade schools. This may be true for Sarie below, who stated:

“They could not find a school to put me in... the Department of Education decided that I had to come to this school...”

When asked in the questionnaire (question twenty) if the participants were comfortable with learning their Technology subject, ninety-two percent of the participants indicated that they were contented with learning their Technology subject.

I have gotten used to it... (#14)

I chose it for that reason because I cope with it... (#3)

I love and enjoy it... (#7)

The second part of the questionnaire regarding the participants comfort level asked why this was so:

I learn new things everyday... (#6)

More females are needed and being one of the few females makes me comfortable. (#9)

I can relate to my technical educator who is female. (#20)

I chose it and it's too late to change. ((#22)

A few of the participants stated that they did not comprehend the subject and fell behind and that it was too late to change the subject, so they made the best of it. In the interviews, many of the participants implied that they had difficulties regarding what the different subjects had to offer.

Samantha: I don't know like... why not Mechanical... and building like... fitting and turning and then you get Electrical with the wiring... I can't do that and also the Maths.

Maths and Science has a huge influence on the participant's subject choices. In grade ten Samantha started off by taking Maths core and Science but dropped Maths for Math Lit and Science for CAT. She felt:

Samantha: ... it was lots of work as well as the Science so I dropped my subjects in grade 11 as Technology did not interest me anymore.

Samantha: I selected CAT as I did not want to do Science as 'it was too much Maths'.

Engineering language is also seen to assume a masculine identity which means that the female learners who study this subject are subjected to taking on these masculine identities (Walker 2001). Maths and Science are seen as male, entrenching masculine potentials (Bleeker, 2004). In the questionnaire the demotivating aspect of the subject choices was the challenge that Mathematics posed to them. The data exhibited the fact that Electrical Technology is overwhelmingly mathematical:

Sarie: ... with Electrical its Maths that is my problem.

Shinaua: ... Electrical, because Maths hasn't been my favourite ... so Electrical is a lot of Maths...

Samantha: ...it was too much Math's.

Many participants feared the challenge that this subject exhibits thus they shied away from choosing this subject.

Thandi: I struggle a lot and the Maths, ja...

Bambi: I suck at Maths.

Sarie: I chose the subject because it was easier for me, because I don't want to my...fail the year. Maths 'got me down' so I chose Maths Literacy.

Lucy: Maths I struggled with a lot. That's when I dropped to Maths lit... I am not Maths minded... I stayed with Physics but I struggled with it a lot.

The data reflected that although the other two subjects, Mechanical and Civil Technology also include calculations that are very difficult, the subjects are not mathematically grounded, and so some participants prefer to selected these two subjects. When questioned about subject influence in the interviews the following was stated:

Shinaua indicated that her subject selection: “was a process of elimination”

Samantha: I thought that Technology was for me.

During the interviews the questions revealed:

Shinaua: Yes, the level of learning is increased every year.

Thembeke: I find it very difficult, but I try...

The interviews continued to indicate that the participants were influenced by the subjects and that the curriculum of these subjects was the root problem to them not coping with it.

Samantha: I don't know like... why not Mechanical ... fitting and turning then you get Electrical with the wiring... I can't do that and also the Maths...

The study has shown that due to the perceived difficult curriculum involved in Maths, more learners are moving from Maths to Math Lit and that this change has resulted in learners (at vocational schools) failing subjects that are too academically focused. The interviews revealed that subject packages at schools do not allow Math Lit combined with Science, which forces the learner to drop Science as well.

Samantha: ... I did take Physics and Maths core and well... as I went on ... In grade eleven I dropped my subjects...

During the interview with Shinau she was asked what or who influenced her not to pursue a Technical career:

Shinau: Maths.

Research shows that when learners change to Math Literacy, that Maths Literacy is not adequate for learners who would like to study engineering or technology (Enterprise, 2012). The data reflected the difficulties experienced by female learners entering the school in the latter part of grade nine is that they missed the core foundation of the Technology subject and they were then

unable to catch up.

Thandi: I did not know Engineering Graphics when I entered the school in grade nine so I battled with it.

The study showed that the other subject, Engineering Graphics and Design, which is offered by the school, is detrimental to the participant's career choices.

Phumbi: EGD is difficult.

Present yardsticks in vocationally education have indicated that more female learners selected EGD than other related subjects and that there was a minor drop in numbers of learners studying Electrical and Mechanical Technology (Enterprise, 2012). The data implied that the advantages of being in a Technical school and having completed the high school at the end of their matric year are:

*By the time you get to varsity, we will at least have the basics of the technical subject (#19).
It is hardcore and you learn how to handle different situations in life brings us (#14)*

Question twenty-five in the questionnaire asked how they felt about the technical syllabus and if the curriculum was relevant to the needs of the participants. Eighty-eight percent of the participants responded that the syllabus was pertinent:

They deal with real world applications. (#11)

Learners who leave the school have don't have a problem with apprenticeships and jobs. (#9)

By the time we get to varsity we at least have the basics. (#19)

The data in this study held a view that the technical curriculum excited the female learner's interest. The participants felt emancipated in the male dominated subjects :

I've learnt a lot about things that I use every day. (#23)

...because I learn new things everyday and why pay a person thousands to do what I can do

myself. (#6)

Contrary to the above, a negative implication of the curriculum that was deeply rooted in the responses of some of the participants was that the practicals were of a concern. Thirteen percent of the responses indicated that some of the practicals were not relevant to the syllabus at all and that some theory could be practically constructed. Participants frequently expressed their concern regarding the practicals:

If we do not even practice how to lay bricks, how do we learn a skill from theory? (#21)

We learn all about it but don't do it physically. (#2)

Some practicals are not relevant and some theory can be practically built. (#16)

Question eight of the questionnaire queried if the educational material used in the technical subject was gender neutral. Ninety-two percent of the participants felt that the educational material they used in their technical subject was gender neutral. The data of this study implied that the school's evaluation in terms of education and training they received reflected that most of the participants seemed to be content with their educational training.

Pumbi: I have a passion for Mechanical but I feel that I would not survive Mechanical.

Bambi: I don't want to work out of my garage fixing cars.

The data showed that one of the advantages of studying their specific subject was:

Lucy: ... they always ask me if I can fix things for them... I know something that other schools don't teach. I can now repair things that would have cost a fortune to repair.

Bambi: I learnt novel things every day.

This theme amplified the curriculum impact on the participants and how the participants were affected by this.



4.5 Subject satisfaction

Question twenty-two of the questionnaire asked the participants if they could change their subject choice, would they select the same subject again. Twenty-nine percent replied in the negative.

No, I would choose Electrical because there are more well paying jobs. (#4)

No, I would choose Electrical because it would be beneficial for my career choice. (#17)

No, I would like to see what Civil is like. (#20)

Four participants answered with a NO only, not substantiating their answer.

Thembeke: No ... I would change to business studies

The data above indicated that financial motivation for choosing a specific subject was a great influence on subject selection. One participant was not well informed regarding the career choice she wanted to pursue. The awareness of other subject contents inspired the participants to select a specific subject.

Seventy-five percent stated that they would select the same subject again:

I feel I learnt a lot of interesting things. (#6)

... because I fully understand and love doing it. (#10)

I enjoy doing it... my marks are high. (#11)

The above data depicted the participants' passion for the subjects that they had selected as well as their contentment regarding their selection,

Question twenty from the questionnaire revealed that ninety-two percent of the participants indicated that they were content with selecting their Technology subject. The positive facet of this was that the participants said:

I like it and enjoy it. (#1)

I learned new things every day. (#6)

I love and enjoy it which makes it much easier in learning the subject. (#7)

... because I want to become something in this line of Technology. (#8)

Being one of the few females in the field makes me feel comfortable. (#9)

We are taught the basic fundamentals that everyone should know. (#13)

They could relate to their female educator especially when she shared her experiences. (#21)

They could now repair things that would have cost a fortune to repair

The data indicated some negative responses from the participants:

I do not completely understand the subject and fell behind ... (#17)

In both the questionnaire as well as in the interview, this participant felt negatively towards the subject but stated a positive reply:

It was too late to change the subject, so they made the best of it. (#22)

In this theme the participants indicated the different reasons why they were studying the subject and what motivated them in selecting the subject.

4.6 Gender and Technology subjects

This theme discussed the participants' awareness of gender and technology subjects. Many of the participants suggested that the curriculum and school system reproduced gender stereotypes and inequalities. According to Wajcman (2001) the development of gender identities is enhanced by the implication of a connotation amid hegemonic masculinity and technical competence.

The participants indicated that labels were attached to them with no reason:

They assume just because you are a girl that you don't belong in the workshop (#16)

The school is a co-ed school but female learners are in the minority (one hundred and ten female learners as opposed to eight hundred and ninety male learners). At the conclusion of the female learner's grade nine year, it is the participants' prerequisite to select one of the three technical subjects that are offered by the school. Roger states that the participants must be reassured that electing Technology as a subject would not constitute a loss of femininity (Roger, 2000).

Female learners did not only experience subject problems. The participants were subjected to the notion that with Technology being seen as a masculine domain. The participants expressed that they do well in the theory:

...it has become a stereotype that the girls are good with the theory, guys are good with the practicals. (#3)

Most people feel that we can't do what the boys can do... (#10)

Thembeke: One thing I've realized that in the engineering world it is a man's world where, in order to survive, you have to be strong and push to get what you want.

The participants amplified the need to be accepted by educators and male learners. The male dominance in the workshop frustrated the female participants:

We are not given a platform to showcase our abilities. ... more pressure on them because we have to prove ourselves to everybody, all the time. (#21)

In the interview question that asked why do you think that Technology cannot be feminine?

Thembeke: I am girly. I like wearing certain things.

This data showed that some female learners tried to disrupt the conventional femininity by getting into a technical field and trying to break down many barriers to enter this masculine terrain. (Charles,2002).

Phumbi: I don't know if I can do the boots and everything...

Yet whilst there, a few female learners in this study, choose to select within that, a less masculine and more feminine subject.

Shinau: left me with Civil... was a lot of writing, research and reading.

A female engineer or vocational worker came to be seen to represent contemporary and 'open-mindedness (Hedlin, 2011). Incompatible limits regarding clothing affect the practical presentation of the curriculum subjects. When a female learner's wellbeing is positioned in a male-dominated realm, her growth of proficiency could unsettle the confined masculinity supremacy (Stepulevage, 2001). The data reflected that the participants indicated that performing with the male learners in this masculine field posed multiple practical problems:

... pants would be more practical than skirts. (#17)

This is a suggestion of the masculine trait of Technology. According to Francis (2010), this suggests a shift in the female learners thinking regarding Technology and their subject preferences. The compelling nature of the subjects forced the participants to get involved in physical activities which required them to bend, stretch and move over objects and materials which inhibit their feminine composure. The data showed that the possibility of female learners being exposed and viewed by male learners from different angles made the female learners uncomfortable and hampered their productivity. Some participants implied that the masculine clothing was off putting and non complementary to their concept of being feminine. Many young

women are reluctant to sacrifice their personal lives in pursuit of their careers (Milgram, 2011). Pumbi felt that being on a site was ‘not for her’.

Thembeke: ...I am girly, I like wearing certain things.... And in the technical field I just feel limited.

Phumbi: ... I don't know if I can do the boots and everything... it's just the boot thing... I just can't imagine myself in it... I like being a girl whatever...

In the questionnaire, question number six, the participants were probed as to what the challenges were that the participants encountered at the school.

The boys think just because I'm are a girl I can't use a machine properly. The boys also hog the machines so it's difficult to get a machine to work on. (#2)

... to the boys we are not capable of doing things they do. (#6)

... being disrespected by some of the boys and criticized... ((#14)

Thembeke: boys in the school... they don't care..... treat you like trash... use whatever language they want to ... don't care about you.

The data showed that female learners challenged the customary masculine profession and so they were viewed as intruders.

The boys in the school don't take you seriously. They assume that because you are a girl, you don't belong in the workshop. (#16)

To add fuel to fire, the female learners, challenged the notion of inequality within this masculine profession. Eccles states that in communicating with girls about what different kinds of STEM careers involve, they can allow for making a social contribution (Eccles, 2012).

Girls have more pressure on them because we have to prove ourselves to everybody, all the time. (#22)

The social construction of Technology refers to ‘strength work’ which necessitates physical power which is not fitting for female learners. The government has implemented a technical concept of making Technology more design-based and not only focusing on the skills-based aspects of the subject resulting in a dual gendered subject. The data indicated that the following gender relations are challenged:

Parent and female learner	parental constructions of the Technical school were contested
Parent and female learner	parental constructions of the Technical subject were contested
Parent and female learner	parental constructions of the career choice was contested
Female learner and male peers	Path breakers – challenge classroom gender discrimination
Female learner and educator	Confirm or challenge – challenge stereotype notions
Female learner and work	Trendsetters – challenging employment stereotype notions

Table 5: Challenged gender relations regarding Technology choices

Female learners experienced various levels of gender relation challenges. The table above shows how the parents construct their ideas regarding school, subject and career choice selection and how the female learner tried to contest this. The data continued to show that the participants initially had very little to say in some of these choices as their parents dictated to them. Within the participants’ technology experience, they challenged the different stereotype notions of the Technology being reserved for male learners only.

In this masculine environment the male learner are seen as privileged when compared to the female learners.

Anything that has to do with girls is either not considered or it will take a long process. (#23)

Not all girls considered boys in the classroom as being a disadvantage, for example:

Some boys assist me when I can’t understand some of the things. (#2)

While this may be seen as positive, it can also be seen as girls being dependent on boys.

Question two of the questionnaire asked whether the participants received guidance regarding their subject choice. The reply emphasised the comradery amongst the female learners in the school and showed how the seniors 'looked out' for the juniors. Robnett (2012) also stated that their peers influenced female learners who pursued STEM subjects in secondary and tertiary education.

I was told that I should take Civil (told by a matriculant) but I didn't like it so I took up Electrical. (#14)

I asked experienced learners to tell me about the subject and explain more in depth (#8).

The data revealed the attitude of a participant who indicated that she came to the school because

Bambi: I also liked it that there were mostly boys in the school...

When she was asked why, she answered:

Bambi: Because girls are snotty.

The data in this theme suggested that while some girls challenged gender stereotypes, many conformed by accepting and reproducing stereotypical ideas about girls in Technological fields. In this section I have discussed different factors that influenced the reasons why the grade twelve participants chose their technical subject. The data collected was analysed further reinforced in the next theme. The next section will discuss the projected career choices of grade twelve female learners studying technical subjects.



QUESTION TWO

WHAT ARE THE PROJECTED CAREER CHOICES OF THE GRADE 12 FEMALE LEARNERS STUDYING TECHNICAL SUBJECTS?

The participant's responses about their projected career choices are discussed under the banner of the following themes:

- 4.7 Participants' career choice
- 4.8 Technical Careers
- 4.9 Non Technical Careers

4.7 Participants' career choices

Question thirteen of the questionnaire asked the participants what career they intended pursuing on completion of grade twelve. Some participants indicated more than one possible career.

The responses of the 24 participants are presented in the following table:

Participant number	Technology Subject Chosen	Career choice 1	Career choice 2
1	Civil	Architecture	
2	Mechanical	Mechanical Engineer	
3	Civil	Medicine	
4	Civil	Town planning	
5	Electrical	Electrical Engineering	
6	Mechanical	Educator	Engineering
7	Mechanical	Mechanical Engineer	
8	Civil	Architecture	
9	Civil	Structural Engineer	
10	Civil	Civil Engineering	
11	Electrical	Software/Electrical Engineer	
12	Civil	Quantity Surveying	
13	Electrical	Agricultural Environment	
14	Electrical	Maritime/Mechanical	Electrical
15	Civil	International Relations	
16	Electrical	Electrical Engineering	
17	Civil	Tattoo artist/Graphic Design	Sound Engineer
18	Civil	Forensics	
19	Civil	Quantity Surveying	
20	Electrical	Educator	
21	Civil	Town/Regional Planning	
22	Electrical	Electrical Engineer	
23	Electrical	Maritime Engineering	
24	Civil	Politics/Law	

Table 6: Technology Careers

From the table, it can be seen that seventy-one percent of the participants indicated that the careers that they had selected to continue with after school were technical in nature. Francis

(2010) indicated that female learner's motivation for their impending career could be clarified by materialism and realism. Most of the career choices above are high earning careers which inspire the participants to greater salary income brackets.

Sarie: ... apparently the girls are getting paid a lot more than the boys to do engineering.

The data from this study showed that both parent and participants were drawn to this attraction. This range of career interests indicates the diversity of interest regarding Technical and non-technical subject. Many of the participants in the questionnaire will be continuing with technical careers. Numerous participants have indicated that they are interested in undertaking Engineering after school. Question fifteen in the questionnaire asked why the participants wished to follow the career. This will be separated into two sections – Technical and non-Technical.

4.8 Technical subjects

The majority of the participants indicated that they wished to pursue a technical career. Some of their responses and reasons for their choices are below:

Architecture: I like designing buildings/houses. (#1)

Architecture: I have a passion for drawing and creating new lifestyle living. (#8)

Mechanical Engineer: I am more interested in the mechanical industry. (#2)

Mechanical Engineer: I am passionate about it. (#7)

Electrical Engineer: I still have the adrenaline to be in this field of engineering. (#5)

Electrical Engineer: there is a lot of money in the career and I enjoy it. (#11)

Electrical Engineering: I will earn a lot by something I love. (#22)

Electrical Engineering: I have grown to love this career. (#16)

Civil Engineer: it is a lifelong desire and passion I have had.

Quantity Surveyor: it is interesting. (#12)

The data revealed that many participants really loved the technical subject that they were undertaking. Two participants mentioned financial prosperity as a reason. This links with earlier

data that stated the intent of participating in a subject for financial gain.



4.9 Non-technical subjects

Some of the participants indicated that they were not interested in pursuing a technical career. Their projected non-technical career choice and reasons are represented below:

I want to do medicine: I like helping people. (#3)

Marine Engineer: ... especially in a trade like maritime... (#14)

International Studies: it appeals to me. (#15)

Forensics: I want to help put criminals away. (#18)

Teacher: I love languages and two educators convinced me that I was right.

Politics/law: I love debating and finding solutions to a problem... (#23)

The careers indicated are varied and non-supporting of Technology. The data mirrors the opinion of the participants who have indicated that they were either forced to come to the Technical school or that they lost interest in Technology along the way.

The data revealed that some subjects were selected with a specific career or goal in mind:

Civil is the subject I wanted to pursue a career in this field. (#12)

I didn't want to do Electrical or Mechanical Engineering... (#15)

I entered the class already knowing what I wanted to do. (#21)

The interpretation of this data is that some young participants felt that there were limitations to women's success. Thembeke felt that female learners did not belong in this field and that if they did enter this masculine field, that the female learners would be restricted to entry levels in Technical careers. For her to conform to this idea and to reproduce this idea was very difficult.

Thembeke: I am going to battle and start from the bottom...

Thembeke expressed her view that by accepting this perception that, starting from the bottom is the norm and, thus thought that she had to become part of it. She continued to state that women could be in technical fields but not in leadership positions. She did not see a future for females in Technology and therefore saw no future for herself. Thembeke implied gender attachment to specific careers. Thembeke wanted to select a possible modeling career which she implied her notion of this career being predominantly female. In general, if one talks about a model it is seen to be a female model, yet there is gender parity, as men who model are referred to as male models. Thembeke's notion of modeling is associated with the idea that women are defined by their bodies and the way they dress.

Some participants stood very strong in their view of female learners managing with Technology:

Thembeke: ... it's not just something for boys. Girls are ... they are good... they can tackle the issues... they are good at technical subjects...

Sarie: some of us do better than the guys do

Life is tough and girls should deal with it... in the workplace there are no special treatments... (#11)

Phumbi: I have enjoyed something that is out of my comfort zone.



QUESTION THREE

WHY DO GRADE 12 FEMALE LEARNERS STUDYING TECHNICAL SUBJECTS INTEND CHOOSING NON TECHNICAL CAREERS?

4.10. Schooling experiences

4.10.1 The institutional factors

The data showed that gender is a social construction and that societal expectations of female learners are epitomised by the male educators in the non-sustained support that these female learners are subjected to in the classrooms. According to Wajcman (2007), Technology denotes masculine inclinations and the school setup is not always compatible with femininity. Schools can be seen as an exceedingly debated and argued space (Mutekwei & Modiba, 2012). The leadership of a technical school can challenge gender equality by sustaining historical belief which does not support embrace femininity. Some of the participants suggested that the school

was not supportive to female students. For example:

Girls are not recognized at the school... (#24)

We're not given a platform to showcase our abilities or voice our opinions... (#21)

This suggests that some girls contest gendered subject classification. The school policy can manifest a particular gender regime (Connell, 2002).

As an educator in the school at which the research was conducted, the researcher was aware that the school had a school policy regarding discipline for both male and female learners but that many educators were non-compliant with this gender policy. Some of the participants mentioned that as female learners, they felt marginalized in the school. For example, Thembeke claimed:

Yes, they just don't care.

Furthermore some responses to the questionnaire were:

They turn a blind eye to the issues within the school. (#5)

... should have neutral judgments and... (#8)

According to Susinos (2009) the school and its educators must test the school ethos that encourage the construction of gendered predispositions and eliminate any likelihoods of disparity. Croll (2007) implies that schools support and tolerate gender prejudiced concepts and that they have exploited female learners.

There is no equality in the school. (#6)

Question six asked the participants what challenges they experienced within the school, with regard to the general school management. Participants unremittingly expressed their dismay regarding the school's management of female learners as they take part in multiple Technical activities during the year:

The girl who aims high and maintains those marks don't get much attention... also maybe be given a bursary. (#7)

... girls are not given enough extra mural activities as boys. (#21)

We are seen as the weak links in the school. (#18)

Many female learners felt left out of the school system and felt that the school revolved around the male learners. The perception of a lack of fairness with regard to equal opportunities within the school was evident in the data:

Projects in the school like building of the go-carts exclude the girls... (#2)

They must involve females in things that males also do so that we can learn e.g. go-cart challenge and Top Gear. (#6)

They do not contribute in the projects that take place at the school like bridge building. (#23)

Some participants felt that certain modifications could be made by the school to make technical learning impartial for female learners.

Thembeke: I think it's only this school... the can tackle the issues...

Phumbi: ... need to be realistic...

They must involve females in things that males also do. (#6)

They should set a neutral judgement... (#8)



4.10.2 The interactions with boys in the class and workshop

Question seven asked if male learners contributed to the problems of female learners (Good 2010). The data highlighted the fact that they experience a sense of inferior belonging within a dual sexed environment as the participants felt that their male peers:

... being disrespected by some of the boys and criticized for our work ethic... (#14)

The boys don't take you seriously. (#16)

Male pupils doubt me. (#17)

...and to the boys we are not capable of doing the things they do in the workshops... (#6)

Thembeke: they use whatever language they want to ... they don't care about you... they treat you like trash.

The participants rejected the negative comments which made them feel uncomfortable and in desolation.



4.10.3 Educators' attitudes and expectations

In the questionnaire, (question seven), many the participants had dominant notions regarding educators when the participants were asked if educators contributed to the problem of female learners who do not continue in a technical career. Thirty-three percent of the participants indicated a negative answer to the above question as opposed to fifty-four percent of the participants who gave a positive answer. One participant indicated a 'don't know' reply. Participants overtly reacted to this question. In some cases there was not enough line space available for the answer in the questionnaire:

We are told that they are not as good as the boys. (#8)

Most of them feel that we can't do what the boys can do. (#10)

They don't think that we are good enough to be in this department. (#12)

We are criticised for our practicals. (#14)

... being doubted by my teachers and male pupils... (#17)

The data revealed that the attitude of an educator is important to ensure that male learners toe the line with sexist behaviour and do not accept stereotype roles. Technology Educators have been dominantly male (Mitts, 2010).

Employ female teachers to do/teach Technical subjects... (#21)

The participants felt that the educators should be mindful of the assorted requests and interests as well as foresee approaches to refining the classroom as well as encouraging them to appreciate Technology.

More awareness programs will do. (#3)

Get companies to offer outings... (#9)

More one on one time with teachers... (#20)

The participants stated that educators need to take tenure of the work by way of their personal experience and interpretation of gender issues (Skelton, 2010). The participants felt that they are subjected to:

... constant comparison to the boys. (#22)

The impression one gets from the data is that male educators themselves are still influenced by historic gender stereotyped behaviour.

... they say "this is a man's world" ... (#8)

Teachers don't necessarily care what you do, as long as what you do excites you. (#3)

Female learners conceptualise the interactions that are directed by educators and male learners (Milgram, 2011). The participants explained that this:

Thembeke: ... has made me lose heart...

It is said that Technology educators unwittingly complement the issue of limited female learners in class (Mitts, 2010).

As a girl I always get comments that girls shouldn't do any technical subjects. (#5)

Learner's academic experiences drastically influence self-efficacy and outcome expectations, ability and aptitude (Ferry, 2000). According to the participants, the data below represented attitudes of multiple male educators within the school as experienced by the participants.

... teachers don't necessarily care what you do... (#3)

Those who support the girls are overpowered or give up along the way. (#21)

The data showed that the participants needed much support from the educators. The participants felt that the male educators lacked in giving the female learners any form of support.

Many male educators strongly believe that girls should drop any technical subject to the extent that they tell it to my face. (#5)

The data showed that educators seemed to favour male learners as their male counterparts and that prejudice was rife in the school.

Your work will not be notice as much as the work of the boys. (#9)

The ostensibly diverse way in which female learners study, their methodology and thrive in Technology must not be underestimated by educators (Ginns, 2010).

... not a lot of support from the teachers. We don't get advice to continue but rather we get asked

why we don't want to be doctors or lawyers. (#22)

The data shows that the educators did not encourage the participants to continue with Technology.

Male teachers make nasty comments when we make little mistakes and say "typical women" or "women were not made for this". (#14)

The participants implied that the educators chose some school projects which would interest only the male learners. Gupta (2012) infers that engineering has commonly been viewed as a male domain which supports the grievances of the participants.

Anything that has to do with a girl will either not be considered or it will take a long process. (#23)

The educators' deficiency of information, expertise and ease level impedes their presentation and the educational knowledge of learners in lessons (Hill, 2003). The participants indicated that some technical educators were not well skilled in their opinion and this factor influenced their attitude towards the Technology:

... depending on their teaching skills... (#7)

Bambi: ... some teachers are slack... they don't give you your marks back... they don't give your stuff back and don't tell you what to do...

Samantha:... you have to understand them to enjoy the work... some use huge words that you don't know and they like make the work boring... some are so slow...

Technology educators would require extra technology training in order to discover meaningful methods that they can incorporate the subject to promote learner performance (Scheckelhoff, 2006).

It would be great if visuals were incorporated... demonstrates how everything is applied in the

actual engineering environment. (#15)

More excursions to technical companies... (#21)

Roger (2000) refers to a Technical programme that empowers and sustains educators in increasing opportunities (for female learners) in the curriculum which includes inclusive teaching methods. Despite their teaching skills the attitude of the educators suggests that they represent staunch chauvinistic tendencies:

I do believe that teachers discourage girls a lot. (#17)

... sometimes if you battle a bit, they joke around by saying it's because you are a woman and women can't do men's jobs. (#6)

Being doubted by teachers... (#17)

We are discouraged by teachers. (#18)

... the constant comparison to the boys... (#22)

Sarie: ... some teachers, they, I won't say pick on us, they insult the girls.

She was asked how this made her feel:

Sarie: Sometimes it makes me feel, you know what, I can do it, just to show them that I will get through it and push myself hard. In other times I feel that it's dragging me down just because it is so much.

In some Technical schools, learners are influenced by numerous social experiences, cultural, ethnic and societal challenges. This places an enormous demand on educators who try and incorporate all these societal concerns into a technology experience (Chetcuti, 2012).

Shinai: ... my dad, being an Asian parent... maybe in some way it's a very intercultural thing...

The above data clearly showed how the participants are subjected to negative actions of educators and how these actions influence their career choices.



4.10.4 The subject matter

The dominance of male learners in technology is supported by the manner in which gender is entrenched in the technology (Wajcman, 2007). Both the participants' educators and peers:

...think we are not technical minded just because we are girls. (#20)

Some participants indicated that Technology is not in support of a specific gender:

... it doesn't specify that this can be done by males only. (#6)

The data showed that the participants experienced difficulties regarding their subjects:

It is not easy and Maths and Physics are difficult. (#4)

... then I find it hard to do. (#13)

I don't understand and fall behind very quickly. (#17)

It is very difficult. (#20)

The fears of not being able to work, move or lift heavy objects to maintain the physical burden of their career choice were mentioned:

... can handle the heavy machinery but some girls can't... (#22)

Some things boys can do girls can't be done by girls. (#2)

The boys always get better credit because they are good with their hands... (#8)

The participants' felt that it would be important to face the reality of not continuing with Technology:

Thembeke: you shouldn't be really encouraged or sugar coating the subject and continue with engineering...

The data showed that the prospect of studying Technology at a tertiary institution created fear:

You have to take difficult subjects... and it is difficult to study the career in university. (#24)

Shinaua: First year engineering at varsity is just Maths... I wouldn't have done well... not waste anyone's time, my time or my parents' money...

The participants explained their feelings regarding the Technology subject and other subjects that affect their view of possible Technical careers.



4.10.5. Constructions of femininity

Physical differences caused by inherited or genetic factors are not the motivation for inequalities but rather the gender differences cultured through socialisation. (Duvall, 2010). Female learners did not only experience subject problems. The participants felt that they were subjected to the notion that with Technology seen as a masculine domain and very practically inclined, that the participants were seen to do well only in the theoretical aspect of the subject:

...it has become a stereotype that the girls are good with the theory, guys are good with the practicals. (#3)

Most people feel that we can't do what the boys can do... (#10)

Thembeke: the only problem against feminine is when you are going to start at the top, you don't start at the top... you start at the bottom...

Croll (2007) mentioned the concentrated prejudice against female learners and stated that many attempts were made to focus awareness to the extent of this type of discrimination.

Thembeke: One thing I've realized that in the engineering world it is a man's world where, in order to survive, you have to be strong and push to get what you want.

In response to multiple factors, male and female learners create their own identity (Warrington, 2011).

Thembeke: If I start at the bottom... you are limited in the way you are dressing. I am girly, like wearing certain things. I like wearing certain dresses.

The stereotypes of macho masculinity and girly-girliness seem to be seen by children as default positions which mean that children construct their identities in conformity with these stereotypes, unless they have strong reasons to do otherwise (Paechter, 2010)

Thembeke: I like doing certain things and ... and in the technical field I just feel very limited.

Thembeke: ... I wanted to own my own business in modeling...

Her response prompted me to ask her if she thought that the field was very masculine.

Thembeke: Yes

Naugah (2013) explains that these gender differences are a common factor in socialisation which emphasises assumptions and expectations of female learners as future wives, mothers and employees.

Shinau: Think about if you want a family...

If female learners want to survive in a culture where gender stereotyping have to be challenged or altered, Croll (2007) states that reorientation expectations and the increase in female learners' rights needs to take place to ensure development, protection and participation of the female learners

Thembeke: more women entering the field would help the female learners... it's not just for boys. Girls are good – they can tackle issues. They are good in technical subjects

The data shows that some participants were not prepared to challenge the stereotyped behaviour:

Thandi: I don't know if I can do the boots and everything... you can't work the whole day with it... or work the whole day with heels. I like being a girl whatever... I would always have to be at the site.

Bambi: ... I think Mechanical; I don't want to work out of my garage fixing cars. The first thing that came to my mind...

The participants indicated that they would like all the males that they are in contact with at the school to:

... be more open minded in terms of personal opinion. (#10)

Treat all learners equally. (#4)

This data related to their understanding of masculinity within the classroom and suggested that they are emotionally mistreated by the male educators whereby the participant's experiences manifest a rollercoaster of emotions. Depending on the participant's state of emotion the issue of rejection promoted a two way possibility: one being a strong tenacious person as opposed to the other which is ready to give up.



4.10.6 Freedom to choose

The study found that many participants did not want to continue with Technology once the female learners exit school. The following reasons were provided for not continuing with Technology:

I just don't think that it is for me. (#4)

I am not comfortable and feel that I am more suited in a more creative field. (#17)

I don't like working with my hands. (#18)

I can't see myself continuing with Technology. (#20)

The participants explained why they did not continue with Technology. These reasons ranged from their marks being too low to apply for further tertiary education to how they had changed their minds after studying their Technology subject.

I don't fully qualify to study it (career). (#1)

My marks don't allow it. (#23)

Learners indicated that they decided to change their career choice due to the change in their attitude. They thought about the options:

Thembeke: I think it was my Technology... it just made me lose heart.

I found something that I enjoy. (#13)

It does not appeal to me anymore. (#15)

Two participants indicated that career prospects in the current political domain were limited to certain racial lines:

Bambi: to get a job you have to be of colour or non white... for a black woman yes... they get jobs easier...

Samantha: in South Africa yes...

This interview with Bambi and Samantha exposed their fear that race still inhibited participants in getting the career that they seek due to factors beyond their control such as the Quota System and Black Economic Empowerment.

Thandi: not every kid here is going to be an engineer ... some are just not meant to be an engineer.

Tyler-Wood (2012) stated that early exposure to career opportunities would not only keep the

female learners from discarding STEM careers either due to the lack of information or stereotypical views but also to help female learners to explore potential career choices.

I was not fully informed of all my choices. (#6)

The above data shows that choosing a career to continue with is challenging and demands the participants to seek thorough understanding of exactly what it is that they want to achieve, both from an emotional and a monetary point of view.

All the female learners stated that they had listened to their parents when they entered the high school phase (GET) of their life. The parents made the rules and they obeyed. However, being in the senior phase (FET) of their schooling life, the female learner's self-efficiency stratum emancipated them from their parental bond. The data showed that the participants now had to choose not to conform to parental influences and had decided to make their own choices.

... I made my own assessment... (#11)

Shinai: my parents don't really have a say in what I do. I will decide what I think is best for me.

Thembeke: I told him that I didn't want to carry on with it.

Thandi: ... when you say Mom I can't do this ...

Phumbi: ... but I am going to do it...

In some cases the parents give in to their children's choices:

Phumbi's mom: ... whatever you find it in your heart to do I will be ok with it.

Lucy's mom: ... seem to understand that this is what I want to do...

Samantha's parents: they are happy with any choice I make.

4.10.7 Conclusion

In this chapter, the data was presented and analysed from the questionnaire and the interviews. Having used quantitative and qualitative methods of research, I have presented and discussed the data as a mixed method approach. The data from the questionnaires and interviews were discussed simultaneously within the themes. The next chapter summarises the findings from this study and makes recommendations for further research.

CHAPTER FIVE

SUMMARY, RECOMMENDATIONS AND CONCLUSION

5.1 Summary

The purpose of this study was to determine the different factors that influenced the career choices of the female learners in grade twelve. This chapter will summarise the reasons why the female learners do not continue with a technical career when they leave grade 12. These choices, which include possible educational training fields or a specific vocation to pursue, have substantial repercussions on job-related development. An adverse experience can avert female learners from constructing career choices that comprise employment in that specific domain thus having a profound consequence on their career path and their future.

As demonstrated in Chapter 2 these female learners who study Technology are seen as "path breakers". Technology work completed in primary schools was not analogous to what was offered in high school resulting in a lack of knowledge regarding career choice. The female learners were not encouraged to challenge the nontraditional subject or confront stereotyped image of the subject. These perceptions of female learners impede their ability to perform in Technology. The lack of female role models adds to this stereotyped career. Guidance counsellors provided limited information regarding Technology careers and some relied on parent or family support. Female learners selecting courses and careers are not immutable. In the current economic climate, every female learner requires an education. In this research the learner demographics played a huge roll in school selection. Poor functional school settings include educator dynamics, curriculums which disregard female learner's needs and stereotyped indoctrination that female learners should not be in engineering careers. Female learners do accomplish, and in some cases, better than the male learners on several indicators of scholastic

attainment. It is evident from the questionnaires that numerous masculine activities seem to crumble and that many of the female learners intend to continue with a Technical career.

All learners are subjected to quantifiable procedures regarding perceptible attainment that is enforced by the education system. It is therefore effortless to lose prospect of the resolution of gendered preference choices. Unfortunately equal concentrated monitoring is not provided in this matter that concerns the female learners. This omission of monitoring female learners would neither favour female learners or Technology. Female learners are anticipated to traverse the norms placed on their femininity opposed to the male learners being able to fortify their masculinity norms via the sustained significance of their stereotyped domain. The divide in technological understanding and awareness could expand, instead of merging as the male learners continue as business as usual opposed to the female learners who are seen as breaking new barriers.

5.2 Implications from this study

The milieu of learners, as well as what transpires in the classroom, will manipulate learner's education and thus their future. So much more needs to be done to stimulate Technology as a subject in schools and to maintain this interest in order to tackle prospective shortages in the engineering field. More female learners need to 'connect' with the subject. Subsequently the following recommendations emerged from this study:

5.2.1 School curriculum

Updated curricula mutually in terms of education theory and significance to commerce must be implemented. The need for commerce in terms of skill-based education is essential in advancing Technology trade (NQF). To sustain gender equality amongst all learners the introduction and inclusion of basic Technology into activities from pre-school level and in Primary schools would result in Technology becoming an everyday experience for the subject. Technology will become rooted into every young learner's daily culture, forming the belief that from the primary school, that literacy and numeracy are fundamental opportunities which include female learners. This

belief would ignite the female learner's interest in the subject. Supporting subjects like Maths and Science should be interesting and able to maintain learner's interest in Technology by including more realistic and applicable ways of learning. As the South African schools not having a separate elementary phase, the changeover between learners' primary and high school phases must be cautiously monitored in terms of Technology continuation. The Technology curriculum needs to be made as an impending, exhilarating and a feasible vocation option for female learners. Technology, as Life Orientation, should be a compulsory subject. The curriculum should be gender neutral. The amalgamation of would be of benefit the assortment of understanding, skills and inspirations of female learners as well as that of male learners (Plante, 2009). A range of assessment methods must be used to assess theory and practical work. Those in management should ensure that the ideology and perception of gender impartiality are fundamental to the curriculum advancement, the assessment mean and execution in Technology. In addition the yardstick for appraising competencies which advantage female should be expanded. The curriculum should allow for more recreational activities. Educational sessions for female role models in Technology fields should be compulsory. Bridging courses at tertiary educational centers for learners to enter into higher education must be compulsory. Curriculum pace setters must be determined by the Education Departments as an annual yardstick. The curriculum must be designed to create relations between what female learners and male learners are learning in the primary school and what their possible post-school ambitions might be.

5.2.2 School educators

Educators should ensure that the school operation is gender inclusive. (Keller, 2001). Educators should respect the academic attitude and behavior of female learners as well as be reasonable and flexible in their personal circumstances. Educators who have limited knowledge of the Technology subject which they teach must be trained. Forums and workshops are ideal for educators to meet regularly and confer about gender impartiality. Educators could reduce the female learner's level of anxiety and hostility towards Technology subjects. Educators could be present at training sessions or attain novel materials. Female educators need both a firm technological understanding. Educators should concede from overwhelming oral cultures which dominate in classrooms and learners do the minimum.

Vibrant classroom participation would endorse gender impartiality. Educators should motivate female learners to become immersed in physical participation of actual practicals that epitomize their interest capacities. The educator should allow for the verbal element and a proliferation of forecast for agreeable understanding amongst female learners. Educators should allow as many female learners in one class as possible and lecture them that Technology propensities are adjustable and achievable. Educators should offer rigid and motivational advice to female learners. Produce a class room environment that inspires early curiosity and nurtures enduring inquisitiveness in Technology. The school should present three-dimensional skills education. The learning styles and well being of the female learners in the classroom must be considered when teaching. More female technology educators need to be teaching in classrooms as they are imperative role models for female learners who are attracted to Technology. Educators should mull over strategies to draw more female learners to their lessons. Consider the use of various types of activities like individual or group activities. To ensure equal rights in the classroom, male learners should not be allowed to overwhelm the female learners this eliminating stereotyped behaviour. When marking projects, the educator should allow for creative freedom as well as mechanical design when setting up mark spreadsheets. Educators must invite speakers from industry to speak to the learners to help merge the relationship involving school and employment.

5.2.3 Role models for female learners in Technology education

Invite female role models who have succeeded in the field of Technology. Successful technical orientated women need to interact with female learners by coming to their classrooms and exchange information about their occupations and the types of provision and training that is needed to do the work. Posters showing female Technology workers should be displayed in the classrooms. Although many schools host careers days, not many emphasise nontraditional professions. The work experience that occurs in the grade eleven year, can afford more prospects for female learners to shadow Technology careers. More female educators should teach Maths, Science and Technology. Information to female learners must be provided about career possibilities, by means of videos and charts intended to confront stereotypes concerning careers for women.

5.2.4 School counsellors

It is the responsibility of the school's guidance counsellors to offer more data regarding the different electives that are accessible to female learners and the possibility of numerous career opportunities. The counsellors should also create associations between primary and high schools by communicating with both of the primary and high school educators and by instilling a mediation process between the classes. The counsellors should be able to provide data about the required planning and preferred projections of several Technical careers to both female learners and their parents. The counsellors should communicate with Technical educators so that they have an understanding of the classroom problems and difficulties. It would be of great importance for the guidance educators to host Career days and Open days at the schools where various Technical companies and female representatives would be able to converse, explain and demonstrate some of the Technical careers. During the grade eleven Work Experience time period, the counsellor would be able to negotiate and mediate possible career opportunities for the female learners as well as provide support to the female learners who have worries regarding the careers.

This study strongly advises the participants to view this social construction beyond the barriers created by gender stereotypical perspectives and to express their experiences in a manner that could bring meaning to other female learners. The data showed, as indicated previously, that the female learners internalize the ideas of what it is to be feminine by means of the way they dress (boots and skirts) and to an extent, the subject that they choose. However, they are still defined by their bodies. Children grow up in an environment filled with stereotypes, including gender stereotypes (Steinke, 2004). By expressing their views the participants give meaning to their experiences. It is clear that the challenges they face are not centralised in a vacuum but that many of these discourses stem from various other origins. The data reflects that these participants are subjected to these discourses. Some are able to manage the pressure oppose to others who choose to change their course direction:

Phumbi: I can't imagine myself in it.

Thembeke: I actually do enjoy the work...

Francis (2010) indicated that many female learners feel that their future occupation could impact on other gender issues.

Thembeke: ... I feel for townships and the other girls' schools...

Thandi: you are here on earth to add something to the world

The female learners who attend a predominantly male school are seen as path breakers who are challenging stereotyped perceptions. This is seen as non-traditional and because many people do not see female learners in technical careers indicates the barriers mounted and preserved by sexism. When educating a boy one educates one person, whereas educating a girl educates a whole family (Hoffmann-Barthes, 1999).

5.3 Conclusion

In conclusion this study has highlighted the factors that influence their career choices. The female learners who chose not to continue with Technology after leaving school have been able to maintain good marks for their subjects despite the fact that they disliked their Technology and other related subjects. Change is always difficult but by bridging a variety of gaps and clever dialogue, many negative factors that influence the female learners' career choice can be eliminated, thus creating positive learning experiences in Technology and more female learners selecting Engineering as a career option.

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Consent letter to female learners:

Dear _____

I am Ms. Slabbert and I am a Master in Education student at the University of KwaZulu Natal (UKZN). I am enrolled in an Independent Research Module. I am conducting a project towards my degree. The title of the project is: The purpose is to understand the career choices made by Grade 12 female learners studying technical subjects. I would like to request your permission to participate in my research project.

Key features of the project: In this project I will seek to explore the career choices made by the female learners studying technical subjects. Data will be collected in the form of a first schedule questionnaire followed by a second level of data that will be collected via an interview schedule with a smaller sample group.

Universal principles such as honesty, justice and respect will direct my research. You will be treated with fairness and honesty and I will ensure confidentiality and anonymity by not using your name in my written report. You are free to withdraw from the research at any stage without negative or undesirable consequences to you.

The supervisor of this project is Dr Shakila Singh and she may be contacted on 031 2607604.

Thank you for your co-operation.

Yours faithfully

Contact Number

Ms. V. Slabbert

031 – 33 55 482

Informed Consent

Declaration

I _____ (full name of parent)
hereby confirm that I understand the contents of this document and the nature of this research project and I consent to participating in this research project.

SIGNATURE OF FEMALE LEARNER

DATE

Consent letter to parents:

Dear Parent/Guardian

I am Ms. Slabbert and I am a Master in Education student at the University of KwaZulu Natal (UKZN). I am enrolled in an Independent Research Module. I am conducting a project towards my degree. The title of the project is: The purpose is to understand the career choices made by Grade 12 female learners studying technical subjects.

I would like to request your permission for your daughter/ward, _____ to participate in my research project.

Key features of the project: In this project I will seek to explore the career choices made by the female learners studying technical subjects. Data will be collected in the form of a first schedule questionnaire followed by a second level of data that will be collected via an interview schedule with a smaller sample group.

Universal principles such as honesty, justice and respect will direct my research. Your daughter/ward will be treated with fairness and honesty and I will ensure confidentiality and anonymity by not using her name in my written report. She is free to withdraw from the research at any stage without negative or undesirable consequences to her.

The supervisor of this project is Dr Shakila Singh and they may be contacted on 031 2607604.

Thank you for your co-operation.

Yours faithfully

Contact Number

Ms. V. Slabbert

031 – 33 55 482

Informed Consent

Declaration

I _____ (full name of parent) hereby confirm that I understand the contents of this document and the nature of this research project and I consent to my daughter/ward _____ participating in this research project.

SIGNATURE OF PARENT

DATE

Consent letter to the Gatekeeper:

60 Kennilworth Road

Musgrave

4001

30 April 2013

The Headmaster

Durban

4000

Dear Sir,

Re: Permission to conduct research at George Campbell School of Technology as part of my research study at the University of KwaZulu-Natal, School of Education.

I hereby request permission to conduct research at George Campbell School of Technology. My research focus is based on "understanding the career choices made by grade 12 female learners studying technical subjects “.

It is therefore important to find out which factors influence as well as the impact these factors have on female learners currently enrolled in these courses.

Participation in this research will be on a voluntary basis and prior arrangements will be made with the school concerned. I ensure confidentiality to all responses to the questionnaires and interview schedules and undertake that all information gleaned will be used for academic purposes only.

Further, administration of the surveys and questionnaires will be conducted during non teaching time, with the least possible disruption to the school day.

Yours faithfully.

Ms. V. Slabbert

Technology Educator

Consent letter to Department:

60 Kennilworth Road
Musgrave
4001
5 June 2013

Mr. S.R. Alwar
Support Services

Manager: H.R.
Private Bag X9137
Pietermaritzburg
3200

Re: Permission to conduct research at George Campbell School of Technology as part of my research study at the University of KwaZulu-Natal, School of Education.

I hereby request permission to conduct research at George Campbell School of Technology. My research focus is based on "understanding the career choices made by grade 12 female learners studying technical subjects “.

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Yours faithfully.

Ms. V. Slabbert

Technology Educator

Ethical Clearance approval:

Dear Dr. Singh,

Full Approval has been granted for Ms Slabbert's project *Understanding the career choices of Grade 12 female learners studying technical subjects* (HSS/1108/013M).

Data collection may now commence

Kind regards,

Mariette

Mariette Snyman
Research Office: Ethics
University of KwaZulu-Natal
Govan Mbeki Centre
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2 December 2014

**Declaration of Editing of reference list of dissertation for partial fulfilment of
M.Ed.:**

Understanding the career choices of grade 12 female learners studying technical subjects.

I hereby declare that I carried out language editing of the reference list of the above dissertation on behalf of Veronika Slabbert.

I am a professional writer and editor with many years of experience (e.g. 5 years on *SA Medical Journal*, 10 years heading the corporate communication division at the SA Medical Research Council), who specialises in Science and Technology editing - but am adept at editing in many different subject areas. I have previously edited much work for various faculties at UKZN, including the School of Education. I am a full member of the South African Freelancers' Association as well as of the Professional Editors' Association.

Yours sincerely

LEVERNE GETHING leverne@eject.co.za

Questionnaire Questions

Learner Questionnaire Pseudonym: _____

1. What subject are you studying?

Mechanical Technology		Civil Technology		Electrical Technology	
-----------------------	--	------------------	--	-----------------------	--

2. When you came into the school, did you receive any counseling or guidance regarding the selection of the different technical subject choices from the school or anyone else? Please explain.

3. Have you received any career guidance from the school?

4. If yes, how would you rate the guidance given regarding possible career choices provided by the school?

Excellent		Good		Satisfactory		Poor	
-----------	--	------	--	--------------	--	------	--

Please explain

5. Why did you choose the technical subject that you are currently studying?

6. Is there a specific technical career that you consider best suited for girls?

7. What challenges did you encounter as a female learner in the school that influenced your career choice?

8. Do teachers contribute to the problem of female learners who do not pursue with a career? Explain your answer.

9. Is the educational material you use in your technical subject gender neutral?

10. What should schools do to make technical learning fair for female learners?

11. Why did you choose to study a technical subject? You may choose more than one answer.

I would like to do study engineering	
I would like to study architecture	
I would like to open my own business	
I enjoy working with my hands/practical environment	
I enjoy working in the workshop	
I wanted to learn technical skills	
There is lots of employment opportunity in this field.	
I am a creative person and I like to make things.	
Other reasons not specified above	

12. What aspects of the subject do you prefer?

Practical		Theory		Both	
-----------	--	--------	--	------	--

Explain

13. How would you rate the education and training you receive at your school?

	Excellent	Good	Satisfactory	Poor
Theory				
Practical				

14. Did you receive any career counseling at the time of selection of the career choice?

Yes		No	
-----	--	----	--

15. What career do you intend pursuing on completion of your grade 12?

16. Why do you wish to follow this career?

17. Is this a technical career? Please explain your answer.

18. Do you have any suggestions that will help to increase the amount of female learners following a technical career after completing grade 12?

19. Do you feel that what is taught in the technical education classes prepares female learners adequately for the occupational work?

20. Do you feel that your technical educator influenced your career choice? Please explain.

21. Is the technical subject content the reason why you are continuing with a technical career?

22. If you are not continuing with a technical career, what are the reasons for this choice? Please explain.

23. If you could rewind your choice, would you select a technical school again?

24. If you could rewind your choice, would you select the same subject again? Please explain.

25. What are some of the setbacks/problems that you encounter with technical education at your school?

26. Do you feel that the technical syllabus/curriculum is relevant to the needs of the learners? Please elaborate!

Learner interview schedule

Learner Questionnaire Pseudonym: _____

1. Why did you choose the technical subject you are currently studying?

2. You have indicated in the previous questionnaire that you do not intend to continue with a technical career. Can you explain?

3. What career do you intend pursuing?

4. Why do you want to pursue this career?

5. What/who influenced you not to pursue a technical career?

6. What advice would you give female learners who have to make a career choice?

QUESTIONNAIRE TRANSCRIPTS : (24 participants)

1. What subject are you studying?

	Not continuing	Continuing
Mechanical Technology:	1	2
Civil Technology:	5	8
Electrical Technology:	3	5

2. When you came into the school, did you receive any counseling or guidance regarding the selection of the different subject choice from the school or anyone else?

Yes	10
No	14

Please explain:

- I chose a subject I thought I would be able to cope with
- I was told by ex pupil to take Civil - did not enjoy it - Electrical
- in grade 8 and 9 - introduced to the different subjects
- I just knew that it was a technical school - no idea about the subjects
- in grade 8 I knew what I wanted to become
- we did all 9 subjects
- was only told what the subjects were - made my own decision
- I didn't
- my brother who came to the school told me
- was something I wanted to do since grade 6
- did my own research
- was told about the 3 subjects

- explained in great detail on Open day
- pupils told me more
- educator explained the subjects and how the school works
- at the entrance interview I was told about the different subjects
- the deputy principal explained the different subjects to me
- my parents informed me.

3. **How would you rate the guidance given regarding possible career choices?**

Excellent	1
Good	10
Satisfactory	8
Poor	5

Explain:

- I still don't know which career path I can take in Mechanics
- I was placed in Electrical even though I chose Civil
- we were never explained what the different fields would entail in the future
- were told about many careers but still confused
- careers not explained in depth
- sometimes representatives from different colleges/universities come to the school and speak about different career study fields
- only saw in detail when doing work experience
- if they wanted students to go into Technology then more should be done
- LO department helped identify some careers
- knew what I wanted so not interested
- my father

- I knew what I needed for the career I chose
 - not enough assessments done to help me
 - career days were held at the school
-

4. **Why did you choose the technical subject that you are currently studying?**

- it was different
 - I am more theory minded
 - I never chose it
 - I did not want to do Mechanical or Civil
 - more interesting and offered better job opportunity
 - because of the demand of engineers
 - love building design
 - always interested in Electrical
 - best subject at the time
 - wanted to pursue a career in this field
 - comfortable with the subject
 - I did not want to do Mechanical or Electrical
 - interested in aeroplanes and cars
 - inspired by my father
 - money possibilities
 - interesting
 - the practicals
-

5. **Is there a specific technical subject that you consider best suited for female learners?**

No	16
Yes	8

6. **What challenges do you encounter as a female learner in the school?**

- Girls are doubted
 - seen as weak links
 - disrespected by the male learners
 - our work gets criticized
 - boys complete their practicals faster
 - girls are seen as not good enough for the department
 - educators not motivating
 - gender stereotyped
 - not taken seriously
 - no equality in the school
 - told that girls don't belong in a workshop
 - girls not recognised in the school
 - not enough bursaries for the girls - lots for boys
 - sports discrimination
 - no platform given to voice opinions
 - girls seen as good with theory - bad with practicals
 - always compared with the male learners
 - more pressures
 - don't give credit when due - have to work extra hard
-

7. **Do teachers contribute to the problem of female learners who do not continue in a technical career?**

No	8
Yes	13
Do not know	1

Explain:

- girls are excluded from building the go carts
- educators turn a blind eye to female learner issues within the school
- those who support the female learners are overpowered by males
- they discourage us
- some educators are not well skilled
- they don't motivate the female learners to continue with Technology
- some school projects only for boys
- they say you're a girl if you battle – women don't do men's jobs
- Male educators say to the female learners that the female learners must drop Technology to their face
- Educators make nasty comments about us
- Educators don't necessarily care what you do
- Some educators go out of their way to help us.
- Educators ask why don't you want to become a doctor or a lawyer
- Female learners are underestimated by the educators
- Told that female learners are not as good as male learners

8.	<u>Is the educational material you use in your technical subject gender neutral?</u>	
	Yes	22
	No	2

9. **What should schools do to make technical learning fair for female learners?**
- Accept more girls into the school
 - Educators need to be neutral and not judge the female learners
 - They must consider female learner's projects for competitions/displays
 - Equal opportunity for all
 - Open minded in terms of personal opinion
 - Introduce more technical awareness programs
 - Life is tough and the female learners must learn to cope
 - Technology must be promoted from the primary school level
 - All schools must have Technology
 - Educator must stop making it seem that female learners are inferior to male learners
 - Educators are stereotyped
 - Uniform skirts must be replaced with pants – more practical
 - Male educators are negative towards female learners
 - Female learners need more time on the machines
 - Have more female educators at the school
-

10. **Why did you choose to study a technical education subject? You may choose more than one option.**

I would like to study engineering	12
I would like to study architecture	3
I would like to open my own business	5
I enjoy working with my hands	6
I enjoy working in a workshop	5
I wanted to learn technical skills	9
I enjoy working in the practical environment	11
I am a creative person and I like making things	4
There are skills shortages in this field	5
Other reasons not specified	10

-
- 11 **What aspect of the subject do you prefer?**

Practical	6	Theory	5	Both	13
-----------	---	--------	---	------	----

Explain:

- Love working with my hands
- Don't like theory
- I learn better when I do things
- Practicals are interesting – trial and error
- Practicals prove the theory – apply the theory
- Good at both
- Practical is more fun than theory
- Practicals are time consuming
- Theory is way too much to learn
- Both helps with the understanding
- Both is a good balance
- Good to see what the theory looks like

- Theory because the boys always have more time to do practical
- No clue how to do the practicals – confusing
- Theory – not good with my hands
- I am good at theory

12. **How would you rate the education and training you receive at your school?**

	Excellent	Good	Satisfactory	Poor
Theory	13	10	1	
Practical	8	7	4	5

13. **Did you receive career counseling at the time of selection of the school?**

Yes	7	No	17
-----	---	----	----

14. **What career do you intend pursuing on completion of your grade 12?**

Forensics, Electrical Engineering 4, International Relations, Mechanical Engineering 3, Maritime Engineering 2, Quantity Surveying 2, Educator 2, Medicine, Law, Town Planning 2, Agriculture Engineering, Graphics and Design, Civil Engineer, Architecture 2, Structural Engineer.

15. **Why do you wish to follow this career?**

- I like it
- I like designing buildings/houses
- Have a passion for drawing
- Lots of work available.
- Embraces my qualities
- Lifelong desire and passion for it
- Suited for the career

- Want to work with the environment
- Females needed in this career
- See it as a challenge
- Love finding solutions to problems
- Have a passion for working/helping with people
- It's interesting

16. **Is this a technical career?**

Yes	17	No	7
-----	----	----	---

17. **Do you have any suggestions that will help to improve the subjects you have studied?**

- More practicals must be done – hands on experience
- More awareness programs must be hosted
- Smaller classes with better interaction between learners and educators
- Slide shows etc. to demonstrate the Technology
- More detailed career possibility information regarding the specific subject
- More talks about in service training to see what you get yourself into
- Extra lessons for female learners
- More excursions to technical companies

18. **Do you feel that what is taught in the technical education classes prepares female learners adequately for the occupational work?**

No	4
Yes	20

19. **Do you feel that your Technical educator influenced your career choice?**

No 15

Yes 9

Explain:

- Motivated me not to give up
- I was motivated by outsiders
- I knew what I wanted to do as a career
- Were excellent educators – taught well
- Have a female Technical educator who influenced me
- I trusted the educator

20. **Are you comfortable with learning your Technology subject?**

No 2

Yes 22

Why is this so?

- I did not grasp the subject and fell behind
- It was too late to change the subject so I made the best of it
- I love and enjoy the subject
- I could relate to my female educator – she shared her experiences
- I strive to become something in Technology
- I learn new things everyday
- Now I can fix things that would have cost a fortune to fix
- Educator make the work easy
- There are other female learners that ‘stand together’

- The subject is interesting
-

21. **What are the reasons for you not continuing with a technical career choice?**

- I found something that I enjoy more
 - I just don't think that it is for me
 - It does not appeal to me anymore
 - My marks don't allow it
 - I was not fully informed about all my choices
-

22. **If you could change your choice, would you select the same technical school again?**

No	6
Yes	18

23. **If you could change your choice, would you select the same technical subject again?**

No	7
Yes	17

Please explain:

- I learnt a lot
- I would like to see what Civil is about
- I would choose Electrical as it is more beneficial
- I enjoy the subject
- Other subjects too advanced
- I understand what I am doing
- Not many female learners are interested in the subject

- It is something I always wanted to do
 - I don't see myself doing the other subjects
 - I love the subject
 - I have family members in the same career
-

24. **What are some of the setbacks/problems that you encounter with Technical education at your school?**

- Workshops are too small
 - Too much theory
 - Female learners are looked down at
 - We hardly see what we are learning about
 - Gender stereotyping
 - To get the good grades to continue to study is difficult
-

25. **Do you feel that the technical syllabus/curriculum is relevant to the needs of the female learners?**

No 3

Yes 21

Please elaborate:

- It is relevant
 - The level increases on a regular basis
 - Some practicals are not relevant
 - Some theory could be practically built
 - Basics for further studies
-

26. **How can these problems be addressed?**

- Educational talks and workshops
 - 6 months theory and 6 months practical
 - Relevant practicals like bricklaying etc.
 - Smaller classes
-

INTERVIEW TRANSCRIPTS: (8 PARTICIPANTS)

INTERVIEW 1: (Shinau)

I am doing my Masters as I said to you and I would like to find out what the factors are that influences girl's choices with regards to subject choices. You are welcome to stop at any time if you feel so. Why did you choose the technical subject to study, that you are currently studying? Why did you choose it?

Shinau: I chose the career , the technical subject in high school because we had to choose a technical subject in grade ten and being a technical school it was uh... compulsory. I chose Civil because it involves quiet a lot of research and writing and that kind of thing. And the reason why I came to a technical school is because I live across the road and when I realised that I did not really want to do... Oh my mom decided that I rather go to a school that is walking distance so that you don't have to go through the whole problem of transport and taxi problems and taxi strikes and that took care of one problem and when I told her that I wanted to move school because I did not want to pursue anything in a technical field she said no... My mom is very afraid of changes I don't want to pressure her too much so I stuck with it.

So the main reason is basically because you live across the road?

Shinau: That is why I came here and I chose a technical subject because it was compulsory.

Why did you choose Civil? Why did you choose Civil and not Mechanical or Electrical?

Shinau: It was a process of elimination. Mechanical I did not really enjoy it. There is nothing particularly I didn't enjoy. I just didn't like it...it...it just wasn't drawn to it... Electrical, because maths hasn't been my favourite, so in Electrical it is a lot of maths and formulas and all things like that so that left me with Civil. Civil, so Civil was a lot of writing, research and reading. I like research and I reading and I like writing so that's why I chose Civil. And also, I was very interested at the time in in... I am a very aesthetic person so agriculture interests me well...

You have indicated in a previous questionnaire that you do not intend to continue with a technical career. Tell me about that choice.

Shinau: I never intended to pursue a technical career because like I said, either I am drawn to

something or not, so I decided to pursue something I was drawn to and interested in also where I could use my strengths where I actually excel and do well in my chosen career and with engineering, it was engineering that was your question... with engineering it was also I... it... it aaagh... engineering? First year engineering at varsity is just Maths, so... so if I actually did pursue it because I thought, just let me do it because there is a lot of money involved in it, I wouldn't have done well with any of the tests in the semesters and things like that and I don't want to waste anyone's time, my time or my parent's money with things like that, and I don't want to do anything I don't enjoy.

You did Math's core?

Shinau: I did Math's core...

What career do you intend to study? What do you plan to study next year?

Shinau: I intend on studying International Studies. With that there is a lot of career opportunities... and right now I... I've looked over a different career opportunities but I really want to look into it once I start studying it and once I see which subjects...which subjects... which modules I enjoy the most, the ones that I do the best at...Where I focus on.... uhh...career opportunities like.... that that I really excel in what I am strong at and what I am interested in. From there then I will look into it.

Why did you choose this? What activated this idea?

Shinau: When I have to choose a course to study at varsity it just happened to be my first choice. I came across it very early in the year, I bookmarked it on my phone, I just kept it there... It was a lot to choose a course and to choose and I was very in-decisive about what I wanted to do and then I thought.... what do you think I'll be good at in varsity and it happened to be International Studies... I was just uhhh... going through the list, seeing what the course was about, what it entailed, what it offered me, post varsity and then I chose International Studies...It involves a lot of communication between people, it's very...it... it focuses on... on... on organisations of companies that have international relations, that have inter-cultural relationships and that kind of thing, so with it, you can have...you can work in the public sector or the private sector...With the public sector you can work in the UN, the embassies, the MEC's, anything that is political,

governmental.... nongovernmental organisations or the private sector with companies with international branches and that kind of thing... So that's why....

When did you see the list?

University when... you... your... the options of degrees that you are going to study.

Are you fine with studying this option?

Shinau: I... I.... no, you don't have to go on to the site then they say ... what degrees do the university offers...so...oh yes, that is what I did. I went through that list and I thought, ok..., not bad..., not bad....., not bad... that's interesting....

That sound very interesting. Who influenced you or what influenced you not to pursue a technical career?

Shinau: Maths.

Besides the Maths, what made you not continue with the technology or engineering?

Shinau: I just did not enjoy it overall. I wasn't really, not that I wasn't interesting; it was interesting, because in a way it was. Engineering is a lot of creative thinking and making things into something solid, that you can actually see your ideas... it....it... it... is very interesting ... it didn't interest me...

It didn't tickle your fancy?

Shinau: It didn't tickle my fancy... blow my hair away... It didn't go with my flow... it didn't blow my hair away. But it was doing it, it was interesting but also while I was doing it there it was also one.... I gave in stuff very late because I ...my... I don't really want to do this, I'm not really enjoying it, so, I knew that in high school I wasn't giving it my all because I didn't like it... what would happen at varsity or working field. I slacked off because I just wasn't enjoying it. So I thought I should draw on my strengths rather. It was interesting. I encourage other people to see what it is to pursue it, pursue the engineering field.

Your parents... how do they feel about it?

Shinau: My parents don't really have a say in what I do.

Why?

Shinau: I... whenever they have suggestions, whenever anyone has suggestions, parents, friends, people who know me, counseling teachers, they do have...add something to...like an opinion.... I will take the opinion openly... I am very open to opinions and I will put it on the table, I will listen to what they have to say about it and I'd really think about it.... and see, and I will take it into consideration that ultimately, I will decide what I think is the best option for me... so that's how I feel on what I... I plan to do.

And what other influences are there?

Shinau: From a very young age, my dad, being an Asian parent that initiated the whole, be a doctor, be a dentist, be a ... and then my sister was... be a lawyer, be a lawyer... be a lawyer and that was about it and my mother, didn't really want me to... Ja. She didn't really have anything that she wanted me to be.... she never really had anything she wanted me to be...

So culture was not an influence? None of your background? Ethnic culture that would influence your choice?

Shinau: No... to influence my choice to pursue or not pursue?

Not to pursue in any way...

Shinau: No....

And influencing your international studies?

Shinau: Consciously I wouldn't say... but maybe in some kind of way it's a very intercultural thing and about the world as a whole... and I have always liked being of mixed race and with my dad being from Taiwan and my mom being from the Eastern Cape, so I have always had ... I have always embarrassed the multi-cultural side and always fascinated and people in general, really fascinate me... so... I would say my personal interest definitely influenced my choice and cultural... huh.... maybe sub-consciously. Like I just said.

What advise will you give female learners?

Shinau: Pursue something you want to study not something someone else wants to study, but don't shut the door on any suggestions. Be very open to suggestion. Really think it through... and think it through now... think about it short term... long term... don't get to think about money now because it might not be in demand now, might not be in demand in ten years... and really go for something you are passionate about, and also, whether you like it or not, money is something you have to think about and also have a career in it, passionate about it and is it going to fund the lifestyle that you want so you realise your dream. Think about if you want to have a family.. don't get something that is going to give you maximum or more income. There are a lot of factors... I am very open to all those factors... and do your research... number one, do your research.

Would you... what subjects would you choose if you could choose again?

Shinau: Which high school subjects? History, when we did history in grade 9, I really enjoyed History. History... I would choose Geography because of what I am going to study now otherwise I wouldn't really have chosen Geography. Math's wasn't something I was very strong at but funny enough I really enjoyed Math's. Science was fine, English was fine. I love my English and Afrikaans definitely. Also more languages if I could. If the school offered more languages I would have taken all of them. What else... what else was there? I wouldn't have chosen EGD (Technical Drawing) I enjoyed it in grade eight and nine and from grade ten and on it nearly killed me. And ugh... and technical subject. I would have taken any of the technical subjects. But the way I did choose ... I obviously I learnt quite a few things from it when you do International Studies, you deal with humanities and environmental issues, so Civil did teach me the different environmental issues and also about architecture and buildings and things like that. So that would help as well with what I want to study... It gave me some background knowledge study so I won't to say that it was completely useless.

INTERVIEW 2: (Thembeke)

Welcome. I want to ask you why did you choose the technical subject that you are currently studying?

Thembeke: I chose it because I was influenced by my parents.

Uhhmm.....

Thembeke: Well, from primary I always liked business studies, but I didn't continue with business studies because my parents, they are the ones who chose the school for me actually, and then while I was here I was then suppose to choose between Electrical, Civil and Mechanical and the one I first liked Civil but also my father who told me more about Electrical engineering because there were more jobs in this field and what so ever and he had connections in electrical engineering so I did research on it and saw that it wasn't too bad. So I decided to go on the Electrical engineering and then... I had my doubts when I was doing it and I thought that I would do better in Civil because everyone was doing better at it and I didn't like it, I didn't like Electrical that much. So I had my doubts I thought maybe if I change to Civil things would get better. But at some point along the line I... I... I also saw that, at some point I saw that, that uhhmm... I couldn't make... I made my choice and I am sticking to Electrical and I didn't like Civil any more. But at the end of the day, technical wasn't what I liked... I did it because I was influenced by my parents... They were talking about salaries... how educated you are if you do something technical but it is not something that I would choose...

Not? So you wanted to do Business Studies right from the start? Right from the word go? What about it attracts you?

Thembeke: Mam, ok, if, maybe... maybe let me not say business studies, but maybe something in the fashion world. Something that is not technical.

So more woman ...

Thembeke: More women and more feminine

So you feel that your interest slants more in the direction of femininity . Why do you think that engineering cannot be feminine? Especially Electrical?

Thembeke: Mam, it can be. It depends on the positions you are in. I don't think that you can start at the top. The only problem, the only problem against feminine is when you are going to start at the top, but you don't start there, you start at the bottom and it also depends on yourself. For it to be feminine is always depends on yourself. I can't be getting, I can't be get forties and thirties and expect my career to be feminine in engineering. I am going to battle and start from the bottom and I don't... If I start from the bottom in engineering, the way we did our work experience and you are limited in the way are dressing. Well, I am girly, I like wearing certain things. I like wearing certain dresses, I like doing certain things and... and in the technical field I just feel very limited.

Very masculine?

Thembeke: Yes.

Ok. You have indicated in your previous questionnaire that you intend to do a different career. Can you explain? Not to continue, you explained that in great detail, just remember that this is quiet, what's its name... Is there anything.... So if it puts you off... Working with electronic meters and stuff, didn't you find that that could be, and working with a soldering iron, don't you think, that that could be feminine for you?

Thembeke: Uhhmm... it's not that I wouldn't define that as not being feminine, but I actually do like practical.

Ok...

Thembeke: I do like practical, I prefer practicals rather than the workbooks. I prefer that... because I am able to do that by myself but I just don't see myself working... I will do it here at school, I don't mind. I do pretty well in it. I do my PAT's to the best of my ability without any help... but I... I don't see myself doing that in ten years time on an everyday basis. I... I don't see myself doing that...

And you are... here... In other words you are saying that you are here doing it because you have to... you are doing well in it because you have to do it... ok... uhm... what career do you intend... what career do you... have a specific career in mind at the moment?

Thembeke: I was caught up between marketing and business management and then I did my

research and I think that am falling more towards business management.

Ja...

Thembeke: It's to me like the same thing... and that is the thing. I marketing... I wanted to first do marketing and then owning my own business in modeling, but I think it is easier if I start with business management and then running my own business... rather than the other way around.

Did you know that it is too completely different fields???

Thembeke: Two different fields completely... different fields...it's not like... definitely... it's not like technical to business... to marketing... because that's what I wanted to do... I first wanted to start off to technical... and then at the same point in my life... I own my own business...

Do you not think that you can do technical marketing???

I... I can... I think... I think that being in this school... has just... I think that being in this school has just made me lose a lot of heart with anything that has to do with the field of technology

We are going to get to that question just now. I am just asking because uhm... there's so many careers for technical women and... and business management and marketing on the cards business is part of it you know, where you don't need to if you are wanting to go into business management and marketing... do you not feel that with your technical knowledge, more doors will open for you? You still stick with technical, but you just carry that through and apply it in marketing for big companies... huge technical companies...

Thembeke: That... that has a lot of benefit... that... that what I saw in my research as well... when working for a technical company you get paid... but now, since I have... I have had a lot of regret being here, I have ended up losing heart... so now I don't think that I want to do anything technical again... but...

Ja... ok...

Thembeke: But I don't think that I will do anything technical again, but then again as I was

saying now, now that I don't like what I am doing, by the time I get in varsity... in varsity I am going to study business management and when I am done with that, I am pretty sure that I wouldn't mind doing that because it could benefit me a lot.

You can always fall back on your technical education... uhm... why specific marketing? Are you a good outgoing person... can you organise? Are you a good organiser?

I have good leadership skills

Hmmm...

Thembeke: I can organise... the thing is my heart is at it... That's it...

What about it attracts you to that? You say your heart is there... what is it... what is it that you have seen that attracts you to that?

Thembeke: Mam... It's not just the marketing, it's the marketing management.

Yes, but what about it... is it leadership positions?

Thembeke: It's the leadership positions... and it's... I don't know... maybe it's... its everything technical that I am just not into and this is more... Its more managing brand... and that's what I like doing.

If you could change your choice, which subject would you select? Would you select the same subject again...? Electrical?

Thembeke: No

Not? What would you choose? Change the subject... if you could change the subject... what would you change it to?

Thembeke: Yes, I would change it to Business Studies.

Ok. Business studies... then you would have to change schools...

Thembeke: I would love to...

Do your parents know that you feel like that?

Thembeke: They know.... They know...

You discussed it with them. How do they feel about it?

Thembeke: My mother is supportive, but my father was against it. So my father was against it. I told him that I didn't want to carry on with it ... he said that you must carry on with it as Tertiary education because you know... many students don't get jobs in marketing How difficult it is to get a job..... So I told him that I don't like that... like even my own uncle who had an engineering degree could not find a job... he found it difficult to get a job. I don't know why? But ja... So I told him I don't think... Yes marketing... there's not much, apparently there's not much jobs... when you go onto the internet... whichever the site... whenever, I can find, I see that are jobs available. I don't know why people say that there are no jobs available. Even if it means that you fly to another place and get a job... as long as you have it.

Ok. School? What are some of the problems that you encountered in the technical educational at the school? You can go crazy...

Thembeke: Uhhh... ja well, ok.

What made you lose heart?

Thembeke: What made me loose heart...

You said that you lost your heart...

Thembeke: I think it was my technology. Ja, that just made me loose heart... hope not just heart.

Did you find it difficult... the subject?

Thembeke: This year it is difficult. I find it very difficult, but I try... at times I wouldn't worry that much, but it would be better. This year it was just different... this year I was expecting to get up in the seventies but... It's just not pointing in that direction.

Is it just not matric pressure as a whole? Matric pressure is quiet high...

Thembeke: It is quiet high and hard, but I think... I think the Technology as well is the biggest problem because I do fine in Math's and Science. That also counts ...

Are you good in Math's and Science?

Thembeke: I am average... I have my days... touch and down...

Ok... uhhh... Practicals... do you do well in the practicals? Do you find practicals difficult?

Thembeke: For Technology?

Ja.

Thembeke: Not at all...

You find that you understand ... that you've got the full understanding of the practicals.....

Thembeke: I wouldn't say... Maybe not all understanding, but I get help. I get help from the teachers... I get help... Some things I am not sure of, how its connected, electrical, I don't know which wire goes where, I go to my teacher and get help... and I end up getting good marks. I think I am more creative... I come up with... my teacher tells me what goes where and how to do whatever I have to do but I am more creative... my... my assignments or my PATs are normally different from other people because I am able to work because I am able to think creative with the work that I've got and make it better... but ja....

Do you see Technology as an artwork... art form?

Thembeke: No, I... I don't see it as an art form, but I try and make it an art form.

Do you feel that the technical syllabus and the technical curriculum is relevant for the female learners?

Thembeke: I don't understand?

Do you feel... well, that it is too masculine... do you feel that it is too boyish... the curriculum, do you feel that the girls at school can cope with it?

Thembeke: Girls can cope with it. Girls can definitely cope with it...

What about the curriculum is it that you find difficult or easy... what is it that you ... do you enjoy the work?

Thembeke: I... I actually do enjoy the work even though I did lose heart but I actually... I... I ...

think that anyone can work with it... I think it comes with the heart and great effort.

Do you live in the area?

Thembeke: No... I don't.

Not in the area. Not in the area. What would you say to any girl coming in or wanting to come into Technology? What advice would you give them?

Thembeke: I would say... you must... you must choose for yourself with your heart... especially in the technical field... you must be able to choose a job that you know that when you struggling with something one day, you must be able to come up with a solution, because I don't see myself coming up with a solution in my career that will come up in Electrical... so you must choose something that suites you. You must work with your strengths and you must do research... go to open days and do everything that you are supposed to do. And in grade seven, mostly you are immature or you are still a child so you listen to your parents... yes, you must listen to your parents but you must do your research and you must choose what you like...because at the end of the day your parents are not going to be there when you study and working in the office. You are going to be alone in the office.

In grade nine... did you then know you weren't going to do Technology?

Thembeke: Yes... I ... When I first started a ... I... I did tell my parents..... but it wasn't because of the technical part of it... Problems I had with peers.

Peers?

Thembeke: Yes.

Explain it to me.

Thembeke: Boys in the school... they're not... their not so ... they don't care. They treat you like... they don't care they treat you like trash. They treat you like trash. They don't care about the girls. The boys use whatever language they want to..... They don't care about you.

Do they feel threatened by you?

Thembeke: No. I wouldn't say so... they just don't care... they treat you like trash.

But that would be the same in any other industry?

Thembeke: I don't think so... no... I don't... I don't think... I think it's only this school... in other schools there are also different types of pressures, but here in this school...

This is a technical school.

Thembeke: Yes, they just don't care

Are you in the top class or the bottom class?

Thembeke: The bottom class...

Any advice... any advice... anything that you would want to say that would change for the girls?

Do you... What do you feel could make a difference?

Thembeke: I do think that more women entering the technical field would help us women... it's not... it's not just something for boys. Girls are... they are good... they can tackle the issues... They are good at technical subjects... it's just a matter of being dedicated and I don't thinkI don't think that you can be dedicated to something if you don't like it.

Can I ask you think that enough is done to expose the girls to technical jobs?

Thembeke: No

Do you think there is a lack there?

Thembeke: Yes. There is a lack... I... there... it's just that there is a lack of... I feel for the townships and the other girl's schools... the academic schools... in those schools they don't know much about us. They only know that we do Math's and Science and that we are technical. We fix things like cars. They don't know more information on that. If they had to get more information... it's just that people are expected to do research... But most people don't really bother. If you don't go and get people, people won't go and get advice as well.

INTERVIEW 3: (Thandi and Phumbi)

Welcome to the session... I am currently doing my masters degree in technology... gender and focusing on gender in Technology. I would like to welcome you to the questionnaire section and you are going to be participant A and you are going to be participant B... ok. So that... please when you talk say participant A and B so that I know who the comment comes from. Ok. Why did you choose the technology subject that you have chosen?

Thandi: For me first there was like uhm... my parents... my parents really loved um... this engineering field and I was really not into engineering, but then again, you know when your parents tell you have to do something you can't back out and you have no say... so like ok the plan didn't go like all was planned to go to university... like ja... and then they took me and it was like... it was already said that you are going to this school while I really had no love for it. I didn't know what TD... I didn't know what Electrical and stuff... that's mostly why I struggle with TD and stuff cause why I really have no love for it.

Uhmmm

Phumbi: For me ok I came from another school, another technical school and I came here in grade nine. Uhh... Civil...for me was just another subject.

Uhmhhh

Phumbi: Civil for me was like just another subject. I really had a passion for Mechanical but my mother... I have an uncle who is an architect... so my mother was like... go to the ... go to the Civil field... go there, go there so you can work with your uncle so I went ok, I will go in just to show you how much I would like it. That was just why...

How much you will like it? You won't like it?

Phumbi:I ... ok... I am more of a theory person so this field was more of my type of thing. Even with Mechanical, I liked the subject but I knew that I would not... you know... survived in it.

So you are Civil Technology?

Phumbi: Electrical

Ok so Thandi is Electrical and Phumbi is Civil Technology. Ok. You have indicated that you wish not to continue with a technical career... can you tell me why?

Thandi: I love speaking. So in the engineering field I feel that I would be limited. So it's more of like ... work, work, work, it's just theory and less speaking. So I love law... uhm... I like speaking, so I love law, I love working with people, interacting with people more than working with machines and have to calculate stuff, so that's why I...I actually chose... and told my parents that I loved George Campbell but I think that its...its... what I want to do I want to do law and I want Industrial Psychology.

And Phumbi?

Phumbi: Like her I actually like people. I like working with people... I... I have a very deep understanding of people and I want to enjoy it. With Technology I don't think that I would fit in. I... I just... I can't imagine myself like going outside there, I don't know if I can do the boots and everything... I love nature... it's just the boot thing... I can't imagine myself in it.

Would you say it's to masculine for you? Is that what you are saying?

Phumbi: No...

It's when you mention the boots...

Phumbi: I knew that was coming because of the boots, but it is not that. It's not that, honestly, honestly it's not that. I ... you can't work the whole day with it... or work the whole day with high heels. Sometimes you need those sneakers, you know. It's not me... it's not me. I'd like being a girl whatever... It's not like you know, you work you know and you work towards a quantity surveyor or an architect or whatever; I would always have to be at the site. You know what I mean? So it's just that it's not for me.

And technical education in PR or something like that? You can enter management. You work in this field for a short while then you go into management, then you are back into heels anyhow? You know if you see the long term aspect of the job and maybe not just the short term of it, because the uhh... short term could be that you... you have to rough it out to understand it. You know what I mean... so how do you feel about that?

Silence

It's just if you knew or you would be able to look at it from a different point do you feel maybe that you were not guided enough? Is that what is coming out here? Is that what you are saying?

Phumbi: I think so... I... I...really honestly think so because a lot of people...and our parents are so... they are ok... It's like I say... you get a job and you make money. Architect, you either draw, Civil engineer, you work there on the site and you do your thing. They don't know, they don't know, how can I put it, the time of making engineering work... how can I put it? If they knew that being an engineer does not just entitle being a civil engineer or an architect there are other aspect to it that you can also work with then maybe people would like you know... people like women or girls would be obligated to doing this and decide either no ... With parents it more like my daughter, my son is studying this....my daughter... engineering is money... and quickly they group you like I want my daughter or son to ... prestige it is the prestige... but they actually don't realise what Thandi said that it's not just Civil Technology, Civil Engineering, there's also Industrial Technology, there is also Architectural Technology and most parents don't know that, because they are so focused on I just want my kid just to be like an engineer... that's it.

There is a prestige to that and it is... it is and it is really quite nice to be able to say that ...ja.

What careers did you state that you wanted to do? Thandi what did you specifically wanted to do?

Thandi: Advocate...like LLB law and ordinary law and all that stuff and just progress from there.

And Phumbi what would you like to do?

Phumbi: Any time I can't decide... because it depends on what the marks are obviously... I wouldn't mind... I fell in love with Anthropology... I want to get into the human aspects you know...everything about humans and ... and... and the history and the existence of the human being and then I also like medicine even though I can't stand blood. Every time I see blood I want to faint, but any ways... I have just like, ja, I have applied for everything and where ever I am taken then that's where I am meant to be.

Right. You have actually answered the question in terms of who or what influenced you not to continue Technology. Was there a specific event that you said no. Not this... anymore. Or was it a gradual thing like you were saying and both of you were saying...Thandi and Phumbi, you were both saying that it seemed that it was a gradual dislike and it wasn't something that just put you off. It wasn't anything specific and you couldn't follow your parents' dream. Is that basically it?

Thandi: Ja.

Phumbi: Ja.

Its hard... it's not easy... uhm... what advice would you give to other female learners making career choices?

Thandi: If you make your choice look at it from the long term as well as a short term. Make sure in four years , do I still want to be in this field, not thinking of the money... money is nothing... money does not buy happiness. You can work and earn money but not enjoying what you are doing is pointless... so ja.. that's it.

Phumbi: I have to agree with Thandi on that, but do a whole lot of research. Don't let any other person tell you what you must do with your life because you are here on earth to add something to the world and as much as we would all love to have our own architectural companies, our own hospitals, our own schools there is a certain purpose that has brought you here. Make sure that it is something that has already been put in you. Not the other people, but something that you the sort of thing that you know from the bottom of your heart that this is what I want to do with my life.

Thandi: To be honest, not every Campbell kid here is going to be an engineer. That is actually what I have realised. That some of us are just not meant to be engineers. Some are engineers, but not everyone in South Africa is going to become an engineer... ja.

How do you feel about the fact now that you have done the Math's, and the Science and the EGD? Were these subjects difficult for you?

Thandi: EGD ... ja ... EGD is difficult. Hey... it's difficult... I struggle a lot and the Math's, ja, that's it. The others are fine. It's the physics... that is a difficult subject... ja.

The others are learning subject. You can still catch up. But Mathematics...

Phumbi: With Mathematics you must know the foundation. If you don't know the foundation you are lost.

And the technical subjects?

Thandi: Uhhh. I'm doing good at it. I understand the concept of every Electrical theory. It's also the combination of Math's and Science there. It's learning and learning. Ja...

And the Civil Technology?

Phumbi:I... I have enjoyed it, so here in school I have enjoyed learning something that is out of my comfort zone. It being out of my comfort zone so because I am a readaholic... so that just what I do... so Civil has just made me look at technology as a whole in school because in grade nine to matric I have learnt a lot of things and know I can see a car and say oh ja... I've drawn that gear (laugh) I have drawn that gear or I calculate the bending moment ... o ja... I know a scaffolding... whatever... like its...its... it enables me to be in a company of people whether there are architects and mathematicians where I know ja I know...the topic and feel part of the group.

You are not excluded from that specific conversation at all.

Thandi: Ja.

Just another question? How do you feel you were treated firstly by educators and secondly by the learners in the school? Do you feel that they could have pushed you off the target in terms of Technology? Did they have an influence... the educators and learners?

Phumbi: The ... I don't really think so. There are a lot of learners that when you tell them like no I am actually not interested in Technology they all ask what are you doing in a technical school? Because it seems like you see everybody who should be here should just be focused on Technology and you end up looking like a bad person... and the teachers... no I...no I...I think that they have encouraged us... it's just that our passions that are so different.

Thandi: some teachers are realistic. And sometimes need to be realistic and you have to know

your strengths and weaknesses. Once again not all of us are meant to be in the engineering field. If... if you don't have love for Math's... if you don't have love for you technical subjects then you shouldn't be really be encouraged or sugar coating the subject and continue in the engineering field like you will find your way into the engineering field. If it's not for you.

And your home back ground? Your parents was a big influence for you? You said that your parents were the one who put you here. Did you have ANY say in that decision?

Phumbi: I think we all want to please our parents to some point, you know. You just used to... you say I am going to do this, you know, I am going to show you that it's hard for me but I am going to do it so that you understand where I am coming from. Ja. I think that is what it is.

How do your parents feel about your decisions now with regards to not continuing?

Thandi: They have seen the reports for five years. So now they know (laugh) now they know when you say Mom I can't do this, now she really knows that I really can't do this. At first in grade 8 it was like no... no you are just lazy, you are just lazy, but as you are growing up they can see that she is really struggling with it.

Phumbi: My mom is very open minded which is why I had to be open minded about my Civil Technology. She is like... whatever you find it in your heart to do I will be ok with it.

So you feel that the curriculum, the subject was nice, the school was fine. It was just you that it was you, over a time period that you feel you need to make the career choice

Thandi: Yes

Phumbi: Yes

INTERVIEW 4: (Sarie)

Why did you choose the technical subject you are currently studying?

Sarie: Uhm, I chose the subject because it was easier for me. I am better at theory than practical. So, the, the theory part is... easier for me to understand, than to actually build things.

Explain to me. Why, why do you say that? Are you academically more stronger?

Sarie: Uhm, yes I am. I was supposed to be in an academic school but that didn't happen the way I wanted to, so, I came here and, well my, my academics are a lot better than my... technical side of things.

Your practical side?

Sarie: Ja

And the practical? What puts you off about the practical?

Sarie: Nothing really puts me off; it's just that I... I am not really good with my hands. I have a hard time...um... building things and I... I can't draw or do anything artistic or practical. I am more loud mouthed and speak my mind.

Mind?

Sarie: Ja

Ok. You have indicated in a previous questionnaire that you do not intend to continue with a technical career. Could you explain this for me?

Sarie: Yes, I can. Uhm... I will be not continuing in a technical career because from the beginning it was not what I wanted to do. I wanted to... go into the... into the direction of... but when I got here, when I got here from Pretoria to Durban, they could not find a school to put me in. No school wanted to accept me. I lived too far away or they did not like my background, my marks. There was always something they didn't want. And then the... Department of Education decided that I had to come to this school because it is the closest to where I live.

So you obviously live in the area?

Sarie: Ja.

Ok. Was traveling going to be an issue for you? To travel to the other schools?

Sarie: Yeah, it would have been, because I stay here in town and the other schools are more way far out.

Way far out..

Sarie: Ja

Ok. What career do you tend pursuing now when you leave school.

Sarie: Umm... Next year I am going to join the police force for a few months and get all the training I need for my forensics... and uhm... after that... according to my marks, because I will be with the government, they can pay for my studies as well. Some of it at least. Then I will... I will study in the direction of forensic investigation.

What about the subject...what about the field do you like so much? What makes it so much more interesting?

Sarie: I am not really sure.... I... I would like to know about the human body, what's inside and I... I want to be able to figure things out...I like to know who did this and why did they do this... uhm... I... I like puzzles. So in my mind I want to know who did this and why they did this... who killed this person, why did they kill the person? I like to figure things out.

Do you not feel that maybe you had a perception of the career that you wanted to do and not give the technology a chance because technology is also a puzzle and a form of artwork?

Sarie: I guess so...I... I am not sure of technology...its two completely different things in my mind.

No, why I am asking is because you say that you like the concept of a puzzle and in technology you have to puzzle out problem areas and it... it's also ... just... do you not feel that decided on the career from the start and that's the way you wanted it to be and nothing could sway your mind?

Nothing, nothing at all could change my mind it's... its... it's a weird feeling that I have in my stomach I just... everything is pulling me that way.

And...and... and if you...if you do not make it in this career what then?

Sarie: Well, I am doing a few other courses as well. My mom offered them to me till I get sorted. She offered a facilitator, assessor and model agent. If I get that, it's something I can fall back on. If I this then I would have been in the police force for a few months and always go back there.

Are you sure that you can get into the police force?

Sarie: I am ninety percent positive.

Have you gone for interviews with them already?

Sarie: Not yet. I... we have spoken to the chief police lady. She said that I needed my matric first before I can go back. So as soon as I am finished here I will go back there.

Would you ever consider teaching... technology?

Sarie: Nooo. Not all.

No technology at all?

Sarie: No. nothing to do with technology.

If you could change your choice of subject...would you select the same subject again?

Sarie: Yes, I would.

Why? Why would you do it?

Sarie: Like I said... ok... with Electrical its Maths that is my problem, and with Mechanical it is very much practical and handwork as well... I enjoy Civil. I might not be good at it but I enjoy it because it is a lot of reading and writing and those are the type of things I enjoy most.

In forensics, do you not feel that you are going to be out there investigating?

Sarie: Yes.

Is that what you like?

Sarie: That's what I like. If I could go there and I can get whatever small piece lies next to the body I... I would go back to the lab... I'll be... like wanting to find out what that is... linking it to the case or not.

What are the challenges or setbacks or problems that you have accounted at the technical school? That you... what did you find were problematic?

Sarie: For me? ...uhmmm... a... with the technical subject itself? The technical subject?

The technical subject as a whole...

Sarie: The technical subject itself is uhm... a lot of the things is pretty easy for me... it's just the mathematical part of it ... the mathematical side of it.

What about science? How do you feel about science?

Sarie: Uhm...well... I don't do science but I wanted to. But I didn't do it because I wanted to get through my... through high school with marks well, and then afterwards if I can I will do a bridging course in Maths and Science, because I don't want to my... fail the year.

The subject? Anything else about the subject that you find difficult or problematic or have setbacks.

Sarie: No not really. My drawings were ok, not bad but pretty good

And within the school context? With you and the school, were here any problems there?

Sarie: Uhhh... no not really. I think the teachers treat us girls pretty fair... they... they...

All teachers?

Sarie: Most of them.

How many don't?

Sarie: It's hard to tell. Some teachers, they, I wouldn't say pick on us girls, they insult the girls. They just expect a lot more from us girls because of... ja...

Because you are a girl?

Sarie: Ja, you can say that.

Do you not think that maybe, in some cases, it's because there are so few of you that you get that special attention? Don't you think so?

Sarie: In some cases it could probably be true if the girls get the special attention. In other cases it could be that they try and push us really hard. Then again, at the end of the day, it's for our goodwill.

How does that make you feel?

Sarie: Uhm... well sometimes it depends on the day. Sometimes it makes me feel, you know what, I can do it, just to show then that I will get through it and I push myself hard. In other times just sometimes I feel like I it's dragging me down just because it is so much.

What, the pushing or the work?

Sarie: Uhm... the pushing and the work, both combined, because the pushing, pushing, pushing and we are doing work, work, work gets a bit much sometimes, but yet again...

Are you saying that the matric workload is... is huge?

I am not saying that it is huge, I think that we just got uhm... what they are doing is when we have projects, they put all our projects... we have to hand it all in at the same time. Most of them get handed in like one day after the other or some are all in one day. And even the tests as well. Just as you write this test then you are going to write another test. Like for instance today I am writing one and tomorrow I am writing two.

Ok. Do you not think that the education department is to blame for that?

Sarie: Uhm...

For having put pressure on the educators to get the work done, to finish the syllabus.

Sarie: Ja, I think that could be it, because it's like always the teachers that have to have the things in and all the marking that has to be in.

Any other problems that you have?

Sarie: No.

The facilities at the school?

Sarie: I think that they are perfect. They are really good. Everything is very well done here.

For you as a girl, do you feel like a girl in this school?

Sarie: Yes I do. After all we have our own bathroom. We... they don't ... everything a girl needs is here. I mean, they don't put on more for boys because there are more boys here.

How do you feel the boys have treated you over the last couple of years?

Sarie: Uhm... I don't say that I feel like a lady now. They, if they can see my bag is heavy, they will ask me if they can carry my bag for me. They treat me very well.

Do you feel that you are part of the group?

Sarie: Ja. I feel comfortable here. I don't feel like the odd one out because I am the only girl.

Any other issues?

Sarie: Nope. I quite enjoy the school.

So with the school, you are happy with.

Sarie: Ja.

Do you feel that the technical syllabus is relevant to the needs of female learners? Please elaborate why you think so.

Sarie: The technical syllabus is pretty good for everybody, male and female and uhm... I... I... I think it's well... we... we all the girls, we learn what the guys learn too, and some of us do better than the guys do and...

That is theory and prac...

Sarie: Ughh. Yes theory and prac. Maybe the guys will do slightly better in prac, but I know that us girls we hit them in the theory.

Ughh. Is there anything that you would like to change to the syllabus?

Sarie: Uhm....

What would you like to see changed? What do you think would be a good idea to use?

Sarie: I... I am not sure. I don't know. That is a difficult one.

Just in your five years or whatever time period you have been at the school, what do you think would motivate girls to come to the school?

Sarie: Uhm...

What would you do if you had to motivate a girl?

Sarie: Agh... that is a difficult one. A lot of girls like their Biology and that kind of stuff. uhm... wow. I am not sure. If... if it was me I am not sure... agh...

No its fine. Don't worry. Think about it...

Sarie: Uhm...

Would you recommend girls to come to technology?

Sarie: Yes I would.

What would your reasons be?

Sarie: Uhm... well... the girls... apparently the girls are getting paid a lot more than the boys to do engineering and study because they are wanting females. So I would tell them to go to the school, you will get money when you are out of school... you will get money here. You will be able to make a good living for you and your husband if that is what you are plan on doing and it's not that you are getting paid small money, you are getting paid big money for this.

Do you feel that you can apply this theory that you have learnt to your own life

Sarie: Uhm... if I needed to I would be able to.

What do you mean by that?

Sarie: Uhm... well if I needed to... for example if I wanted to build an extra room to my house, I would be able to draw my plans, which is theory, and then I would... I wouldn't do it all by myself but I would get somebody to help me. It's just one other person to help me build up the extra room. So I... I would be able to build it and draw it and be able to do the surveying and things that I need to do. To know how much of this I need... and how much of that...

Do you feel that you are more knowledgeable? You can check up, because you know...

Sarie: Ja.

INTERVIEW 5: (Bambi and Samantha)

Welcome to my interview session. You are welcome to withdraw at any time, and I would appreciate it if give me your opinion as far as you are able and willing to.

Why did you choose the Technology subject that you are currently studying or the Technology subject that you are currently studying?

Bambi – Because I thought that I... I wanted to be in the Civil Technology Department and not the Mechanical Department and because when I think of Mechanical, I don't want to work out of my garage fixing cars. That was the first thing that came to my mind. I did not want to do it.

And Electrical?

Bambi: It's... it's hard...I don't like it...

Hard? Because of the Maths?

Bambi: Ja.

What grade did you come to this school?. You did not have that pre...

Bambi: I suck at Maths. I could not even do grade nine Maths. That's why I did not want to do Electrical.

And then Civil? That seemed to be the better one of the three?

Bambi: Ja...

Why did you choose to come to this school?

Bambi: Uhhh... I hated the school I was in previously. Any school would have done and this one was in the area...

So you lived in the area?

Bambi: Yes.

Samantha: at first I thought that the Technology was for me. I thought it was easy enough to do because I did take Physics and Maths core and well... as I went on... in grade eleven, I dropped

my subjects and I said no... it's not for me anymore because it actually... I don't know... it is very complicated at times and I... just... It doesn't interest any more.

You do Civil Technology and you dropped your Maths and Science...

Samantha: To Cat and Maths Lit. Yes.

Why did you do that?

Samantha: Uhhh... because like... at first like... school... I really started hating school and it really didn't interest me and I started to get very lazy to be honest... and so the counselor she said I must drop my subjects.

The counselor?

Samantha: Yes... she told me to drop my subjects...

And now... how do you find the subjects?

Samantha: Very much better... and easier for me to cope and now I enjoy school and I don't have any stress on me anymore.

And the Civil... you doing it because you have to not because you want to.

Samantha: I can't drop it in grade twelve.

No you can't drop it in grade twelve. Did you still enjoy it in grade eleven?

Sam: Ja. I would choose it over all three subjects because it's like the easiest and most girls take the subject because it interests them.

Why not Mechanical?

Samantha: I don't know like... why not Mechanical...and building like... what do you call them Fitting and turning and then you get electrical with the wiring... I can't do that and also the Maths...

Ja...

Samantha: Lots of Maths

You do not intend to continue with a technical career. You told me to an extent why, but why would you not want to make a career out of this? Would you not want to use what you got in a career that you can use and make it work for you?

Bambi: I would be very bored doing this as a career for the rest of my life.

Bored in what way?

Bambi: I don't enjoy this at all...

The Civil technology... you have seen that this is not for you...

Bambi: Ja...

So it is not as such the theory... you decided that it was not you...

Bambi: I don't enjoy it... the theory... the theory starts... I don't enjoy it...

What put you off?

Bambi: The work...

The work load?

Bambi: And kind of the materials...

The section on materials?

Bambi: Ja... a lot of theory... a lot of learning

And Sam?

Samantha: uhhh...the theory is just way too much...you have to have write two books by the end of the year.

Two written books?

Samantha: Yes. Ummm I don't mind the practical work that's fun but...I don't know... it's also not me...

Do you not think that as a girl... going into the world out there that getting a job as a women you stand a better chance? Do you not think that that could be a bonus for you?

Bambi: for a black woman yes...they get jobs easier... ja... it doesn't matter if you are a girl... you have to be black.

So you say that you have to be of color... non white? B: do you feel the same?

Bambi: They are treated like they are more important... ja.

Do you find that that is what has happened at school?

Bambi: No... not really...

Is that just your perception of what is going... of what is happening?

Bambi: To get a job you have you be of colour or non white...

Samantha: In South Africa yes...

It interesting yes... thank you for that... What career do you intend to pursue?

Bambi: I... I would like to be a draughtsman

Why?

Bambi: My dad, when I went for my work experience I did Mechanical drawings...

And Civil?

Bambi: I drew Mechanical and it changed all the time... like motors.. Its challenging but I know how to do it...

And you are good at it?

Bambi: Ja, I am good at it.

So you could work for the motor industry? A draughtsman in the motor industry?

Bambi: Ja.

Samantha: in interior designing or teaching because I ... interior designing because my aunty got me into it and we used to like just decorate the house... whatever and... it interest me to do thing with your hands... way better that writing...and teaching because... a lot of people have told me that I have the personality to teach (laughs) and... I don't know... I think I could pull it off well. And ja... children I don't mind...

Would you not mind to teach Technology then?

Samantha: No.

What subject would you like to teach?

Samantha: Uhhh... something like maybe English or something thing fun like maybe grade one or Maths...

Why do you say it's fun?

Samantha: Because children make you happy and like... there always something to smile about... they make little mistakes... you still smile at them and you treat them well... you teach them well...

You've got the patients?

Samantha: Ja.

Much more than for Technology?

Samantha: (laughs) Ja

What initiated... what did you... at school? What made you decide to do the career?

Bambi: Draughting?

Ja

Bambi: From the work experience...

Purely from the work experience?

Bambi: I spent a week there in the drawing room and they gave me drawings to do... I watched them first. There were three guys and I sat with them and they showed me the way to do it and then I got my own desk... then I got to do what they did. They give you drawings to do. They gave me Civil drawings... I liked that... but the guy said it get boring because it's the same thing over and over. So that's why I want to do draughtsman in Mechanical.

So...so the work is very interesting... the mechanical. Sam did you do work experience?

Samantha: No...

And the... interior decorating?

Samantha: I don't know... it interest me...I had gone through books and stuff and designing and into... it... it interest me like... I don't know how to explain. Say like you want to design a bedroom like... love colour coding... going too wild... like designing and teaching, well...some of my family that have just finished matric, they are like teaching primary school. They say it is very nice and ja... I don't mind at all.

So when did you realise that?

Samantha: Uhm... last year... at the end of last year... ja the end of last year.

Ok. Who influenced you not to pursue or what influenced you. I know you spoke about it but there must have been something... was it just the workload for you?

Bambi: Ja.

Just the workload? The other subjects?

Bambi: some teachers are slack...

Slack in what why?

Bambi: They don't give your marks back... they don't give your stuff back and don't tell you what to and you need the other work to do that work...

The initial work...

Bambi: Ja. And it doesn't happen.

And that's put you off?

Bambi: Ja.

All teachers?

Bambi: No not all teachers?

And the other subjects? Do you find that the teachers are supportive?

Bambi: In all my subjects I have one teacher who is slack and non supportive.

All teachers?

Bambi: One of them.

In all the other subjects you find that all is ok... you found that they have supported you?

Bambi: Ja

And motivated you to get through matric?

Bambi: Ja.

Samantha: ja also the work and the teachers... some of them... like you have to understand them to like... enjoy the work. Like some teachers use huge words that you don't know and you wouldn't understand and like they make their work boring... so slow and and I don't know... the same.

Maybe it is just the interest in school that you have lost? You have lost that...

Samantha: Yes...

Tired of school now...

Samantha: That is it. Nearly done... (laughs)

I understand... what advice would you give to female learners who have made or who is making a career choice... from a technical perspective... remember we are talking from a technical perspective...

Bambi: Grade eight and nine... at that level... do research on all three subject to find out the one you want to do, because you don't really know when you have to make the choice. When you have to choose out of the three technical subjects, you don't know what they are about and then it is just like a guessing game. Oh this sounds nice, or this is maybe hard...

But that was only because you came in here in grade ten because you missed the first two initial years...

Bambi: Ja. But still do your research.

Sam you have been here since grade eight. So you went through...

Samantha: Well I would say just think wisely and if you make a choice just make sure you stick to it because in the end it is going to be your fault if you don't... it's going to be a loss for you... and instead of taking up those few years and taking the advantage you are actually losing out. So just be wise with your decisions.

Your parents... how do they feel about this? Were they the ones who influenced you to come to this school?

Samantha: Yes. I couldn't choose another school because my dad works here and like it was partly academic and theory and I though Technology would be better for me and ja... so I just came. I did think it was nice until I got to grade ten... like with the Technology subjects.

And do they have any influence on your career?

Samantha: Well they are happy with any choice I make as long as I stick to it and follow through and study to get like... to well and succeed.

Bambi: uhm... can you repeat the question.

Your parents, did they have any say with regard to the choice that you made?

Bambi: My parents are very supportive of me coming to any school. I was in the area... I didn't mind going there it was a plus...plus... plus...

Because you lived in the area...

Bambi: Ja. And it was a good school. I heard good things about it... and I also liked it that there were mostly boys in the school...

Why do you say that?

Samantha: Because girls are snotty.

And now with your career choice? Do you have your parents blessings? Are they ok with that?

Bambi: Yes, they are. I have this career choice because of my dad who got me the job.

Samantha: Yes, very much.

INTERVIEW 6: (Lucy)

I would just like your input regarding your subject choices. Why did you choose the technical subjects that you have and are currently studying?

Lucy: I chose Electrical because I enjoyed working with lights and all that kind of things... and all the Electrical side of it was very interesting for me. I... I enjoyed it more than Mechanical and Civil... so I went with it.

That's now from grade eight and nine?

Lucy: Yes.

From the grade eight and nine introduction sessions?

Lucy: Yes.

And the Maths and the Science? Did that worry you at all?

Lucy: Maths I struggled with a lot. That's when I dropped to Maths Lit. I started with Maths Lit in grade ten. Near the end of the first term I dropped to Maths Literacy and I stayed with Physics but I struggled with it a lot. I'm not very maths minded. It doesn't work with my mind.

But did you enjoy the Electrical?

Lucy: I didn't enjoy the Electrical that much.

Theory?

Lucy: Theory I didn't enjoy that much but the practical I enjoyed.

You indicated that you were not going to continue with the Technology next year. Will you please tell me more about this? What career do you intend to do?

Lucy: I want to teach English.

Why?

Lucy: It's just... it's always been a passion of mine and since grade eight I really enjoyed it... and it's a passion... I really want to do it... and I want to educate people... It's really something I want to do.

Your choice of teaching... who influenced that?

Lucy: Two teachers. My grade eight and nine English teacher and then my grade eleven Afrikaans teacher.

And then...uhm... Afrikaans?

Lucy: Yes, that is another subject that I would like to teach. I love my languages.

Oh, so it is more languages that you want to teach than anything else. What career do you intend to pursue? You say teacher... primary?

Lucy: No, I would like to stick to high school because the English is more in depth. You go into poetry and Shakespeare. That is the kind of stuff that I would really like to teach and enjoy.

The heavy stuff?

Lucy: Yes, the heavy stuff.

Who influenced you not or what influenced you not to pursue a Technology career?

Lucy: There wasn't anything that influenced me. I just wasn't enjoying it as much as I thought that I would enjoy it. I started being more interested in the languages and focused a lot on that and not focus so much on my Technical subject because I started losing interest in that.

You have the passion for language. How did you get into the school? What made you come to this school?

Lucy: All my brothers came here and...

Uhm...

Lucy: I wanted to follow their footsteps and I heard so much good news about the school that I really wanted to come here. I wrote the aptitude test and got in with a scholarship.

And tell me... what were... were there any problems that you had while you were at school or any factors that you didn't like?

Lucy: No, nothing really. Everything worked out well. I did enjoy Technical and I did enjoy the Electrical, just not as much as when I started out with it.

And... what advice would you give to any of the girls?

Lucy: The best advice that I would give is follow what you want to do. Don't let someone tell you that you must do this. You must be passionate. When you do something you must do it all.

And your parents? Are they happy with what you want to do?

Lucy: At first... they were a bit worried about the pay... because teachers don't really get paid a lot... but now they seem to understand that this is what I want to do and that I must do it.

And did they want you to go into the Technology field?

Lucy: At first they didn't want me to... they didn't want me to come to the school because of the distance to travel... traveling home every day. But when I showed them that I really wanted, they said that if that is what you want then so be it.

What did they want you to do?

Lucy: They wanted me to go to a girl's school in the area and from there decide what I wanted to do... and I... I refused. I didn't want to go there.

So you came here. How did you find when you compared yourself to girls from other schools, how did they treat you with regard to the Technology subjects.

Lucy: Well... it was really that different, but they always asked me if I can fix things for them. It was nice as it gave me a sense of power. I know something... because I come to this school, I know something that other schools don't teach which is a really nice thing to have even though you don't have all the girls it's nice to know the knowledge.

And... you wouldn't have a change of mind later? Would you not teach Technology?

Lucy: I don't think so... I might. I never know what might happen, but I really do enjoy my languages so I am sure I will stick with them.