



**DEVELOPING TECHNOLOGY TO STRENGTHEN RESILIENCE IN SAN CHILDREN TO REDUCE SCHOOL  
DROPOUTS**

BY

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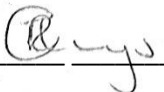
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## DECLARATION

I, **Rosetha Kays**, hereby declare that the work contained in this thesis for the degree Master of Computer Science project, entitled: **“Developing technology to strengthen resilience in San children to reduce school dropouts”**, is my own original work and that I have not previously in its entirety or in part submitted it at any university or other higher education institution for the award of a degree.

I further declare that I fully acknowledged any sources of information I used for the research in accordance with the Institution rules.

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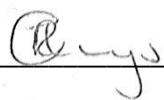
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## ABSTRACT

School dropouts have been a concern in Namibia, especially among San learners. Thus this research focused on developing a mobile counselling platform for Grade seven (7) primary school learners in Donkerbos village. The aim of the application is to build resilience in primary school San learners for them to withstand adversity by bouncing back. This is to reduce San learners' high dropout rates in Namibian schools. The study looked into the area of an individual's life where resilience could be developed more. The study focused on the challenges learners normally face in order to support them in those areas for them to be more positive and develop a strong sense of purpose and meaning in their own lives. There are factors that can enhance resilience in an individual. Factors such as environmental, family, social, cultural, community and personal characteristics can have an impact in an individual's life (Herrman, Stewart, Diaz-Granados, Berger, Jackson, & Yuen, 2011). The study used a qualitative methodology for data collection for the sampling within the San community to explore and understand the contributing dropout and success factors.

For data collection, video recorded interviews were conducted with successful Windhoek based San youth and audio recordings with dropout Donkerbos village based San youth.

The primary school San learners also shared their current challenges through a rich picture method which is some form of a narrative. Snowball sampling technique was used to choose the participants for the research study. The mobile counselling platform was developed based on data extracted from narratives of successful, dropout San youths' school life stories as well as current issues identified by primary school San learners using rich pictures. The collected success and failure stories by the San youth as well as the current issues by the school learners were co-curated for inclusion in the mobile counselling platform. A common tool for qualitative research, namely thematic analysis was used to analyse the data collected to extract themes. Coding was done on the data set for understanding and to interpret their meanings. The themes were then categorised into key themes namely financial, social, emotional, personal, family and education after coding was done. The key themes were then reviewed and examined to gain an understanding of participants' challenges.

Furthermore, the research explored technologies currently being used elsewhere to provide counselling services. Findings demonstrate that online counselling on the web or mobile platforms

exist and is still increasingly growing. However, most of these online counselling services are rather generic, meaning that they will not be fit in all situations and cultural backgrounds.

Findings from the collected data were used as a guide to develop the mobile counselling platform. The platform was prototyped and evaluated with the successful, dropout San youth and primary school San learners for refinement. Feedback from evaluations shows that the youth and learners like the application, however, they would like to see audio and video recordings as well to make it more interesting and emotionally engaging.

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## ABBREVIATIONS

UNICEF:	United Nations Children's Fund, previously United Nations International Children's Emergency Fund.
NUST:	Namibia University of Science and Technology
FCI:	Faculty of Computing and Informatics
NGO:	Non-Governmental Organisation
SSS:	Student Success Skill
CD-RISC:	Connor-Davidson Resilience Scale
RSA:	Resilience Scale for Adults
SPF:	Scale of Protective Factors
ARS-30:	Academic Resilience Scale
JS:	Java Script
CSS:	Cascading Style Sheet

HTML:	Hypertext Markup language
API:	Application Programme Interface
OS:	Operating System
UML:	Unified modelling language
SWLS:	Satisfaction with Life Scale

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## **CHAPTER 1**

### **INTRODUCTION AND BACKGROUND**

#### **1.1 Introduction**

School dropouts have been a concern in Namibia, especially among San learners. The main causes emanate from harsh living conditions contributed by lack of resources, lack of parental responsibility and many other factors. There are multiple reasons identified as to why San learners drop out of school. According to Fernando, Fernandu, Kapembe, Isay, and Hoffeni (2018), one of the reasons why San learners are not actively participating in school is because they do not have any role models to look up to. The lack of resources for students can be a source of stress leading them to give up on their studies. Peer pressure and the teachers' mobbing can also be detrimental to a young San learner.

Unfortunately, learners dropping out of high school is increasing. While the learners may not be aware of the full consequences of their actions when they decide to drop out, their decisions carry life-altering long-term effects. When a child drops out of school he/she will miss out on education as a basis for life. The differences in the types of jobs they might qualify for is one such typical consequence. Another effect is on their families both emotionally and economically. It further lowers self-esteem as they fall victim to social mockery by being labelled as failures. A study done by Hays (2011) shows that the educational success for indigenous people in Namibia specifically the San is one of the lowest rates amongst all other populations in the country regardless of the efforts that the government has been putting to include them in the mainstream educational system. The Namibian government through its noble efforts for inclusivity has reached out to the San youths by ensuring that they have access to education as a basic human right.

The purpose of this study was to understand and to interpret the complex array of factors that contribute to the phenomena of the San learners dropping out of school and to translate the causes of this phenomenon into an encompassing solution. To address the problem for school dropouts, this research explored the reasons why the San learners are among the highest rate when it comes to dropouts. The study looked at the current uses of technology for counselling. Furthermore, we

investigated how to motivate them and thus developed a mobile application to enhance their condition by building resilience in them to endure the challenges during the school life cycle.

One of the important goals for this research study was to establish how technology can be used to intervene in the dropout challenge of San learners. Thus, this research project looked at success and failure stories of San youths and the challenges that primary school learners are faced with and developed a mobile counselling platform to build resilience in San primary school learners. The mobile counselling platform is to help the San learners to be emotionally, mentally, socially, personally, financially and academically more competent. It facilitates the building of resilience in learners for them to cope with stressful situations, manage their feelings more healthily and thus prepare them for high school when they leave the village. It can also help them to develop positive sentiments about themselves and provides them with the know-how about where to find assistance concerning their challenges.

## **1.2 Problem statement**

The alarming rate of dropouts of indigenous learners, with an already low enrolment rate to start with, requires an immediate intervention to reduce further the socio-economic discrimination of indigenous people, such as the San in Namibia. The school dropout rates among the San pupils still remains very high (Dieckmann, Thiem, Dirkx, & Hays, 2014) despite the government's efforts to offer free primary and secondary education and to exempt the San pupils from paying hostel fees. However, it is necessary to stimulate resilience through technology to help them to adapt when faced with adversity. This will give them more options to act rather than to drop out of school.

However, technology has not yet been leveraged to support San learners during their school life cycle to help them to complete their school. A research report by the Ministry of Education shows that schools are still using the traditional face to face method of counselling. This method may not always be effective since in some cases the teachers assigned to do such are unsuitable or learners might not use their services at all as there might be trust issues or no privacy during counselling sessions (Ministry of Education, 2010).



Different digital approaches have been explored such as early warning systems based on school performance factors, smart classrooms detecting learner's emotional state (Kadar, Fercreira, Calado, Artifice, Sarraipa, & Jardim-Goncalves, 2016) and digital counselling. With the last option being the most realistic to implement, the present study aimed to develop a counselling platform based on role models and personal stories to help San pupils through their school lifetime, so that they can complete school successfully.

### **1.3 Research objectives**

Guided by the research question, "How can we reduce the dropout rate of San learners through technology intervention?" this led us to the overall objective of the research. The main objective is to develop an appropriate counselling tool for San learners that are at risk of dropping out of school. The following are the sub-objectives:

- 1.3.1 Establish success and failure indicators of former San learners,
- 1.3.2 Determine the current issues affecting San learners,
- 1.3.3 Evaluate existing technologies for contextual application,
- 1.3.4 Develop a counselling tool for the Namibia San learners to promote their resilience, and
- 1.3.5 Evaluate the technology and preliminary resilience of learners.

### **1.4 Benefit**

School dropout is a great concern not just nationally but worldwide and in the San community is accounting for the biggest percentage of dropouts in Namibia. Though the Namibian government has invested efforts to address the dropout issue, attempts to leverage technology usage in this endeavour has been minimal. Thus, the importance of this study is to contribute to the worldwide and specifically national problem to reduce the rate of San learners' dropping out of secondary school while at the same time contributing to empirical research on digital indigenous learner counselling.

Developing a counselling platform to reduce San learners' school dropout rates will also help to support San learners to cope with adversity as they strive to complete their school career. The

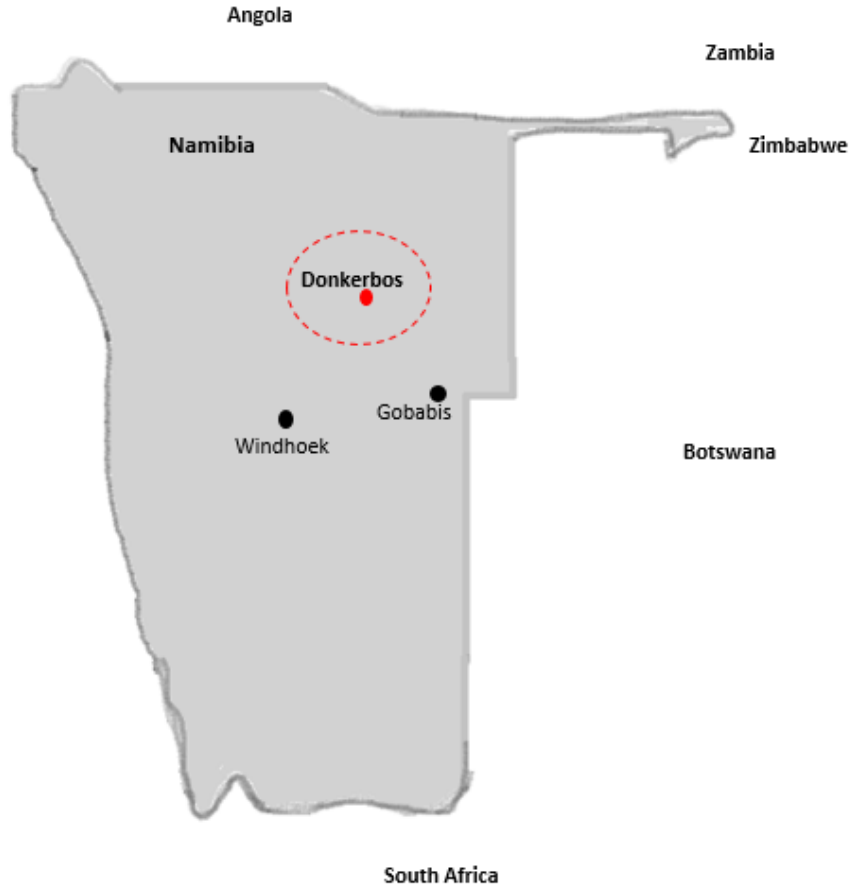
research involved San youths through the process of identifying situations that cause success or failure during their school life cycle.

### **1.5 Research scope and participants**

The research study was limited to the San youths in Windhoek and San youths and primary school learners in the Donkerbos village in the Omaheke region in Namibia. Donkerbos, which means dark bush in the Afrikaans language, is a settlement about 260 km from Gobabis, east of Namibia, in the Omaheke region. Most people in Donkerbos live in shacks with no toilets, proper water supply, sewerage system or electricity. The school and the community share a borehole that operates on solar electricity. The road to Donkerbos is about 30 kilometres from the main gravel road which is only accessible by 4 by 4 vehicles. The majority of the inhabitants in the village are San people who have lived there long before it was established as a village. The village has no municipal infrastructure like electricity or mobile phone coverage. Donkerbos village has a primary school starting from grade 1 to 7, with a hostel attached to it. All learners leave the village for bigger towns or rural areas when it is time to attend high school and this is the time these learners face adversity and where the dropout rate is high.

Participants in this study were San youths who, at the time of the study were enrolled in tertiary institutions in Windhoek, San dropout youths and grade seven (7) primary school learners in the Donkerbos village, Omaheke region. The translation was done by Helena Afrikaner a fellow San youth who grew up in the Omaheke region. The Windhoek based youth are enrolled in tertiary institutions and have a good understanding of English and Afrikaans so there was no need to translate. Below in figure 1.1 is a map of Namibia zoomed in to show Donkerbos village location

Figure 1.1 Donkerbos Location Map



## 1.6 Constraints / Limitations

The geographical location of the San learners and the availability of the respective individuals to take part in the workshops was a challenge. The idea of the study was to gather data from the Donkerbos San youths who had dropped out of school and primary school learners in the Omaheke region. However, it was a challenge to get to the target community due to the geographical distance from Windhoek to travel to the village. The distance is between three to four hours' drive on the gravel road and this can only be travelled with a 4x4 vehicle. It was also a challenge for the Windhoek based San youths to come to all workshops because some of them were working and had evening classes and some go back to their respective villages during institutional recess or holidays. Another possibility is that not all participants might be really honest about the questionnaire answers.

## **1.7 Ethical considerations**

All participants were given the freedom to voluntarily take part in the study. Participants were assured that their information would be kept confidential and not shared with third parties except members on the research project. Parents and or guardians signed consent forms for all under-aged children to take pictures, videos, voice recordings and for them to partake in all research activities. An informed consent form (see Appendix D) was signed by the participants' parents or guardians before the session. A written consent form was also signed by all participants over the age of 18 before any workshop session.

The Namibia University of Science and Technology (NUST), Faculty of Computing and Informatics (FCI) Ethics committee provided the study with a clearance certificate. The research took into consideration the specific focus on San youth and Donkerbos primary school learners in terms of their cultural aspects, specific geographical location and or environment and vulnerability.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter broadens the research understanding within the research context of this study. The purpose of this chapter is to look into the San context, use of current technologies in counselling, theoretical framework, methodologies, resilience in children, and design thinking for school dropout intervention.

#### **2.2 San context**

The San people are one of the oldest tribes and inhabitants of Southern Africa and part of the indigenous San people that have been living in Namibia for about 30,000 years. They are known by their different languages, like Khwe, Ju/hoans, !Xoo, 'N/oha, Naro, #Xao//ae, Hai//om and !Xung. San people in Namibia are discriminated against and stigmatised to the extent that they are called names like Vaduni, Kwankaras, and Mkuruha and they have been discriminated against and marginalised which has been going on for some time now (Fernando, Fernandu, Kapembe, Isay, & Hoffeni, 2018). “The school drop-out and out-of-school children” report by the Ministry of Education is a review dated 2015 and it shows that only forty-three (43%) percent of San children of 7 years of age is going to school in comparison with 83 percent of English speaking and 64 percent of Herero speaking children (UNICEF Namibia, 2015). The government and other NGOs like The San Council, //Ana-Djeh San Trust and Nonafasa Conservation Trust are currently looking into ways they can support the marginalised San community to get fairness in all aspects contributing to their welfare (Fernando et al., 2018). Furthermore, a booklet with inspirational stories of San role models published by //Ana-Djeh San Trust in 2017 aims to motivate the San children to complete their studies despite being faced by adversities. This booklet is used to inspire San learners and students to follow a good example of San youths who became successful in their career endeavours.

Furthermore, the San community has the lowest level of academic success in Namibia (Hays, 2011). Like any other typical child, San children stay closely under their parents' care until they reach the age of about thirteen (13) and graduate from primary school. However, most of these learners who get to high schools leave their village to attend school elsewhere as there is no high school in their

villages and they mostly return home as school dropouts. One of the many reasons is because of the challenges they are experiencing which causes them to drop out of school. They get discriminated against by fellow learners and teachers from different tribes. These learners normally find it hard to cope due to a lack of resources and being away from their homes (Stichel, Blake, Maasz, Stanley, Winschiers-Theophilus, & Afrikaner, 2019).

Furthermore, moving into a whole new environment becomes confusing and challenging for them. They are faced with many challenges such as financial, emotional, academic and social and they find it hard to identify, express and manage their feelings (Edwards, 2016). They don't know how to resolve conflicting situations or how to go about in solving the problems they encounter while away from home (Edwards, 2016). Research done on resilience has demonstrated that support structures are vital for learners to be resilient for them to bounce back when faced with adversity. Factors that hinder the process to adapt are a big threat to human development such as regulation of emotion and behaviour, and the motivation to learn (Masten, 2001).

By using technology, their voices are amplified thereby encouraging them to pursue further means of digital expressions (Fernando et al., 2018). The San youth in urban areas are well informed about social media platforms and they do have access to mobile devices which they can use for communication. The youth in rural areas are not as fortunate as the urban youth as they are not exposed to information about technology usage, neither do they have a mobile phone in their reach. However, even though they could get access to smartphones through donor projects, the cost to use and to maintain the phones is not affordable for them (Fernando et al., 2018). Thus, this study aimed to develop a mobile counselling platform to build resilience in young learners through motivational narratives from San youth.

### **2.3 Counselling technologies**

Digital, online, and other electronic technologies have changed the way the practice of counselling is conducted (Reamer, 2013). Technology plays a major role in our daily lives, therefore, it is important to explore how technologies can be used to motivate people to safeguard their mental wellbeing and to complement traditional face to face counselling (Geldard, Geldard, & Yin Foo, 2017).

There are many ways in which technology as a tool for counselling can be used such that there is no need for a counsellor to be directly involved and where individuals can help themselves or where a counsellor can be actively involved.

Face to face was the way of counselling before other technologically delivered means were unveiled such as online counselling, telephone counselling, video counselling, cyber therapy (avatar therapy), self-guided web-based interventions, electronic social networks, e-mail, and text messages emerged and stretched the means available to today's contemporary therapists (Reamer, 2013).

The use of technology is of great significance as it has progressively impacted the way many counsellors conduct their daily practice as it gives them the advantage of handling their work better. However, there are some challenges to understand the boundaries of ethical practice and risk management regarding using technology as a tool for counselling (Reamer, 2013). One of the concerns that counsellors have is that the use of technology could finally take over the traditional practice of counselling and it is rather seen as a threat to the profession (Anthony, 2003). Other researchers point out that the use of technology is not a substitute for traditional counselling but rather a supplement to enhance the effectiveness of counselling (Anthony, 2003). Furthermore, Yonan, Bardick, and Willment (2011) discussed ethical concerns regarding the use of mobile phones and online social networking websites for communication purposes with clients. The client can acquire private information about their therapist online and use it for their interests which can possibly pose a dilemma (Yonan et al., 2011). For better management, a code of ethics is available with ethical standards that are designed to guide social workers' general conduct (Reamer, 2013).

### **2.3.1 Counselling systems**

There is currently no specific name that is given to the counselling services. However, online counselling, internet counselling, cyber therapy, e-therapy (or e-counselling), and web-based interventions are common names that have been given (Chester, & Glass, 2006; Dowling, & Rickwood, 2013; Kolog, 2014).

### **2.3.2 Online video counselling**

Many therapists use secure movements controlled IP cameras, skype, webcams and visiting a cloud-based virtual health and social care platform to provide services to their patients at no cost (Reamer, 2013). With video counselling, the counsellor and their client communicate with one another via a computer that is linked to a video camera or mobile device in real-time over the internet in a secure way (Tzelepis, Paul, Williams, Gilligan, Regan, Daly, & Wiggers, 2019).

### **2.3.3 Email messaging**

E-mail is another tool that can be used to exchange messages between the client and the counsellor over the internet. Technology as a tool was used to monitor, track and then communicate to parents about the students' level of school attendance by making a phone call or email to the specific parent. The identified students would then together with their parents be sent for face to face counselling to intervene and avoid them from dropping out of school (Williams, 2001). However, this method is simply using technology for communication purposes which have been used already in daily administrative tasks for some time now and is not focusing on innovative technology to help motivate learners to stay in school. Some therapists charge a flat fee to their clients for a guaranteed 24 to 48-hour response for therapy-related questions asked (Reamer, 2013).

### **2.3.4 Social media for counselling**

Facebook and LinkedIn are social networking sites that are benefitting both the therapist and the client in need of therapy. The Substance Abuse and Mental Health Services Administration (U.S. Department of Health and Human Services) and the National Suicide Prevention Lifeline collaborate with Facebook to assist people in need. Through this collaboration, a suicide comment can be reported through a link that is provided for the person at risk to get help. However, there is a concern by the therapist for misperceptions and compromised confidentiality if a client sends a friendship request (Reamer, 2013). Most therapists have managed the challenge by creating two separate profiles, one that is personal and another one for professional use to share with their clients (Reamer, 2013).



### **2.3.5 Cyber / web-based therapy**

Moreover, the web is a service that is provided through the means of the internet which is an infrastructure of a network of electronic devices that provide and facilitate communication and information sharing globally. The use of the internet for counselling is a way that is used to provide online counselling services to complement the face to face traditional method. There is a wide range of online interventions that are available for counsellors to help people who need counselling services. Online mental health support services started in 1982 through online self-help support groups and since then this has developed significantly (Kanani, & Regehr, 2003). Online therapy is a technique that is used to provide a service on the web with the prospect to complement the traditional way of face-to-face therapy. It releases resources to engage in counselling either by peer counselling or sometimes with a professional counsellor.

Through the web, people with the need for therapy can look for live online chat counselling services via search engines. With chat counselling, a person has the benefit of anonymity and instant feedback. Online chat is a type of communication which provides feedback at the same time, unlike email communication which is delayed in response time (Reamer, 2013).

Counsellors can use a virtual world which is an online environment for the community to interact with each other. Through a virtual world, the counsellor offers individual or group sessions where visual communication is taking place between the counsellor and the client. Instead of real images, avatars are used. An avatar is an image that denotes a physical existence. The therapist and the client join an online community where they can be part of a group session or an individual session. They use a free worldwide software called Second Life in a 3-D virtual world to chat (Reamer, 2013).

### **2.3.6 Counselling games**

Most of the counselling technologies are for self-help; however, the internet has become the typical choice for numerous individuals in information valuation and distribution (Kolog, 2014). Kolog (2014) designed the “Hope game” framework to support students in need of counselling services.

Shipepe and Peters (2018) developed the “Struggle Hard” mobile game for career counselling. This game is an interactive online career guidance game for learners to get exposure to a wide range of

career options through gamification. The game gives the learner the freedom to make choices and based on their choice they get rewarded.

A web-based self-guided intervention called “Personal Investigator” that is mainly used by mental health professionals is another innovative tool that can be used to help adolescents with challenges in their lives (Reamer, 2013). The game was developed “by the Mind games group at Media Lab Europe, the European research partner of MIT Media Lab” (Coyle, & Matthews, 2004). The online game uses principles of solution-focused therapy to assist adolescents to address their challenges. The individual visits an academy for detectives as a personal investigator. The investigation is to find clues that can help them solve their problem and to note the clues and their thoughts and ideas in their notebooks provided at the beginning of the game. Five game areas are categorised into five solution-focused strategies for conversations. A character dialogue is initiated with the player in an informal way where the player needs to answer questions from the notebook in each game area. Videos of other adolescents talking about how they overcame their challenges using the strategies are played during three of the conversations. To graduate successfully from the academy, the player needs to finish tasks given by the characters. The player will be awarded a printout of their notebook (Reamer, 2013).

In conclusion, the accessibility of mobile phones is tremendously growing worldwide in comparison to fixed phones, and personal computers and the internet and can be used to support healthy lifestyles (Whittaker, McRobbie, Bullen, Rodgers, & Gu 2016). The use of mobile phones for health information and providing healthcare is growing globally (Whittaker et al., 2016). Findings on a study done by Gibson and Cartwright (2014) suggest that the use of mobile phones can provide a solution to the problems that the youth experience as it may offer a better chance for them to seek help in anonymity (Gibson et al., 2014).

It is a great opportunity to take advantage of the anticipations of emerging technologies to provide counselling services to people in need. Thus, this study chose to move in the direction where an individual would not need to have a counsellor’s active involvement.

## 2.4 Psychological theories for counselling

It is vital for counselling or therapy to use theoretical approaches grounded in psychology. Most practitioners for counselling or psychotherapy use either single theory whereas others prefer to use a combination of theories or rather to adjust theories to derive their version of adjusted theories (Stiles, 2007). There is a framework that provides therapists and counsellors with a way to interpret how the client feels, thinks or behaves.

There are six main categories unto which theoretical models fall into, namely humanistic, cognitive, behavioural, psychoanalytic, constructionist and systemic.

The **humanistic theory** believes that people have within them what they need to keep their lives healthy and thus problems occur due to a lack of this resource to solve problems. A counselling programme embedded into the school programme, student success skill (SSS), provides some sort of support for learner achievement and behaviours related to school using humanistic principles (Villares, Lemberger, & Brigman, 2011).

**Cognitive theory** has to do with the realistic way through which people think. When their thinking is unrealistic, their solutions to their problems will also be faulty and thus they will experience difficulties psychologically and or emotionally. An individual needs to have some sense to distinguish right and wrong thinking in order to have the ability to learn, reason, and solve problems or decision making effectively (Bandura, 2009).

For **behavioural** theory, the environment of the individual contributes to their faulty thinking patterns, which means that if there is no change in their environment to affect their way of thinking, then their way of thinking will also not change. The counsellor helps the individual to identify the factors that are boosting the faulty pattern of thinking to replace it with positive thinking (Neukrug, 2015).

**Constructionist** counselling theory states that an invented understanding brings forth knowledge to the world. Narrative therapy is one of the preferred models for the constructionist theory. This is a method where the individual's problematic construction of relationships, the world and of self is examined by involving the individual. Munro, Knox, and Lowe (2008) share that this theory is an innovative counselling approach that is suggested for use in multicultural therapy.

**Psychoanalytic** counselling theory states that what influences our behaviour are factors like childhood experiences and our unconscious desires. Capuzzi and Stauffer (2016) describe psychoanalytic counselling as a phenomenon that is based on the idea of unconscious factors as the causes of hindrances to adjust appropriately to the environment or situation.

Furthermore, arguments show that our personalities are linked to memories, beliefs, desires, drives and instincts that we are not always aware of in our daily lives. This points to the energy that fuels our minds. However, when this energy level is blocked somewhere through development we are faced with lifelong effects (Capuzzi et al., 2016).

**Systemic** counselling theory describes how people's feelings, thoughts and behaviours are formed through pressures forced on them by social systems surrounding them. The role the individual plays within their families or social surroundings can be used to get a better understanding of their undesirable feelings, thoughts and behaviours. One such way in which the systemic therapy approach was used is where researchers pursued ways to address insults towards transgender people. The participants could discuss the effects the insults had on their relationships with their relatives, colleagues and close associates (Nadal, Skolnik, & Wong, 2012).

## **2.5 Psychology theories for counselling summary**

In relation to the present study's objective guided by the research question of how technology interventions can be used to reduce the dropout rate of the San learners, the study inquired about psychology theories for counselling. Consequently, the study carefully examined six psychology theoretical models that are used by counsellors to understand an individual's feelings.

Drawing on the work of scholars, we understand that constructivists see multiple realities and reality needs to be interpreted to discover the underlining meaning (Neimeyer, 2009). However, constructivists are seen as rejecting the fact that knowledge is a result of reality and thus it is criticised for that reason (Craib, 1997).

Nevertheless, for the present study's purpose, we conclude that the constructionist approach has proven to be well-matched to facilitate where the individual's problematic construction of relationships, the world and of self is examined by involving the individual.

In relation to the present study's objectives, the study considered a constructionist narrative perspective to understand what causes learners to drop out of school and how to create resilience.

## **2.6 Narrative therapy**

Narrative therapy is one of the chosen approaches for a constructionist concept. Narrative therapy is a unique means of treatment whereby individuals are detached from the tangible problem (Clandinin, & Connelly, 2000). In narrative enquiry, experience and story in qualitative research are used with qualitative experiments to comprehend a situation via a voiced narrative. It is a philosophy that is used in instructive studies that perceive individuals as story articulating beings (Clandinin et al., 2000). Narrative therapy is de-noted as the diversity of collective constructionist and constructivist procedures to the practice of therapeutic transformation. Russell and Cohn (2012) indicate that narrative experts reflect that individuals and their narratives are meaningfully moulded by the values by which they live. Our concepts and knowledge of affection, natural distinctions of sex, achievements, etiquette, next of kin, toil, well-being, ordinariness, in actuality all characteristics of our existence are formed by communication resulting from values. With collective fairness and societal conversion gradually becoming a fragment of majority psychological exercise, narrative therapy comprises of a new and all-encompassing structure for respecting the lived exposure of individuals (Madigan, 2011). The word "narrative" involves naming of the sharing or retelling of narratives as a fragment of therapy (Riley, & Malchiodi, 2003). Whereas narrative therapy encompasses an exceedingly attentive set of interceding practices, its basic ethics supplement art therapy, and for this purpose, it is a beneficial tactic in working with youngsters, adults, and families (Riley et al., 2003).

Individuals for instance, who experience adversities are occasionally grasped as defeated or incomplete. People sometimes assess themselves as the trouble and craft narratives of themselves that portray an absence of control and value. Problems may not be perceived by individuals as an extrinsic occurrence that influences them, and accordingly, they are kept within the individual. Narrative therapy trades explicitly with these narratives as the area of operational therapeutic objective setting (White, 1998).

In conclusion, looking at past research, we can see that the relationship between the different descriptions of narrative therapy show us that it is constructed around the individual's life

experiences. We can also see that an individual is detached from a problem, however the individual perceives the problem as an interpersonal occurrence. Narrative therapy is seen as a unique way of treatment using a tactic of storytelling as part of therapy. Stebleton (2010) notes that narrative-based approaches are the additional instruments that can be used in parallel with existing usual counselling approaches.

## **2.7 Resilience**

For this study, most pertinent literature on resilience was reviewed to get an understanding of the current work to the topic. Resilience is a trait that can be developed over time and normally starts developing in the early stages of a child (Sikorska, 2014). Sikorska (2014) further shares that resilient people normally have high self-esteem as they believe that they are worthwhile and valuable. Normally, resilient people are aware of themselves and they have good emotional management ability. They tend to have positive emotions that help them to endure and positively contribute to their wellbeing (Sikorska, 2014).

Researchers, on the other hand, have a different description for it. Resilience is to have a tremendous influence on an individual's welfare and growth (Herrman et al., 2011). Furthermore, resilience is rooted within an individual, which allows them to move forward despite troublesome situations. Resilience is understood as the progressive adjustment or being able to persevere or recoup mental well-being, regardless of facing adversity.

If parents or peers put a high-performance expectation on the child and show that they believe the child can achieve set goals, it would facilitate resilience and help them to develop self-esteem (Sikorska, 2014).

However, Herrman et al. (2011) identified the confusion that exists about the effects of stressors to a certain level where it is believed that stressors in a child's life are necessary for them to build the resilience to be able to bounce back when faced with challenges later in their lives. They further state that if stressors are not controlled by an adult, this can negatively affect brain development or rather a function of the brain which can be the reason for behavioural problems. However, there is no evidence of care being given to reduce stressors such as to support the well-being of vulnerable children or marginalised people (Herrman et al., 2011). Furthermore, researchers have

concluded that learners are resilient when they go through positive growth even though facing adversity (Kolar, 2011). Resilience is also described as an endeavour to impart it in learners and youths by avoidance, mediation and producing a defensive scheme starting from understanding the existing conditions and needs (Windle, 2011). Learners are seen as resilient when they go through positive growth even though facing adversity (Sikorska, 2014). Sikorska (2014) further shares that an emphasis is put on activities such as prevention, avoidance and producing a defensive scheme to impart resilience in youngsters and youths living in circumstances that are disadvantageous to their typical growth (Sikorska, 2014).

Research history shows that resilience has been studied from different disciplines and thus the meaning of resilience has grown as scientific understanding has been amplified. However, there is no mutual agreement on its meaning or definition (Herrman et al., 2011).

Since resilience is defined in many ways, the measuring instrument used can be different depending on the context of the study. The resilient scales such as the Connor-Davidson Resilience Scale (CD-RISC), Resilience Scale for Adults (RSA), Brief Resilience Scale, Resilience Scale, Scale of Protective Factors (SPF), Predictive 6-Factor Resilience Scale, Ego Resilience Scale, Academic Resilience Scale (ARS-30) and Satisfaction with Life Scale (SWLS) are the mostly used scales to measure resilience.

This research study used the SWLS method to measure the satisfaction of life by an individual. The SWLS has brief statements and uses the Likert scale whereby there is an option to link the degree of the option (Bajaj, & Pande, 2016). This tool is a population-wise tool for personal and individual aspects of resilience related to that specific population.

Furthermore, Me and My Feelings (M&MF) was used to measure the mental health state of the learners. It covers two domains namely emotional difficulties and behavioural difficulties. The scores are then analysed using Deighton's Strengths and Difficulties Questionnaire (SDQ) (Deighton, Tymms, Vostanis, Belsky, Fonagy, Brown, Wolpert, 2013).

## **2.8 Literature summary**

School dropout has been a global problem that deserves immediate interventions. The literature review confirms that the San community is one of the communities with the lowest level of

academic success in Namibia. Most of the learners struggle to manage their emotions when faced with daily challenges which cause them to drop out of school.

The call for interventions has led the Namibian government together with other NGOs to look into ways to support the wellbeing of the marginalised communities. Research studies show that individuals are resilient when they can persevere or are mentally well when progressively adjusting to their circumstances though facing challenges. Furthermore, the use of technology to compliment face to face counselling has been well researched as we have learnt from past research the ways in which technology has been used in counselling for mental wellbeing. We also uncovered how the use of technology is of great significance as it has progressively impacted the way many counsellors conduct their daily practice as it gives them the advantage of handling their work better. We also observed that a variety of digital tools such as early warning systems and smart classrooms have been used to address the school dropout problem elsewhere in the world.

However, even though researchers looked at how the use of technology complements face to face counselling, the studies on digital tools used in relation to the dropout problem are rather diverse, parse and do not focus on preventative measures. Unfortunately, there is no substantial evidence of research that has been done on technology being used in the Namibian context to intervene on the dropout problem.

More work still needs to be done on how the school dropout rate can be reduced through technology interventions. Thus, this study addresses this gap in literature on possible interventions to reduce the dropout rate within the Namibian San community through developing a mobile counselling platform to build resilience in young learners.



## **CHAPTER 3**

### **RESEARCH DESIGN AND METHODOLOGY**

#### **3.1 Introduction**

This chapter explains the approach for the research conducted, the study context, methods for data collection and the analysis method used.

The study used the qualitative research approach. The qualitative approach is an exploratory method that is used to closely define what is observed to generate a theory. This is a method that is used to get a better understanding of people's perspectives if the topic being explored is not well understood (Antwi, & Hamza, 2015).

This study used a qualitative approach for data collection for sampling within the San community to explore and understand the contributing dropout and success factors. According to Silverman (2016), qualitative research is a conscientious duty of field spread with problems not for expeditious pre-fixed answers. With qualitative research, the researcher is the instrument for collecting data, interpreting it and reporting the findings (Antwi et al., 2015).

#### **3.2 Participants**

This study used snowball sampling which is a non-statistical method to select the participants within the San community for the study of Windhoek and Donkerbos based youth. Snowball sampling, also is known as chain referral sampling, is a method where participants with whom contact has already been made use their social networks to refer the researcher to people who can potentially participate in the study (Etikan, Alkassim, & Abubakar, 2016). This is a method that is often used to find not so easy to reach groups. The selected individuals were grouped into three, namely, Successful San youth based in Windhoek, Dropout San youth, and Primary school San learners based in Donkerbos village. Informed consent was given by the participants over the age of eighteen (18) and consent for the learners in school was obtained from the parent or guardian as well as the child him or herself. It is important to get consent from the child as well even though it normally would be the parent who initiates counselling rather than the child (Geldard et al., 2017) thus the learners gave assent to participate. The child's consent is important as the parents giving

consent have their interest or agenda at heart which is based on the behaviour of the child. Furthermore, a counsellor has their own goal which may be directed by the behaviour of the child. The counsellor will then look into their knowledge base as to how to go about to solve the problem at hand. However, a child has got his or her own goals even though it might not be easy for the child to express them (Geldard et al., 2017).

### **3.3 Research approach / Research through design**

The terms design and research are in fact referred to as the same thing or rather inseparable as new knowledge is formed by both. Design research is commonly used by researchers to demonstrate or unveil their development practice for their artefact (Zimmerman, Forlizzi, & Evenson, 2007). Though there is little debate as to why the Research through Design (RtD) approach has gained popularity, the technique has become increasingly common and acknowledged in the HCI community (Zimmerman, Stolterman, & Forlizzi, 2010). For inquiry purposes and to gather information, RtD as a technique uses design practices (Zimmerman et al., 2010). Using the design activities, research practitioners have the opportunity to tackle disordered conditions of outlines or situations that are not well-matched with supplementing inquiry approaches (Zimmerman et al., 2010). Furthermore, RtD is a technique to ensure that the solution modelled is organised and specified in such a way to compliment the user's requirements and that the solution is not complex for the end-user to use (Somers, Owens, & Piliawsky, 2009). However, the knowledge acquired from the inquiry method can be existing indirectly or nearly within the product created, as the RtD process is about constructing an artefact, resource or a solution (Zimmerman, Stolterman, Forlizzi, 2010). In conclusion, research is driven by the design approach to develop the "right thing" (Somers et al., 2009).

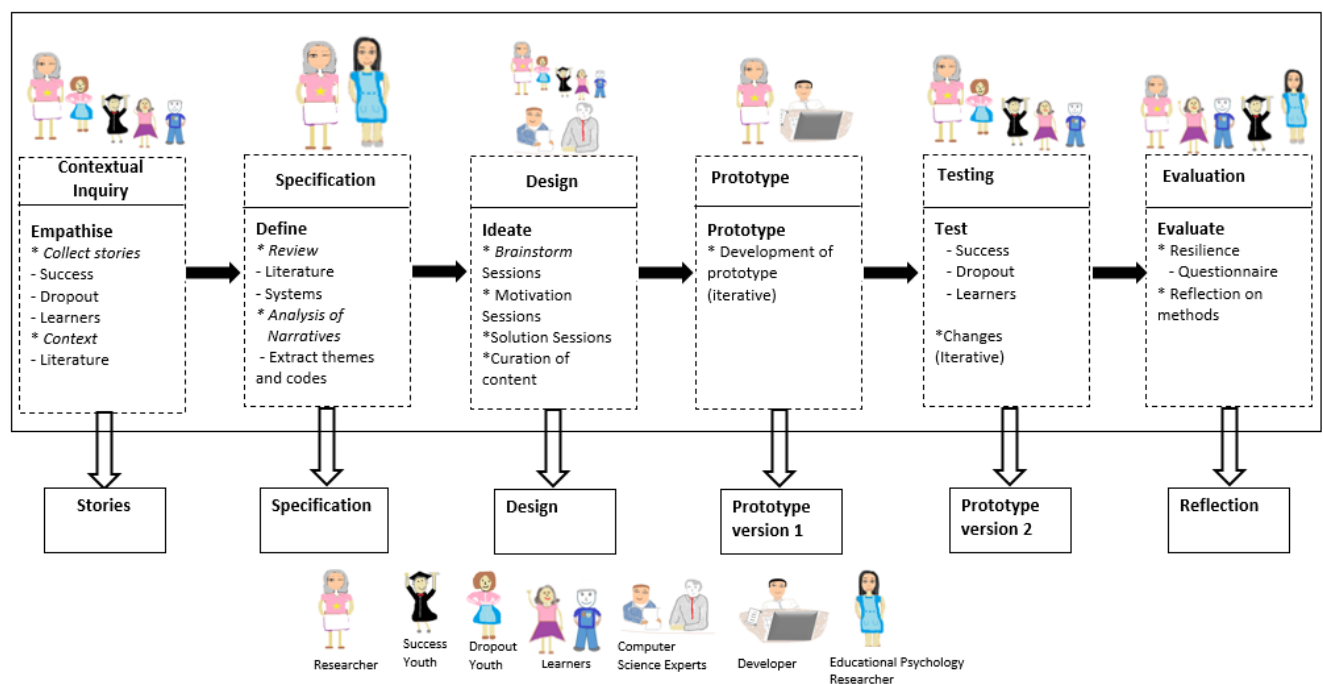
#### **3.3.1 Research design phases**

The research design phases were all contributing to the final solution development of the mobile counselling platform. We followed a design thinking approach which was incorporated in the research phases. Design thinking as a method was used to facilitate the process of the prototype design as it is about understanding and capturing the individual's needs in the context of the study. Design thinking is a human-centred methodology which starts by understanding a person's needs through empathy (Brown, & Wyatt, 2010). It is a solution-oriented approach which focuses on

culture and context amongst others to which opportunities in complex and unknown problems are seen (Brown et al., 2010).

According to Herbert Simon, an American psychologist, design thinking starts with defining the problem before forming an idea (Mulder, 2017). The prototype is developed from possible ideas formed. Furthermore, design thinking has no linear approach as testing the prototype, for example, can create new ideas and facilitate refinement to avoid an impractical solution (Mulder, 2017). The research process consists of a contextual inquiry, specification, design, prototype, testing and evaluating phase. Below (Figure 3.1) is the research phases integrating design thinking.

Figure 3. 1 Research process phases



**1. Contextual inquiry:** The purpose of the contextual inquiry phase was to acquire an understanding of what the learners are experiencing or going through during their school life. This was done to empathise with the experiences of the youth and learners by tapping into their position. The method aims to collect success and dropout stories and establish current issues.

2. *Specification*: The problem was defined from the narratives and rich pictures after which analysis was done by transcribing narratives, identifying key themes and categorising challenges phased by the San children.

3. *Design*: During this phase the idea was to *ideate* by coming up with a creative idea to develop a mobile counselling platform.

4. *Prototype*: At this stage the first version of the mobile counselling application was developed.

5. *Test*: This phase included testing of the first prototype to consider redesigning new ideas. The solution was experimented by developing a mobile counselling prototype to point out the strengths and weaknesses at an early stage and for further improvements. Successful and failure youths and learners were involved in testing the prototype.

6. *Evaluate*: This phase is where the learners tested the application and an evaluation on their resilience was conducted. The prototype developed was to extract knowledge about how we could develop resilience in San children.

### **3.4 Contextual inquiry**

The reason for this phase was to acquire an empathetic understanding of what the learners are experiencing or going through during their school life by connecting with them. The objective of the sessions was twofold, namely to collect stories and secondly to contextualise the San and Donkerbos community and the primary school learners. Video and audio recorded interview sessions with the youth and rich picture sessions with the school learners were held.

For success narratives, data was collected from ten (10) Windhoek based San youths who participated in interview sessions which helped to understand the factors that contributed to their success to having completed school and gotten to college. They were from different regions, who were enrolled in some tertiary institution in Windhoek. The participants were selected with the help of Mr Simpson Kapembe, a fellow San youth. An explanation was given to the youth about the study purpose and the need for them to participate voluntarily. Written consent was then given by the youths that were in agreement with taking part in the research project and for the study to use their photos and audio recordings.

For the *failure narratives*, the sample comprised of ten (10) San youths based in the Donkerbos village in the Omaheke region who had dropped out of school but were willing participate in the workshop. The youths participated in the interview sessions which helped to understand the factors that contribute to their failure to complete school. The participants were selected with the help of the Ms Helena Afrikaner, a fellow San youth who grew up in the same region. An explanation was given to the youths about the study purpose and the need for them to participate voluntarily. Written consent was then given by the youths that were in agreement with taking part in the research project and for the study to use their pictures and audio recordings.

For the current issues, twenty-eight Donkerbos village primary school learners participated while we only planned to have about fifteen participants. About ten of the twenty-eight learners were from other ethnic groups which were not considered for this research purpose. Eighteen of the participants were San learners that were between grades four (4) and seven (7). An explanation was given to the youths about the study purpose and the need for them to participate voluntarily. Written consent was then given by parents that were in agreement with having their children taking part in the research project. The participants were selected with the help of the dropout youths as most of these learners were children to the youths that had dropped out of school.

### **3.4.1 Collecting stories**

Semi-structured individual face to face video and audio recorded interview sessions with about ten (10) successful and ten (10) dropout youths for data gathering were conducted. Each interview lasted for about a maximum of half an hour. Interviews were conducted whereby the participants were asked to describe their school life experiences from the time they started school until they completed secondary school or they dropped out. Furthermore, a rich picture session with primary school learners in the Donkerbos village was conducted to understand their current life challenges.

The contextual inquiry objectives were achieved through the purpose discussed in table 3.1 below.

Table 3.1: Collection of stories, activities and methods used

Participant#	Research Objective	Activity	Instruments used
1	Success Stories	Establish success indicators within the San former learners - the youth shared their school cycle life stories. The interviews were video recorded.	Open-ended interviews
2	Dropout Stories	Establish dropout indicators within the San youths who dropped out of school. Youths shared their school cycle life stories. The interviews were audio recorded. Helena, a successful San youth translated the stories to English.	Open-ended interview
3	Current Issues	Determine current issues that San learners endure. To create a mental model to identify children's current challenges experienced.	Rich picture

### ***Success Stories***

The first workshop focused on acquiring an understanding of the challenges that the San youths faced during their school life cycle and to understand what made them to be resilient and stand against adversity. A brief introduction about the workshop objectives, the study challenge and workshop schedule was done. The San youths who were currently enrolled in tertiary institutions shared their personal school life experiences. Video and audio recorded interviews were conducted with ten (10) of the Windhoek based San youths. During the interviews open-ended questions were asked where the next question was adapted based on the participant's responses. Thus, all

participants were not asked exactly the same questions. Due to the personality differences, the researcher engaged in dialogues with the interviewees and asked more questions for them to elaborate on their statements. There was no need for the interviewer to necessarily ask all questions; however, based on the individuals' responses to question 1 and 2, any of the other questions in the list could be asked to help them open up more. Question one (1) and two (2) were: "Can you tell us your personal life story in relation to your school career?", and "Add any other information or comments which you feel one should know about why you were successful to complete school", respectively.

This allowed for new ideas and new ways to tackle the problem of high dropout rates amongst the San community.

Figure 3.2: San youth success story interview



### ***Failure stories***

The session focused on getting an understanding of the challenges that the youths faced during their school life cycle and furthermore, to understand what made them to be less resilient to stand against adversity in comparison with the successful Windhoek based San youths. A brief

introduction about the workshop objectives, study challenges and workshop schedule was done. An explanation and translation in their mother tongue were given to the youths about the purpose of the study. The translation was done by Helena Afrikaner, a San youth who grew up in the same region. The research participants shared their school life experiences and these audio recorded interviews were conducted with ten (10) of the Donkerbos based dropouts. During the interviews, open-ended questions were asked where the next question was adapted based on the participant's responses. Thus, all participants were not asked exactly the same questions. Due to the personality differences, the researcher engaged in dialogue with the interviewee and asked them more questions for them to elaborate on their statements. There was no need for the interviewer to necessarily ask all questions, however, based on the individual's response to question 1 and 2, any of the other questions in the list could be asked to help them open up more. Question one (1) and two (2) were: "Can you tell us your personal life story about your school career?", and "Add any other information or comments which you feel one should know about why you were successful to complete school", respectively. This allowed for new ideas and a new way to tackle the problem of high dropout rates amongst the San community. Questions that triggered a reflection like "What would you do differently if you could go back to your school years." were asked. Furthermore, they were asked to give motivational advice to the learners in school to help them to be more resilient and to endure.

Figure 3.3: San dropout youth telling her failure story





### ***Learner current issues***

The first workshop focused on getting an understanding of the challenges the school learners are currently facing during their school life cycle in relation to the research objectives. Furthermore, this was meant to understand the similarities and differences in relation to the current issues they have with the dropout factors and success factors. Empathy was vital for this session as it helps with understanding the needs of the learners about the research objective. Empathy is the starting point of design thinking (Brown et al., 2010).

This was explained in their dialect to ensure that they understand the need to voluntarily participate in the research. The translation was done by Helena Afrikaner, a San youth who grew up in the same region as them. The purpose of the workshop in the Donkerbos village was to inquire about the issues that primary school learners' face as understanding the challenges facing the San community learners was important in the current research. The need for interventions such as building resilience in learners was the determination driving the research to engage the San learners as a way to understand and interpret the challenges contributing to the high dropout rates. During the first session, edited video recordings of the success stories of the Windhoek based San youths were shown to the learners as part of motivation and to open the discussions and to give them an understanding of the study objective. This also stimulated their way of thinking on current issues. Below in figure 3.4 is a snapshot of the motivational video session. These videos were shared in order to open the platform for discussion on current issues.

Figure 3.4: Video session



### ***Rich picture***

To open the discussion and get to a common understanding of the current problem faced by primary school learners, the rich picture method which is another form of interviews for reasoning was used. Rich picture was initially created by Peter Checkland where he and one of his students developed a tool as part of the Soft Systems methodology in 1960 to 1970 to be used for gathering data regarding complex problems (Checkland, 2000). This method helped to represent complex problems for the researcher and participants to come to an understanding of current issues. This method was beneficial for this study because of the cultural and language differences. It facilitated the creation of a mental model to identify current challenges experienced by San school learners.

Participants in groups of about five learners per group were given half an hour to one hour to create a rich picture of their challenges. Each group was provided with markers, pens, paper, magazines, glue, scissors and instructions to depict their views or feelings about the current challenges. After the session of creating the picture, fifteen (15) minutes were given for discussion in groups. After the discussion, the groups were given ten (10) minutes to briefly present and share with the other groups what their rich picture meant. For the presentations, the learners had to discuss the rich

pictures to open up the dialogue and sharing of more ideas. The presentations were audio recorded. The description of the current issue was depicted by pictures drawn or cut from magazines as well as written words.

The second session of the workshop started after a small 20-minute break where the learners were grouped in the same groups again and they had to suggest solutions to the identified challenges in the previous workshop. The solutions were then briefly presented to the other groups to open dialogue for more ideas. The benefit of using rich picture as research data collection was for the researcher to better understand complex issues identified by the learners. Through rich pictures, the study explored the perspectives of the San learners in relation to the solution initiative. This method was helpful to bridge the gap in language differences. This was a good way of opening up discussions about the current challenges faced by learners. Below are some screen shots of participants working in groups and presenting their work.

Figure 3.5: Rich picture session



Figure 3.6: Rich picture session: Learners working in groups



Figure 3.7: Presentation on rich picture on current issues





### ***Motivational cards***

Finally, they were allowed to create some handmade motivational cards for any of their fellow San child. Motivational cards are personal and can activate the individual's responsibility to comfort others in time of need.

Participants individually made inspirational motivational cards to any friend, brother, sister or any other child they wished to encourage not to drop out of school. They were excited to show off their creativity to others. Some used natural material such as leaves, grass and sand amongst others. The learners had so much fun colouring in and styling their motivational cards. In the end, they then had to hand it to the fellow child and motivate them through giving a small encouraging speech.

The science behind motivation is that it helps an individual to maintain a goal-oriented attitude. These motivating factors were used to direct the factors used on the counselling mobile application to motivate learners.

Figure 3.8: Learners creating the motivation cards



Figure 3.9: Motivation card

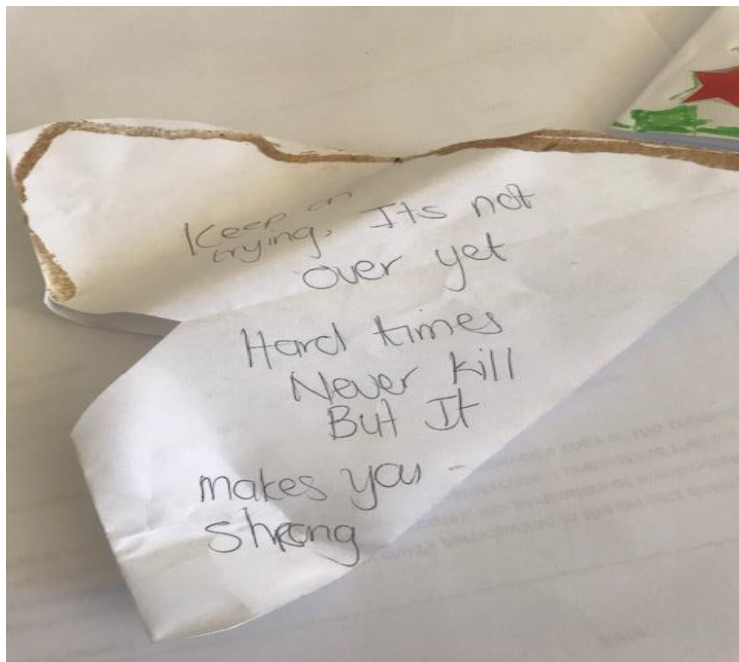


Figure 3.10: Presenting motivation card



### **3.4.2 Context**

The drive behind the context inquiry was to understand the ideas, customs, and social behaviour of the San community and the San learners in primary school. Furthermore, the literature review on what is said about the San community and specifically the Donkerbos community was done. The literature review was done to learn and understand more about the San people regarding their cultural values and mostly their daily lifestyles as to how they are surviving daily. More background information on how the school in the village operates and how the learners from the San community are accommodated were inquired about.

## **3.5 Specification**

The focus of this phase was to define the challenges faced by the learners by analysing the information collected during the contextual inquiry phase. This phase gave us the specification of what should be done regarding the interface before we designed and implemented the actual prototype. During this phase we reviewed and analysed information for us to define the main problem identified from the inquiry phase.

### **3.5.1 Counselling technologies**

A search through literature, discussion blogs and reviews on current digital applications was done to explore current counselling technologies being used. The study systematically explored the benefits and challenges of counselling technologies. Online counselling is important as it can provide an alternative solution that face to face counselling cannot provide; however, there is a lack of substantial evidence of its effectiveness (Harris, & Birnbaum, 2015).

Furthermore, the study focused on three selected online counselling platforms by reviewing them for more visual and tangible experiences about the research's objective to develop an appropriate tool for the Namibia San learners that are at risk of dropping out of school.

Web-based and mobile applications such as Mobieg in South Africa, Happify and Mood Enhancer (<https://www.mobieg.co.za/>; <https://happify.com/>; and Kauhondamwa, Winschiers-Theophilus, Kapembe, Costa, Guxab, Kamati, & Afrikaner, 2018) were the applications that were experimented with. The findings were considered for the mobile counselling application development.

Furthermore, a search through literature, discussions blogs and reviews on current digital applications was done to explore the current counselling technologies being used. The study systematically explored the benefits and challenges of counselling technologies.

### **3.5.2 Counselling systems analysis**

The research question aimed at identifying how we can reduce the dropout rate of San learners through technology interventions. It only made sense to introspect the impulse of school dropouts, with three different systems as prototypes to brainstorm about the voracious dropouts as a guide for the digital counselling platform. Accordingly, we examined a digital counselling solution that is offering online mental health support services for youths that are at risk in South Africa (SA) which is called MobieG. MobieG is embedded with attractive benefits for young people, which include multiple options to self-help services where an individual can choose a counselling topic or else make use of free access to a professional facilitator. Moreover, de la Harpe, Settley, and Cilliers (2019) in their findings state that there is no considerable evidence of effective impact on an individual's life or the quality of the system as the services are used in anonymity. In addition to this facts, de le Harpe et al. (2019) share another challenge with online counselling platforms, which is that they are prone to interruptions during online sessions due to unstable network connectivity which can cause more challenges to someone with an urgent problem. Cultural and language differences is another aspect which can be a challenge for the facilitators to deal with (de la Harpe et al., 2019). The findings of the research study done by Williams, Parks, Cormier, Stafford, and Whillans (2018) on the Happify system show that participants who used the Happify application at the recommended level reported greater resilience after 8 weeks of use. Happify is a fully automated web and mobile system based on positive psychology and is designed in such a way that it can provide relief for individuals with stress-related symptoms and negative thoughts by engaging them in practical activities and games (Vayena, Haeusermann, Adjekum, & Blasimme, 2018). The Happify system uses Artificial Intelligence to interact with the client instead of counsellors. However, very little is known about the mechanisms through which tranquillity interventions lead to an improvement in wellbeing (Williams et al., 2018). Future studies can give more light as to how and in which circumstances the Happify counselling system works.



Besides the above-mentioned systems is the "Mood Enhancer", a mobile application developed to focus on enhancing the individual's social well-being (Kauhondamwa et al., 2018). While emotion often serves as a means of communicating a feeling or emotion, the idea of the Augmented Reality (AR) accessory was developed to use the expression of feelings as a trigger for action to switch the negative feelings to a rather positive motivation or embrace it if it is desirable (Kauhondamwa et al., 2018). Findings from a study by Diegmann, Schmidt-Kraepelin, Eynden, and Basten (2015) indicates that it is probable for individuals to be motivated when using AR applications. However, Kauhondamwa et al. (2018) suggest that there is a need for further studies for a comprehensive user experience evaluation after a refined version of the application rolled out. Finally, using technology for counselling can be a viable option to complement the traditional face to face counselling method. The benefits of using the technology-based online counselling system is to reach more participants globally, and for this study's objective, an in-depth inquiry was done to gain a deeper understanding and to meet the requirements concerning the San Primary School learner. Although the above-mentioned systems focus on enhancing emotional wellbeing, the features of these systems is considered not feasible for the objective of this study, for the indigenous rural areas like Donkerbos are underserved. Donkerbos is an underdeveloped residential area with no mobile phone network infrastructure, therefore online generic systems are not beneficial to the Donkerbos learners. This research therefore focused on developing a compatible solution taking into consideration the San's cultural practices, geographical context and value systems, and through using recreated narratives from their fellow San youth.

### **3.6 Data analysis**

#### *Analysis of narratives: Extract themes and codes*

Transcripts of the recorded interviews were created to make it easier to code and analyse. The qualitative data collected from the youth interviews were analysed using thematic analysis to facilitate clarity and focusing on patterns that can help in the creation of themes. The thematic analysis is a common tool that is used for qualitative data analysis.

***Step one: Getting familiar with the data***

During this process the interview data was transcribed and re-read a few more times to get interpretational accuracy and a proper understanding of the data. The activity involved before coding the data sets was to understand the stories by interpreting their meanings. To filter the data, the real stories were recreated in order to have more innovative and encouraging stories.

***Step two: Coding the data***

During this stage, codes were categorised in relation to the identified topics and themes. The interview transcriptions were read again to add codes in relation to the scope of the study.

***Step three: Extracting themes***

For this stage, the coded data sets from the transcribed interviews were grouped and organised into advanced themes. A thematic map was the result of this analysis that was done in step two.

***Step four: Review themes***

During this stage, the themes were revisited to validate them against the transcribed interviews as a way to determine the definite story for the data about the scope of the study. The review helped to determine whether there is a relationship between the themes.

***Step five: Themes are defined***

Themes were defined and named during this stage about the research scope, the focus and the narratives. The analysis process is repeated to ensure that the themes identified are fundamental for the purpose of the research and ultimately to develop an appropriate tool for the Namibia San learners that are at risk of dropping out of school.

***Step six: Contextualising***

At this stage the data extracted and analysis done were merged to match the context of the literature.

### **3.6 Curating success and failure stories**

The stories were recreated to help in identifying meaning by separating important factors from noise in the data. By recreating the story, all the destructive aspects were removed and rather only searched for the good and encouraging qualities in the narrative. All good qualities extracted from the narrative were used to recreate a new and motivational story to be used with the counselling application. Questions used to facilitate dialogue are found in Appendix A.

### **3.7 Analysis of current issues: Understanding the data from the rich pictures**

A session was held with San learners from the Donkerbos primary school to understand the current issues they face. The rich pictures were recreated to motivate the learners for them to build resilience. By recreating the picture, negative or destructive aspects were used as a guide to motivate the learners in these areas. This was done to form good qualities that can help to build resilience in the learners when faced with adversity during their school life. These rich pictures helped in the development and implementation of the mobile counselling platform.

Reading through the rich pictures as part of the analysis stage helped to get familiar with the dataset and acquire an understanding of the current issues. Extraction was done from the rich pictures created by the participants to get an understanding of the data on current issues. This was done by carefully scanning through the hard copies of pictures to highlight important aspects concerning the research objective, which is to develop and implement a mobile counselling tool for Namibian San learners in order to promote their resilience.

A theory-driven approach was used to create codes from the data and to organise such data for more meaningful data to facilitate the analysis process. Themes were then created from categorised datasets. Learners identified some challenges that they feel are important to be addressed for them to complete their school career. Figure 4. 1 presents the solutions suggested on the current issues identified.

Figure 3.11: Solutions suggested on current issues identified



Descriptive themes were then characterised according to their relevance to the research objectives as one of the steps to develop technology to strengthen resilience in San children to reduce school dropouts. Finally, all codes were linked with the themes.

### 3.8 Design

Having acquired a concrete background understanding from phases one and two, this phase focused on formulating the idea as the solution to the identified and defined problem.

Brainstorm sessions started with a defined topic with computer science experts to generate more ideas for the solution. Suggestions on new ideas of the interface to the counselling application were

discussed. The ideas were noted down and later combined and evaluated for implementation. The brainstorming session was about the interaction patterns such as navigations and functionalities for the mobile platform.

We shared how the actual solution would look and feel like. The visual representation of the mobile platform including colour, typography, buttons, screen density, image sizes, and icons was designed during this phase. A mind map of ideas was sketched on the whiteboard. After the sketch, the idea of the interface was created using the Justin mind tool.

### **3.9 Prototype**

For the mobile application development, Cordova application framework as a container was used. This is a web tool that is envisioned for developers to use technologies like CSS, JavaScript, and HTML to produce mobile applications. During this phase, we considered the platforms to create for and whether it would be relevant for our target audience. This included careful thought about mobile phone infrastructures within the Donkerbos village. Currently, there is no mobile network coverage in the village itself. Another vital aspect we had to consider was the application performance as this would feed user satisfaction. Due to the fact of most applications on devices operating on Android which is an open-source operating system, we developed the platform on Android.

Furthermore, ionic cross-platform mobile application framework was used for the development of the interface of the mobile counselling platform. The ionic cross-platform mobile application framework is an open-source tool for developing cross-platform applications for native iOS, Android, and the web. Firebase was used for the databases to store all data for the platform for maintenance purposes. Firebase is a third party distributed database which provides service on the cloud and belongs to "Real-time Backend / API" category designed for collaborative applications.

However, the mobile counselling platform is using a locally accessible database at runtime. Development tools and programming languages used to develop the mobile platform were Typescript, HTML and SCSS. Hardware specifications to use the platform is an android smartphone with 4.4 KitKat or later version. The SQLite which is a local database stored on the Android phone

was used for the application. Data was stored locally on the physical device, however, SQLite was used to make administration and content updates more manageable.

### **3.10 Test**

The mobile counselling prototype version two (2) was tested individually with the success, dropout youths and San primary school learners. Results that came from the test were used in an iterative process of design thinking to redefine problems. Further alterations were done and the outcome was a second version of the prototype. The final functional version was demonstrated to the participants for testing. All suggestions and bugs were addressed.

The study consisted of usability tests of the mobile counselling application with ten (10) successful youths where the objectives were to get feedback on the design of the application, functionality, and any other suggestions. We conducted semi-structured questions to get feedback in order to refine the application.

#### **3.10.1 Successful youths**

The participants' group comprised of five (5) Windhoek based successful San youths. We were expecting all ten (10) participants who initially took part in the interviews for success story collection sessions to attend, however, only five (5) could make it. These individuals were enrolled at tertiary institutions and they had a good understanding of English and Afrikaans so there was no need to translate.

Written consent was then given by the San youths as their agreement to part take in the session and to use the data. The session used a feedback questionnaire for refinement and this improved the quality of the mobile counselling application after testing it.

During the testing session, the youths had to confirm their details, for example their pictures and names as well as the stories they shared during the story collection session. They also had to give feedback on the application's functionality and usability.

The youths individually tested the mobile application and they had to complete a questionnaire after the testing session. "Your step-by-step mobile application testing process" was used as a testing guide (Gilmore, 2018). The questions were open-ended to allow them to openly discuss

what they thought about the mobile platform. About six (6) questions were asked besides the demographics questions that were asked. The questions can be found in Appendix A of this document.

### **3.10.2 Dropout youths**

The sample comprised of ten (9) dropout San youths based in Donkerbos village. We expected ten (10) participants, however, the tenth participant who had taken part in previous workshops for the narrative interview session could not attend as he got employment on another farm that is far from Donkerbos. Written consent was then given by the San youth as an indication of their agreement to part take in the research project and according us the permission to use the data after all this was explained to them in their native language. A session was held with the dropout youths to test the prototype for refinement. The youths also had the opportunity to confirm their details and the stories that were used as motivation on the application. They were split into two groups of five and four participants per group. The youths went through usability testing and responded to a questionnaire afterwards. The questions were open-ended to allow them to openly discuss what they thought about the mobile platform.

Figure 3.12: The dropout youths testing the counselling app



### 3.10.3 Primary school learners

These were the San learners participating in the testing of the mobile counselling application. The sample comprised of twelve (12) primary school learners between grades five (5) and seven (7). Written consent was then given by the participants' parents for them to take part in the research project and for data to be used for the research study (See Appendix D for the consent form). Helena Afrikaner, a fellow San youth explained the purpose of the study to the parents and the learners in their mother tongue. Thereafter, parental informed consent was obtained before any data collection. The aim of this test was for the refinement of the application.

The learners were split into two groups of six and they were asked to perform tasks in order to test the application by exploring the counselling application to identify and share any hitches or new ideas for refinement. The phone was passed to each learner to allow individual for experience while the rest were observing and discussing and advising each other. Figures 3.14 and 3.15 show pictures of the learners testing the mobile counselling application and completing questionnaires.

Figure 3.13: Mobile counselling application explained





Figure 3.14: The learners' testing session



Figure 3.15: Helena explaining the questionnaire



Figure 3.16: The San learners completing the questionnaire



### 3.11 Evaluation

On top of the five processes of the design thinking, the evaluation phase was added for the final evaluation of the counselling tool and to reflect on the methods used. During this phase, a critical examination on the level of the learner's resilience and a reflection on the methods used was done. There is a challenge to measuring resilience (Rosenberg, Starks, & Jones, 2014) or the ability to deal with change is not straightforward due to the connection between external and internal contributing factors like communities and households. Other components like financial, cultural and social dimensions for example, can also influence the measurement. A trip to the Donkerbos village was undertaken to have a session with individual learners to measure their level of resilience. This was meant to evaluate if a significant increase in their mental state was found to occur during their involvement in the research project of motivational counselling.

The sample comprised of ten (10) primary school learners between grades five (5) to seven (7). The reason why these grade ranges were considered is that some of these learners are already at high school age though they are still in lower grades which puts them in the category of at risk of dropping out. Written consent was then given by the participants' parents in agreement to part take in the research project and for data to be used for the research study.

Ms Sofia Amses a fellow San youth explained the purpose of the sessions to the learners in their mother tongue. A questionnaire as a measuring instrument was used to obtain data concerning the thoughts about life they have had since they started using the mobile counselling application. These individual sessions aimed to discover: the children's life satisfaction with life, and their feelings and their resilience. The learners had to complete life satisfaction and how they feel questionnaires before spending one hour on the mobile counselling platform individually after which they answered the resilience questionnaire.

The learners were allowed to individually use the mobile counselling application for about an hour (For the resilience questionnaires see Appendix F, G and H).

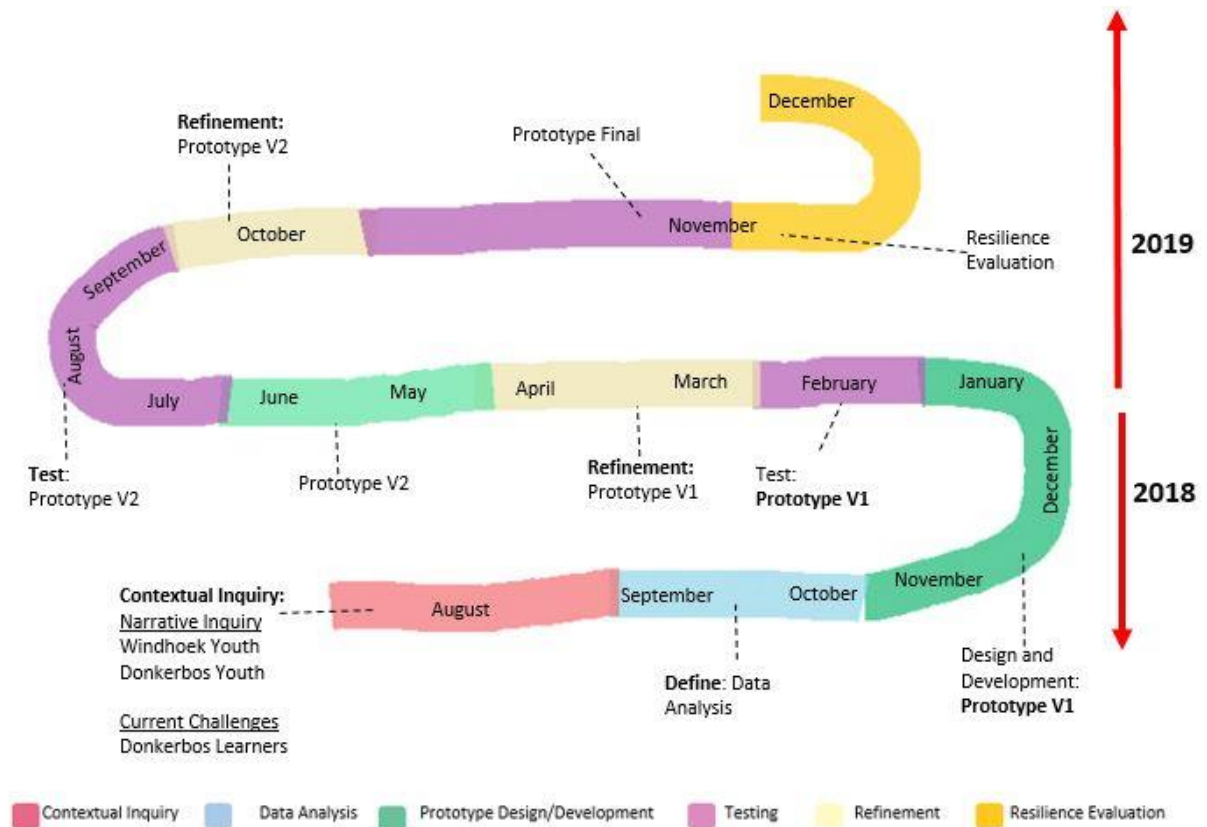
## CHAPTER 4

### ANALYSIS AND RESULTS

#### 4.1 Introduction

This chapter presents the main findings emanating from the data analysis derived from the contextual inquiry, specification, prototype, and testing and evaluation phases. The inquiry phase provided vital knowledge and information for the requirements needed to develop the solution. The project events timeline is presented in the figure below.

Figure 4. 1 : Project timeline



## **4.2 Contextual inquiry**

### **4.2.1 Collecting stories**

Getting data about the youths' school life stories and the learners' current issues was vital for the objective of the study to develop technology to strengthen resilience in San children to reduce school dropouts. The outcomes of the study are sketching the requirements allied to the development and implementation of the mobile counselling application for San learners. The outcomes were used in the development of the mobile counselling application and also providing a guideline to other researchers in the development, implementation, and evaluation of a mobile counselling application. The youths involved shared their identity, however, for confidentiality reasons, the learners' names were not recorded on the questionnaires such that there would be no connection of the responses to a specific learner.

### **4.2.2 Success stories**

Findings of the semi-structured individual face to face video-recorded interview sessions with ten (10) youths are shared in this section.

Below are quotations of two (2) of the successful youths' school life stories. A contextual construct of the stories is given after the story to clarify meaning. Findings on the challenges that the youth faced are categorised as per Table 4.1

#### ***First school life story***

Below is the life story of a male San youth who completed his school career and is currently enrolled as a student at a tertiary institution in Windhoek.

*"I grew up at Omatako village, in the Tsumgwe area where I completed primary education. I was attending school from grade six (6) to ten (10) in Tsumgwe. I had to endure discrimination and hardship while in school because both my parents were unemployed. Despite the hardship I had to face what motivated me to persist was my aunt who paid for*

*my school fees and kept on encouraging me not to drop out. I am currently enrolled at Monitronics College. I want to encourage my fellow San learners not to be discouraged by what others are saying about you and to never give up but to take opportunities given and make the best of it.”*

Omatako village is situated in the Otjozondjupa Region in the northern part of Namibia. The youth shared his story of starting school in the village and then moving to the bigger town for grades six (6) to ten (10) where he had to endure various hardships and discrimination as his parents were unemployed. He then demonstrated what made him resilient despite facing adversities.

In his story, we can see the family factor that contributed to him being resilient and bouncing back in the midst of adversity. What motivated him to persist was his aunt who paid for his school fees and kept on encouraging him not to give up on his school career. This shows that external factors like the family can contribute to building resilience in a child’s life.

### ***Second school life story***

Below is a school life story of a 25-year-old female who successfully completed her school career despite the adversities she had to face.

*“The school in my village where I started grade one (1) only had up to grade four (4) so I had to move to another school away from my village a few kilometres away from my village. From grade five (5) to grade ten (10) I had to wake up very early in the morning to walk a far distance to school. This caused me to get to school a bit late which led to punishment for late coming. Although we were punished it never caused us to drop out of school. The punishment was in the form of cleaning the school while others are attending classes which caused me to miss out on schoolwork. Lack of proper clothing and shoes was another challenge I had to face. I had to walk to school without wearing any shoes while the sun was extremely hot.*

*When I was in grade ten (10) one of the teachers from the lower grades offered to take me into her house and took care of me. This teacher was a big motivation as she kept on*

*encouraging me to study as well as providing for my daily needs. She also advised my mother not to give up but to keep on encouraging me to complete school.*

*Thanks to this teacher, I never gave up even when I failed grade ten (10), I went back to school and repeated the grade. I then changed schools to do grades 11 and 12 and repeated grade 12 after failing. Because of the move and not having anyone like the teacher who used to support me made it even harder for me to cope but I managed to pull through. I am now enrolled in college for a degree.”*

The shared life story of her school career shows that this individual had to face adversity such as lack of finances, transportation, and proper school clothing. However, she was motivated by a teacher who offered to assist and motivate her but soon had to endure further adversity when she changed schools and had no one to assist her.

What we can observe from the story above is that assets and resources in an individual's life and environment can facilitate resilience. The teacher as an external resource and a few internal traits facilitated this individual's capacity of adaptation in the midst of adversity. We can observe that environmental, family, social, cultural and personal spheres are needed in supporting an individual to withstand adversities (Herman et al., 2011).

#### **4.2.3 Failure stories**

Below are quotations of two (2) of the dropout youths' school life stories. The way the stories were told may not be well understood as it was not well constructed. A review of the stories is given after the story to give a better understanding.

##### ***First school life story of a dropout***

Below is a school life story of a female youth who never completed her school career due to the adversities she had to face.

*“My biggest distraction was my boyfriend who kept me busy. I dropped out of school because I couldn’t focus on my school work as my mind was occupied with fantasies of my boyfriend. The principal of the school was motivating all girls not to give up and to stay away from boys but we never listened to her.*

*Now that I am home I am so bored and have got nothing to keep myself busy with. My dream now is to find a job to keep me busy or to do something to develop myself to become a better person. I dropped out of grade 6 after failing the grade and never even reached high school at all. My parents did not like the idea as they had hope that one day I would be successful after completing school and help them financially and they tried to motivate me but I refused. Shortly after leaving school I fell pregnant but had a miscarriage. I then had a second and third child shortly after the miscarriage of which the third baby was down-syndrome and did not survive. My boyfriend is also supportive of raising the one child we have but he is also struggling to keep jobs as some times the employers do not pay him on time or at all.*

*My sister also dropped out of school the same way I did as she had a boyfriend and had no interest in school. My friends who were attending the same school with me also dropped out of school and got boyfriends and children as well.*

*My message and encouragement to those still in school are to persevere and not drop out as you - will regret it one day just like me. When I look at the other learners who completed their school I feel sad. I have a deep desire to go back to school but unfortunately, I have a child already and time has passed me by.”*

What we can observe from this story is that the individual was in a romantic relationship. This romantic relationship was a hindrance to her progress in school. She again shared that she failed grade six (6) and thus dropped out and never even reached high school. She further shared that her sister and friends are also dropouts just like her. She regrets her actions and encourages other San learners in school not to fall in the same trap as she did but to persevere.



## **Second school life story of a dropout**

Below is a school life story of a male San youth who dropped out of school due to adversities he had to face.

*"I grew up in Donkerbos village and finished primary school here. I got support from the government to buy school uniforms and books.*

*In 2010, I left the village to attend high school in a bigger town. I received a scholarship to buy school necessities. In 2011 I had no scholarship or any other form of support. In 2012, I started grade 10 with an external exam where we had to pay. I then sought help from the counsellor for help and got an exemption letter to allow me to sit for grade 10 exams. However, the school did not accept the letter and thus did not allow us to sit for exams. That's when I dropped out of school. My parents were not happy and encouraged me to go back to school but they also had no money to take me back to school so they too gave up. I had an older brother who also dropped out due to the same financial challenge. I regret the fact that I dropped out and the suffering I am going through. My motivation to my fellow San learners in school is not to give up like I did but to hold on and complete school and continue to develop themselves. Through this, they will be able to live a decent life and support their children as well. Today you are much fortunate that the government is helping with transportation to make the best of the opportunity given to you. Please give attention to your schoolwork as this is the key to success for you."*

What we can observe from the story is that he was doing well with support from the government through scholarships. When there was no more financial support anymore, he dropped out of school. His parents could also not afford to pay the examination fees for him. His major challenge was financial. He is motivating San learners not to drop out but to make use of government support.

### **4.2.4 Learner current issues**

The rich picture of the identified challenges and solutions were categorized as per table 4.1 below.

Table 4. 1 Current issues categorised

Identified problems	Suggested solutions
Loneliness	<ul style="list-style-type: none"> <li>- Talk to a teacher when you feel lonely for them to comfort you.</li> <li>- Talk to life skills teachers for moral support.</li> <li>- When your parents have passed away you can ask a friend to help with accommodation, food or clothes.</li> <li>- A cellphone to phone our families will help as you can call your parents to tell them when you are sick.</li> <li>- Talk to someone you trust for comfort.</li> </ul>
Communication Network	- Cellphone network coverage.
Financial	<ul style="list-style-type: none"> <li>- Ask the principal or teachers for assistance with toiletries.</li> <li>- Ask the teachers if they can buy you toiletries when they get paid if your parents cannot afford to buy you.</li> </ul>
Accommodation	<ul style="list-style-type: none"> <li>- Ask your friends for help with accommodation or toiletries;</li> <li>- The government should provide our San community with better housing to improve their living condition.</li> </ul>
Transport	- The school should buy a bus to help with transport back home for the holidays.
Support	- Donations from the government and other organisations.
Emotions	- When people are not treating you fairly, talk to the life skills teacher about how you feel.
Food	- The community should plant crops to help supply the hostel with food.

	<ul style="list-style-type: none"> <li>- The school must provide enough food as it is important for us to concentrate better.</li> <li>- The government and other organisations should donate food for us in the hostel.</li> </ul>
Education	<ul style="list-style-type: none"> <li>- The government should provide computers to schools.</li> <li>- The school should provide us with stationery.</li> <li>- Our parents should provide us with a proper summer and winter school uniform.</li> <li>- Donations for school books and school clothes will help.</li> <li>- The government should provide our school with computers.</li> </ul>

Learners identified the challenges they perceived as important to be addressed for them to complete their school careers. Participants shared suggestions on how the current issues could be solved. Participants' suggestions were: the need for cell phone network coverage; for comfort talk to a teacher when lonely; to ask the principal or teachers for assistance with toiletries; to talk to life skills teachers for moral support; to ask friends for help with accommodation or toiletries; the government should provide computers to schools; the school should buy a bus to help with transport back home for holidays; need donations from the government and other organisations; the community should plant crops and supply the school with food.

In conclusion, the results of the interviews show that successful and unsuccessful youths had to endure life challenges during their school years as children. However, there is a gap between the two groups. The gaps were that the successful youths had support in the form of a teacher, parents, government or family support, whereas those that dropped out did not have a proper support system to motivate them.

Findings from the interviews show that the successful and dropout San learners were faced with the same challenges but what made the one group more resilient is the fact that they had some internal or external factors of resilience.

Furthermore, findings show that learners in the school had similar challenges as those learners in high school already but the advantage is that they have a support structure like their families close by.

#### **4.2.5 Motivation**

Below are motivational messages of two (2) of the learners from handmade motivational cards. A review of the motivational message after the story is shared to provide a better understanding.

##### ***First motivation***

*“Dear April, First of all, I will like to greet you. And then from then, I tell you what you must do. April, you must study hard in school and never give up on your life. And you must never dodge school and study please.”*

This learner is writing to a fellow learner named April, telling him to study hard and to never give up in life. He is also advised not to abscond from school or run away from school. He is encouraged to study again and again.

##### ***Second motivation***

*“Keep on trying. It’s not over yet. Hard times never kill but it makes you strong.”*

This learner is motivating a fellow learner by reminding him/her that it is not over yet and that challenges, adversities, problems will never kill him/her but make him/her a strong person, meaning that he/she can withstand the adversities. Even though not all is perfectly well, they still feel that things will be fine. They also enjoy life as they believe that it is going well with the family and school but are rather motivated by their challenges in their personal life.

#### **4.2.6 Context**

One of the motives that drove this research is that after so many years of independence, the San community is still marginalised (Stichel, Afrikaner, Winschiers-Theophilus, & MacRae, 2018). The San communities are economically disadvantaged. The research took into consideration the specific focus on San youths in terms of their cultural aspects, specific geographical location or environment, and their vulnerability.

The San people mostly survive by gathering and hunting (Stichel et al., 2018) and they move around and lead a nomadic way of life.

Donkerbos, which means dark bush, is a settlement about 260 km from Gobabis, east of Namibia in the Omaheke Region and it has about 100 to 200 people in the Donkerbos village (Stichel et al., 2019). Most people in Donkerbos live in shacks with no toilets, proper water supply, sewerage system or electricity. The school and the community shares a borehole that operates on solar electricity. The road to Donkerbos is about 30 kilometres which takes about three to four hours' drive on a gravel road from the main gravel road which can only be travelled using a 4 by 4 vehicle. The majority of the inhabitants in the village are the San people who have lived there long before it was established as a village.

Donkerbos village has a primary school starting from grades 1 to 7, with a hostel that is attached to it. All learners leave the village for bigger towns or rural areas to attend high schools and this is the time these learners face adversity and dropout.

Like any other typical child, San children stay closely under their parents' care until they reach the age of about thirteen (13) and graduate from primary school. However, most of these learners will have to leave their village to attend high school elsewhere as there is no high school in their villages and in most cases these learners face adversity and dropout.

#### **4.3 Specification**

The results on the review done on systems and data analysis of the stories are discussed in this section.

#### 4.3.1 Counselling systems

This section shows the analysis of the results from the reviewed MobieG, Happify and Personal wearable mood enhancer counselling systems. The data were gathered from the respective websites and the reviewed literature. In table 4.2 below, data about individual counselling systems reviewed are shared.

Table 4.2: Counselling systems

Technology	Idea	Idea description	Remarks
MobieG	Online mobile counselling platform	Provides services including mental health where advice is given on how to identify your problem and how to get out of the situation.	Generalised platform. Free mobile & web guide with reliable advice, information & help for people in need.
Happify	Mental health and well-being mobile and web counselling app with gaming options.	An emotional well-being mobile application that determines your level of happiness by asking some questions.	<p>A tailor made approach is the best way when designing wellbeing interventions for the youth by involving them (Gwinner, Melrose, &amp; Moffat, n.d.).</p> <p>They have activities and games to engage their client.</p> <p>The app does not accommodate children under the age of eighteen (18).</p>

Personal wearable mood enhancer application.	Mobile well-being application	Enhance the individual's mood and social well-being	This application enhanced the well-being, motivation and goal orientation of the individuals who used it (Kauhondamwa et al., 2018).
--	-------------------------------	---	--

Findings on the exploration done show that although face to face counselling is still dominant, there is a growth in online counselling or therapy services (Chester et al., 2006). Online counselling is a new concept, however, technology has been used for some time now. Telephone, internet, smartphones, computer games and video conferencing are technologies that are used for support. Technology improves accessibility especially when you consider individuals that don't have access to a counsellor back in the villages. With the help of technology, they do not have to travel far distances to see a counsellor or to get support. However, there are many questions and concerns about the validity of online counselling. Currently, online counselling services already exist worldwide like web-based and mobile applications such as MobieG in South Africa which was founded in 2010, Happify in New York City which was founded in 2012 by Tomer Ben-Kiki, and the augmented reality multi-platform mobile application "LearnersHelpline Mood enhancer" which uses mental contrasting techniques for the development of the app (Kauhondamwa et al., 2018).

**MobieG** is an online counselling web and mobile counselling system that was developed to assist and advise young people and it is available in five European languages as well (<https://www.mobieg.co.za/>). It provides services including mental health where advice is given on how to identify your problem and how to get out of the situation by following a few steps provided. It gives the client an option to chat to a counsellor or rather benefit from the motivational messages and advice. Like for example when you feel lonely, there are 10 things you can do to break free. Below are screenshots of the appearance of the application. Topics include types such as: personal issues, abusive relationships, and mental health. Under personal issues you have subtypes such as resilience (how to bounce back from setbacks), loneliness, anger management, dealing with debt, abuse and shyness. Below is a snapshot on the Resilience topic in the MobieG application.

Figure 4. 2: MobieG counselling system

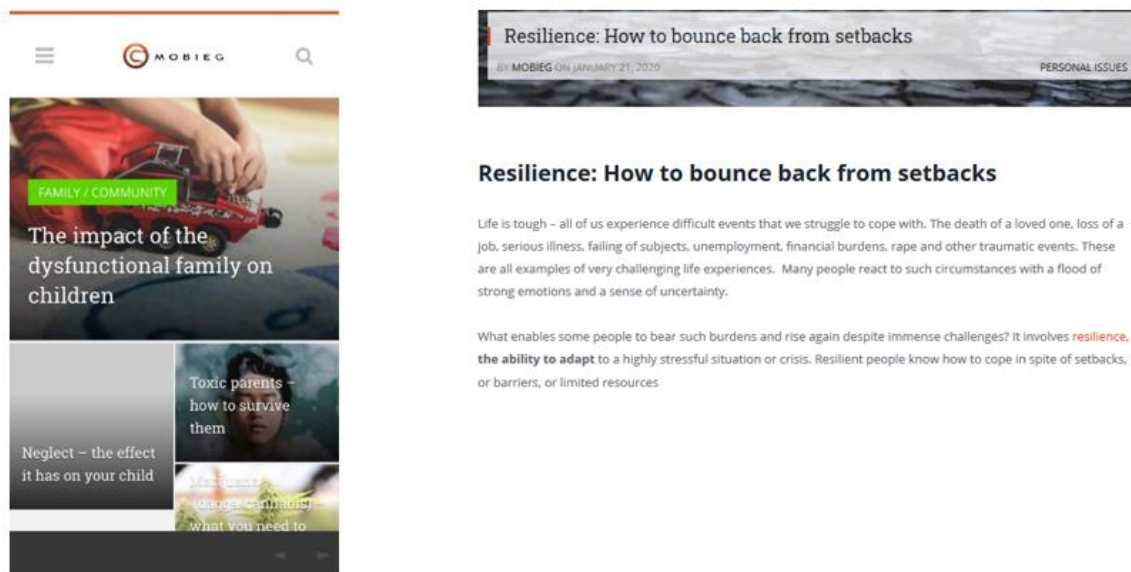




Figure 4. 3: MobieG counselling system: HelpLine

### How can I build and develop my resilience

**Make connections.** Many studies show that the primary factor in resilience is having caring and supportive relationships within and outside the family. Make sure to connect with family, friends, support groups, faith-based organizations or a society and accept their help to get through your tough time. It is extremely difficult to get through adversity alone.

**Resilient people view a difficulty as a challenge, not as a paralyzing event.** Avoid seeing crises as overwhelming problems. You can't change the fact that highly stressful events happen, but you can change how you interpret and respond to these events. It helps to look at the bigger picture, the future and how circumstances can change. Often in a crisis we get stuck in the issue and can't seem to make plans around it. This is where other people might be of help – to help us see what is possible if we take a step back from the problem.

*There is no better than adversity. Every defeat, every heartbreak, every loss, contains its own seed, its own lesson on how to improve your performance the next time. Og Mandino*

“Sometimes life takes you into a dark place where you feel it's impossible to breathe. You think you've been buried, but don't give up, because if truth be told, you've actually been planted.”

? Karen Gibbs

#### MOBIEG HELPLINE:



If you need to talk about this, you are welcome to chat to one of our online counselors. The service is free and you may remain anonymous. Click on: [LIVE CHAT](#)

Online times: Sundays: 18H00-20H00 / Mondays – Thursdays: 19h00-21h00

Happify is an emotional well-being mobile application that determines your level of happiness by asking some questions. “You get scored for overall happiness, which averaged other scores like for example: “positive emotion,” or “life satisfaction”. Happify system is based on a framework that aids an individual to build important happiness skills like to be thankful for example. You are placed on a track based on your assessment results. A consultation was done by Gwinner et al. (n.d.) about young people’s expectations, experiences and needs on innovative technology solutions to promote youth wellbeing. Reviews on the experiences of using the Happify app show that the application has limited free options for activities and you cannot do much on a given day (<http://au.professionals.reachout.com/happify>) (Gwinner et al., n.d.). A tailor-made approach should be the best way when designing wellbeing interventions for the youth by involving them (Gwinner et al., n.d.). Below in figure 4.4 is a snapshot of the Happify application.

Figure 4. 4: Health and well-being mobile and web app



A personal **Learners Mood Enhancer** app was developed by Maria Kauhondamwa with fellow youths in Namibia to enhance the individuals' well-being, motivate them and help them to be more goal-oriented (Kauhondamwa et al., 2018). The application is a mobile application that is specifically developed to support the Namibian San youth's well-being. The app is designed in such a way that it embraces a feeling if it's positive or fight the feeling if it's negative (Kauhondamwa et al., 2018). This helps the individual to be more independent and be self-determined. The application is developed in such a way that the emotions (artefact created by the individual) trigger the app to play a motivating video.

The app works in such a way that when the individual is feeling down, demotivated or happy, the individual can use their mood enhancer app to fight such feelings or to embrace it (Kauhondamwa et al., 2018).

Figure 4. 5: Mood enhancer accessories mobile application



#### 4.3.2 Counselling systems benefit to new system

Different counselling systems were reviewed to explore the benefits that we could draw from their features in relation to the objectives of this study which was to build resilience in primary school San learners in Donkerbos. Table 4.3 below shows the features and benefits of the counselling systems.

Table 4.3: Features and benefits of the counselling systems

System	Features	Benefit for the new system
MobieG	<ul style="list-style-type: none"> <li>- Self-help services</li> <li>- Mental health services</li> </ul>	Motivations are used to help learners to deal with their emotions and challenges in their daily living.

	<ul style="list-style-type: none"> <li>- Advice and information about daily life.</li> <li>- Emotional supportive therapy including comforting, advising, encouraging and reassuring.</li> </ul>	
Happify	<ul style="list-style-type: none"> <li>- Targeted conditions like mood disorders, stress &amp; anxiety.</li> <li>- Cognitive Behavioural Therapy</li> <li>- Self-help: Designed to be used without the involvement of a healthcare professional.</li> <li>- Target feelings and thoughts to train the brain to overcome negative thoughts.</li> </ul>	<ul style="list-style-type: none"> <li>- Motivations and narratives are used to change negative patterns of thinking or behaviours that are influencing the learner and so change the way they feel.</li> <li>- Thus improves mental health by reframing negative thoughts.</li> </ul>
Personal Mood Enhancer	<p>Target features include enhancing social well-being</p> <p>Use of cultural probes for the application.</p>	<p>Providing daily inspiration and goal orientation for the learners.</p> <p>Negative feeling eliminated by embracing positive emotions through positive narratives and motivations.</p> <p>Using fellow San youths' school life stories to motivate and inspire learners.</p>

#### 4.3.3 Data analysis findings

Results collected from success, failure, and current issues and analysed are discussed in this section.

Success Themes: Appendix I presents categorised challenges, effects and resilient factors the success youth faced. Failure Themes: Appendix J presents categorised challenges, effects, and dropout factors.

### ***Current issues themes***

Descriptive themes were then characterised concerning the research objectives to develop technology to strengthen resilience in San children to reduce school dropouts. All codes were linked with the themes.

During the thematic analysis process, twenty-two (22) codes were initially extracted from the transcribed data set. Thereafter, six key themes were created from the initial codes. The themes created are finance, education, emotional, personal life, family and social.

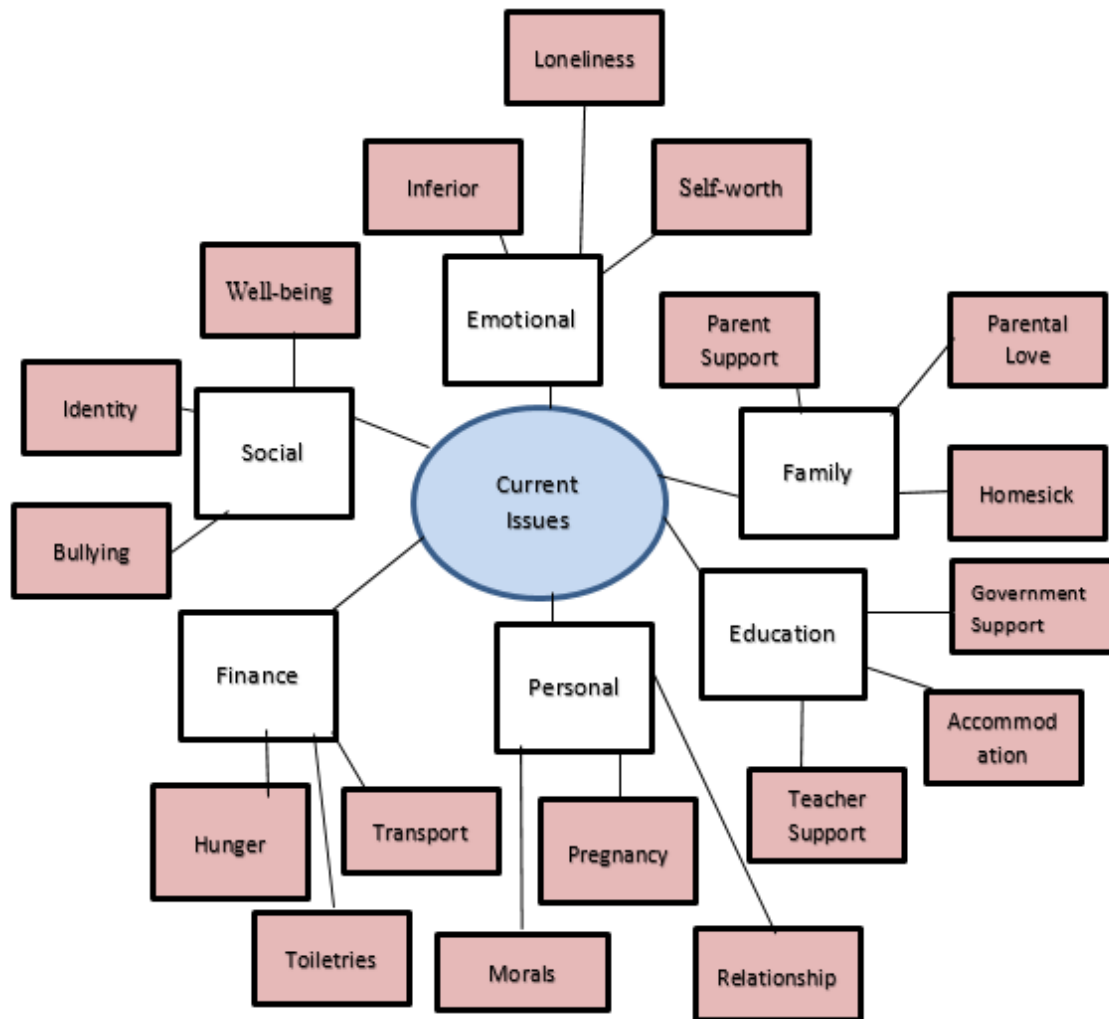
In table 4.3 below are the codes presented from the analysis of the collected responses on the youths' life challenges in relation to the identified topics and themes.

Table 4.4: List of initial codes from transcripts

Bullied/Bully	Self-worth	Family (Support)	Pregnancy
Inferior	Health	Emotional	Friends
Financial	Adapt (Change)	Government (Support)	Influence
Accommodation	Hunger	Assistance	Punishment
Loneliness	Hardship	School	
Transport	Discrimination	Clothes	

Findings on the coded transcribed datasets were grouped, organised into advanced themes, and reviewed for validation and identified to match the context of the study are shared in figure 4.6 below.

Figure 4. 6: Map of themes



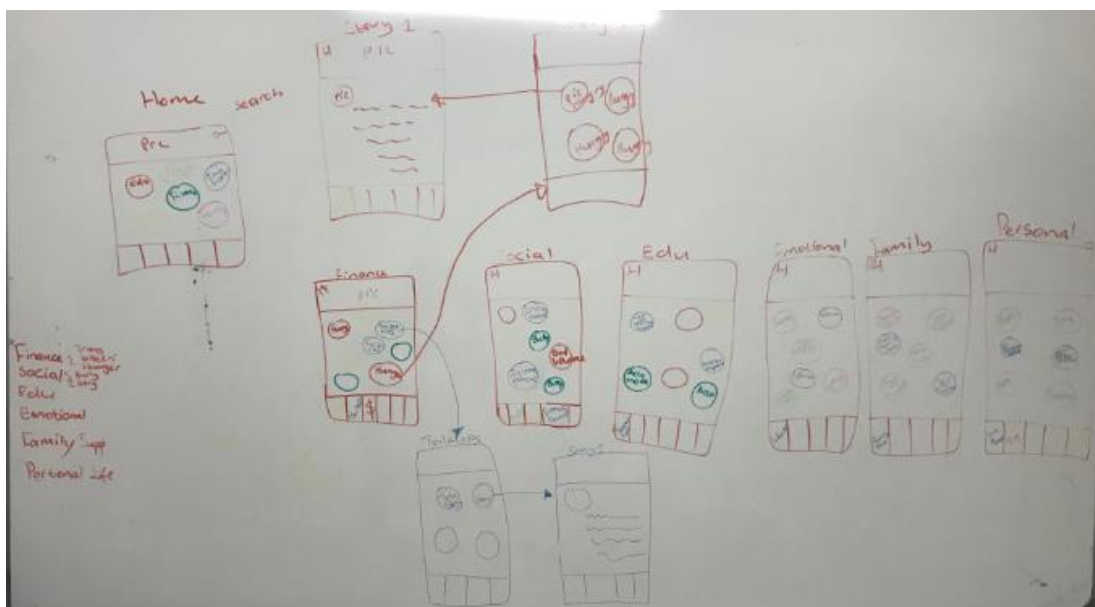
#### 4.4 Design

The design is stage three of the Design Thinking process where thinking “outside the box” is endeavoured to facilitate an innovative approach of thinking. The mobile application interface idea evolved from the themes of analysed success and failure narratives and current issues from the specification stage. Figure 4.8 and 4.9 show the brainstorm results sketched.

Figure 4. 7: Interface mind map

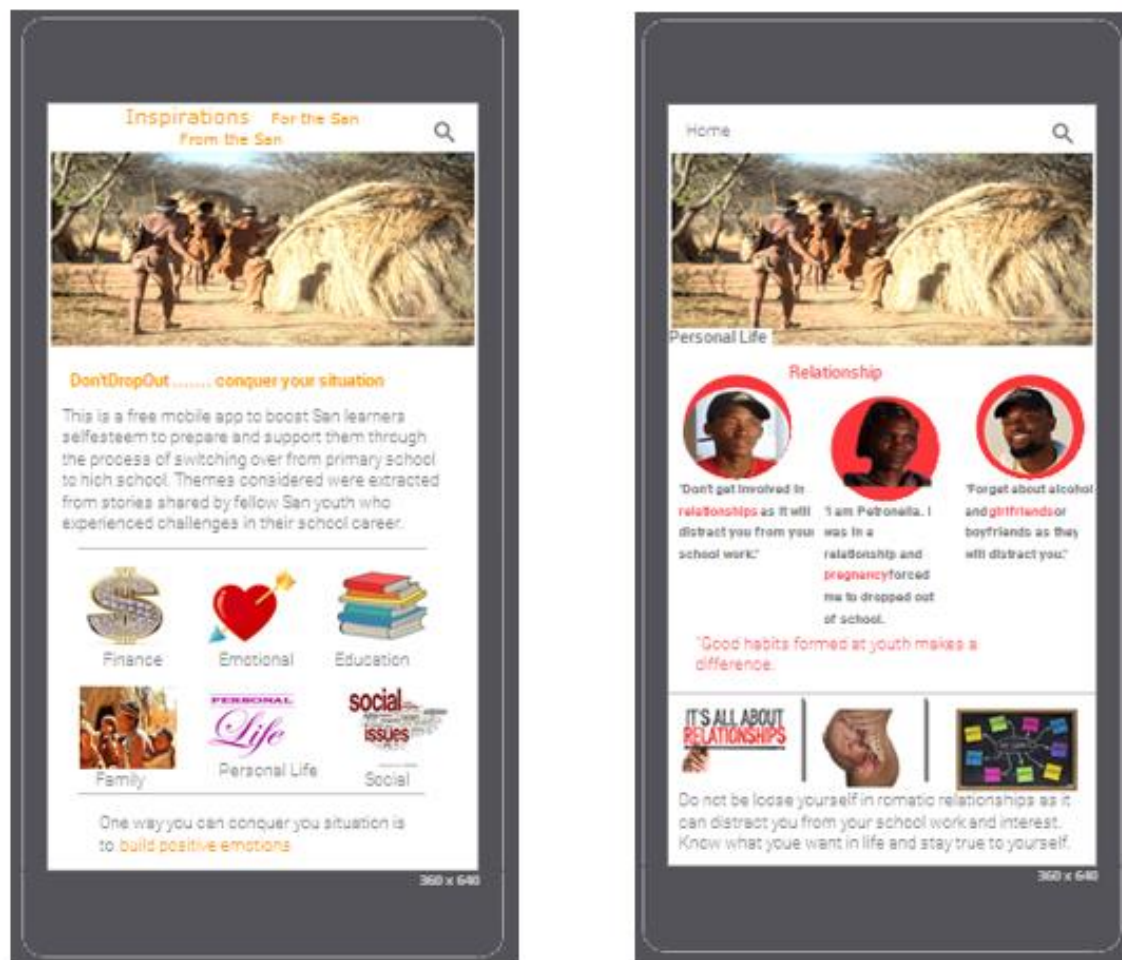


Figure 4. 8: Mind map of the mobile counselling application



After the sketch, the concept of the mobile counselling application was created using the Justinmind tool. Below in figure 4.9 are screenshots of the mobile counselling application design showing the main themes and story types.

Figure 4. 9: The interface prototype



In figure 4.10 below the learners explored the mind map of the interface created in Justinmind which is an interactive tool where the user can interact with the mind map as if it was the actual system.



Figure 4. 10: Mobile counselling application interface explored



The below result is of the kid's feedback about the mobile counselling application after interacting with the interface.

**First result**

*"It will motivate us; it will help us to study more from cell phones; it will help us so that we must not go out of school; it will help us to stay away from boyfriends and not get pregnant; it will help you when you are far away and you are lonely; you can call your parents."*

**Second result**

*"I want you to put on another movie because the one we watched is very interesting and I think you must put more about school and the rules; one about helping each other, taking care of each other and to be good friends."*

**Third result**

*"Yes, it learns us something good now to know about it. It learns us how not to drop out of school."*

**Fourth result**

*“In our group, we think it will be good and useful to us and we will like to have it.”*

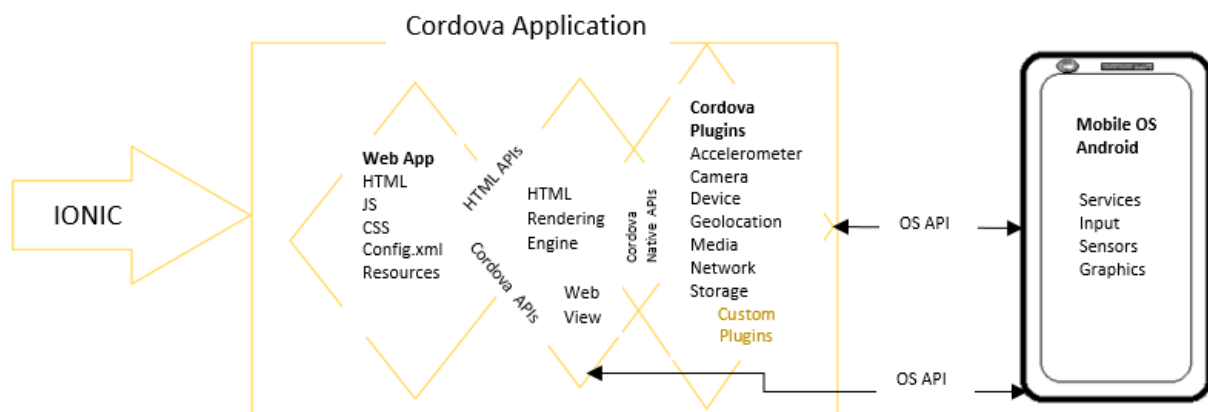
#### **Fifth result**

*“We think the cell phone is good because it is useful that if you need the calculator you can use it to calculate. And to help us with our different problems at school.”*

### **4.5 Prototype**

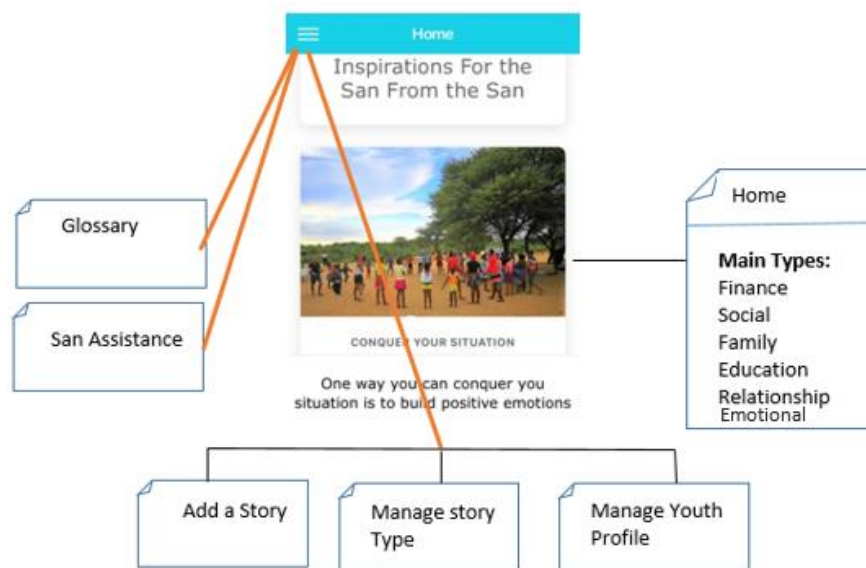
This is stage four to show the results of the prototype. Below is the architecture of the tool used to develop the mobile application. The mobile counselling application was developed using Cordova application framework as a container and the ionic cross-platform mobile application framework for the interface. Below in figure 4.12 is the Architecture of the mobile counselling platform

Figure 4. 11: Architecture of the mobile counselling platform



The application has the following functions namely: Main themes on the home page; the glossary with a list of commonly used themes and phrases; Assistance provided for the learners; Add a story; Manage a story type, Manage youth profile and a search option on the home page.

Figure 4. 12: Mobile counselling application information map



The **glossary** consists of all the terms used throughout the application including the description of all main theme types.

**San Assistance** information is intended to make the learners aware of all organisations and the government's help that is available for them. This is also a way to motivate the learners by showing the assistance and help that is available to them.

**Add Story** is the option available to add a new story to the database. This is a functionality that can only be performed by the assigned application administrator.

**Manage Story Type** is the option where a story type could be added to the database and it is only permitted to the application administrator.

**Manage Youth Profile** is the option where a profile of an existing youth could be edited or a new profile could be created and this can only be done by the application administrator.

Below in figure 4.13, 4.14 and 4.15 are more snapshots of the mobile application.

Figure 4. 13: Landing page for the mobile counselling application.

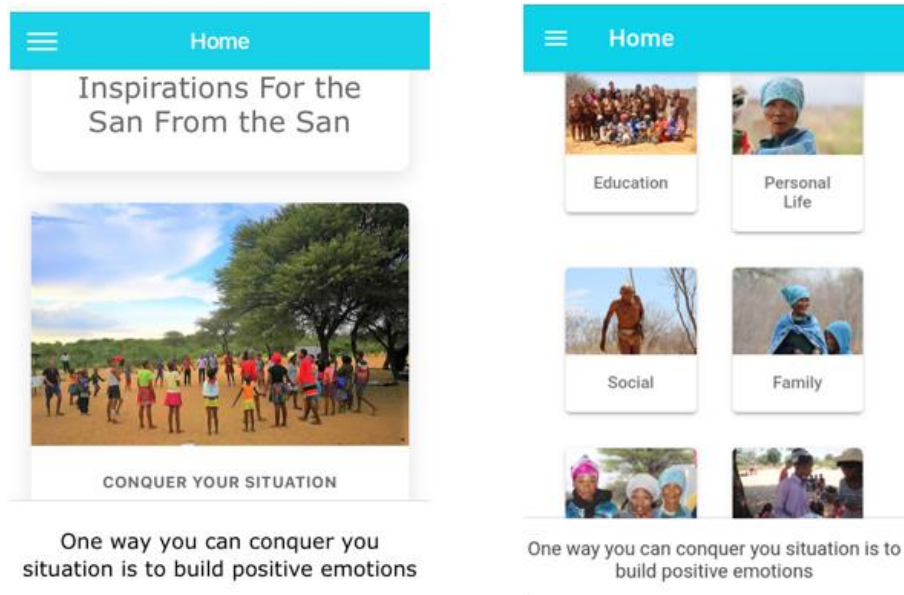


Figure 4. 14: Main menu of the mobile counselling application

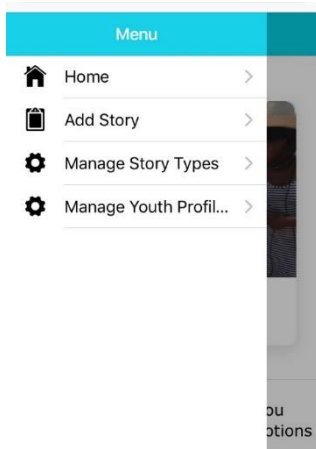
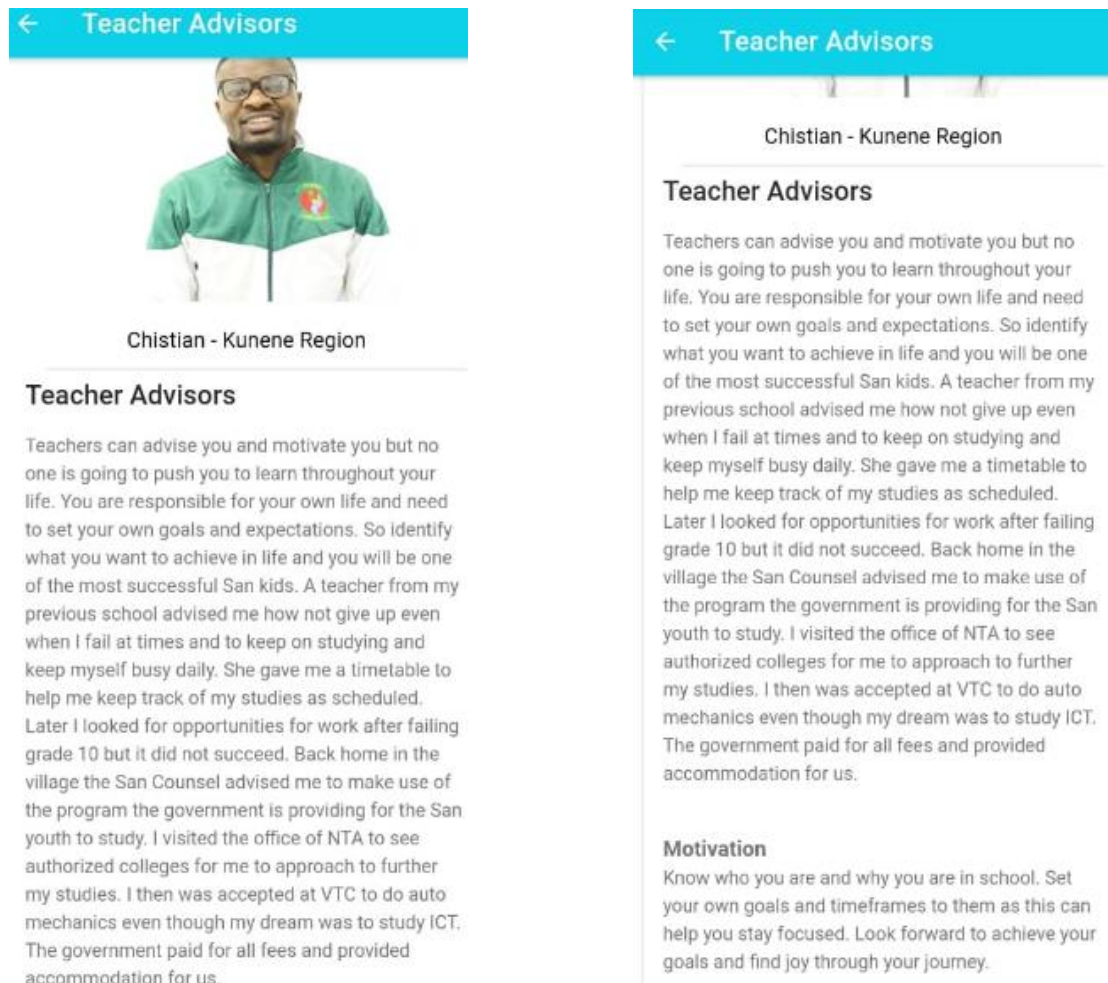


Figure 4. 15: Mobile app stories



#### 4.5.1 Mobile counselling platform use case diagrams

The UML (unified modelling language) shows system functionalities and how the users interact with the system.

Figure 4. 16: Interaction of actors for the mobile counselling platform

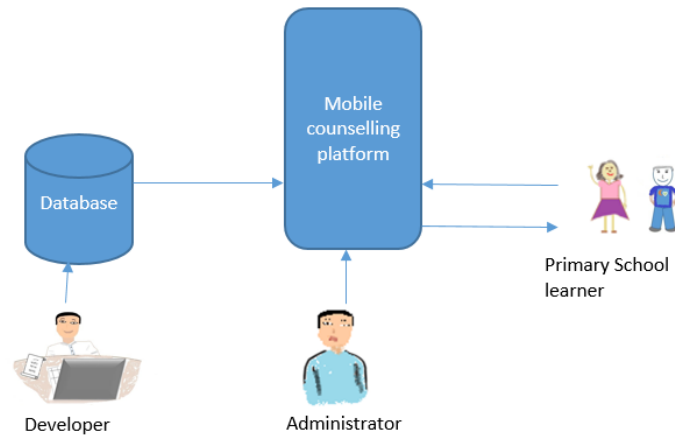
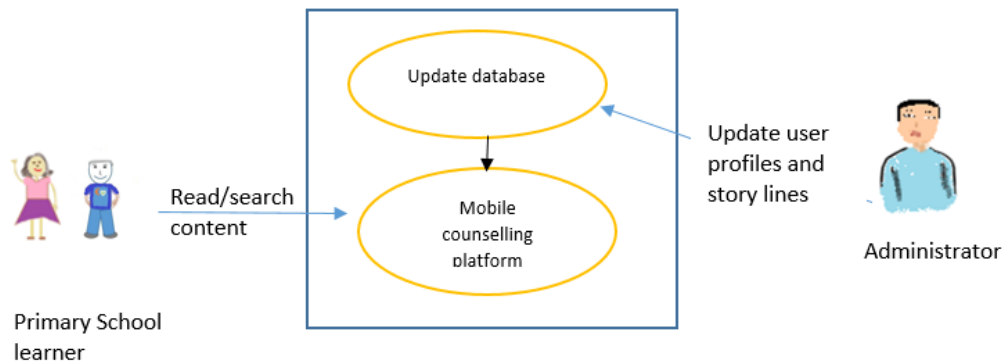


Figure 4. 17: Mobile counselling platform use case diagram



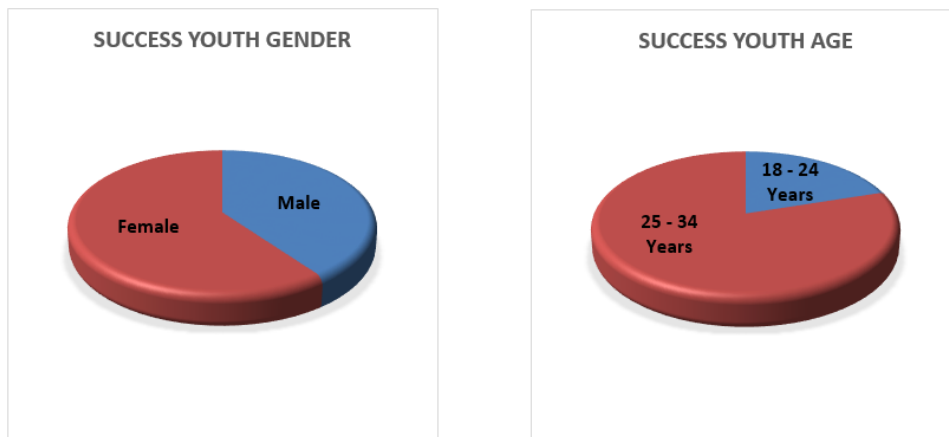
## 4.6 Testing

### *Success youths*

The youths who participated were between the ages of eighteen (18) and thirty-four (34). Sixty (60%) percent of the participants were male and forty (40%) percent female.

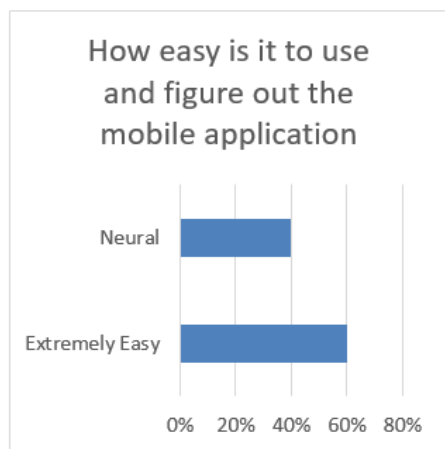
Below in figure 4.20 are the age and figure 4.21 is the response of the success youth on mobile usage.

Figure 4. 18: Participants demographics



The survey from the questionnaires demonstrated that sixty (60%) percent of the participants agreed that the mobile counselling platform is extremely easy to use and forty (40%) percent had a neutral feeling. The diagrams below in figure 4.22 illustrate the figures abovementioned.

Figure 4. 19: Successful youths' mobile app testing survey responses



The respondents advised that the pictures were not quite clear and as such they needed to be refined. The youths also advised that we should add audio and video recordings of the motivations to help the learners even more. They suggested that the recordings need to be in their native language. They further shared that with recordings, the learners would not get bored and it will also help the physically impaired individuals. Some think that the recordings will make it even more emotional and real for the learners. They loved the platform and personally felt motivated once again by their own stories and they expressed that they would recommend the platform to other learners as well. Another youth shared their idea of making the platform more attractive for the learners so that it can attract more attention. Furthermore, the youths believe that the platform can help the learners to open up their minds and be more positive about education and that it is a good way to let the learners know and understand that they are not alone and it did not start with them but others who managed to succeed as well. They further expressed that they think the platform would be effective as it is based on real life stories of experienced successful youths similar to what the learners are going through. In conclusion the platform was found to be easy to use and understand but that it just needs some form of video or audio recordings.

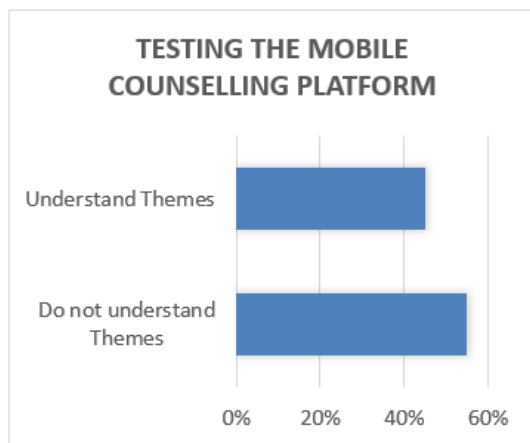


### ***Dropout youths***

They completed a questionnaire after testing the platform for evaluation and refinement of the application. The age of the participants varied from the ages of nineteen (19) to thirty (30).

Fifty-five (55%) percent of the participants did not understand the themes in the mobile application. This made it difficult for them to understand and motivate their learners to use the mobile counselling application. From observations, we could see that most of these dropouts had learners in primary school. With the failure stories we observed that these learners were not talking about a role model they could look up to motivate or support them to persevere throughout their school life. The diagrams below in figure 4.23 illustrate the abovementioned figures.

Figure 4. 20: Dropout youth mobile app testing survey responses



### ***Primary school learners***

The learners who participated were between the ages of ten (10) and eighteen (18). Among the participants sixteen (16%) percent were aged between ten (10) and twelve (12) years, forty-two (42%) percent were aged between thirteen (13) and fifteen (15) years and forty-two (42%) percent was aged between sixteen (16) and eighteen (18) years.

Sixty-seven (67%) percent of the participants were males and thirty-three (33%) percent were females who took part in the testing session.

The mobile counselling application's functionality was explained to the learners without giving any directions or suggestions as to how to perform the tasks. This was done to avoid misinterpretation of unique user experience.

The results to the question: "Do you understand all terms for the types in the mobile application? (Finance, Education, Emotional, Social, Family and Personal) show that seventy-five (75%) percent understood, and seventeen (17%) percent did not understand the terms and types used in the mobile counselling application. Eight (8%) percent of the responses were invalid which could be as a result of not understanding the question.

The diagrams below in figure 4. 21, 4. 22 and 4. 23 illustrate the abovementioned figures.

Figure 4. 21: Mobile app testing survey learner Demographics

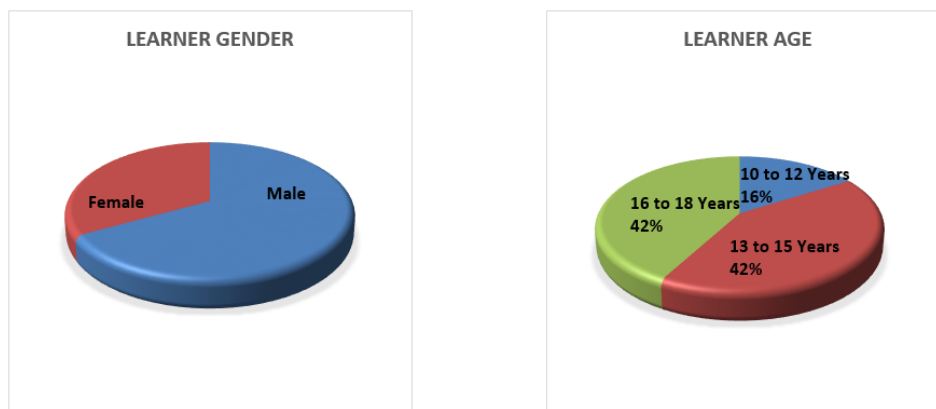
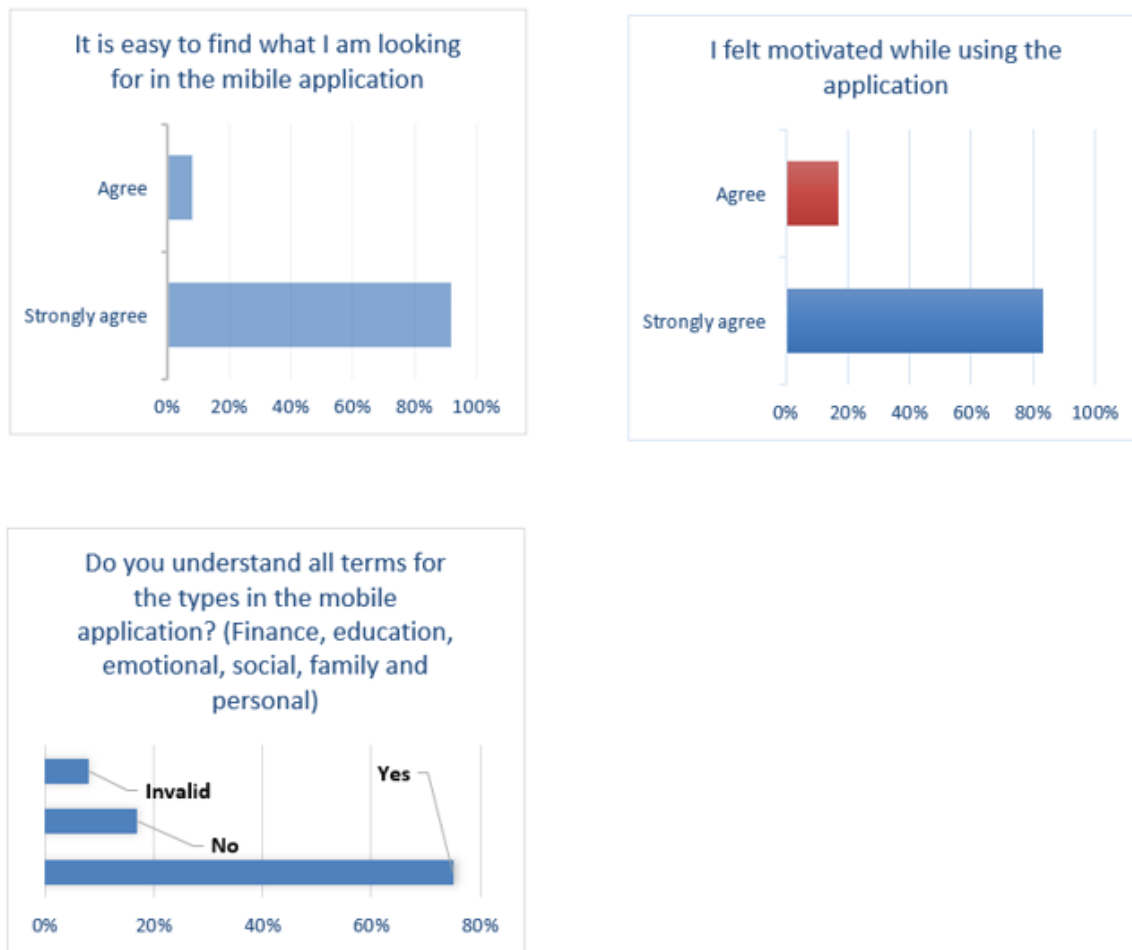


Figure 4. 22: Mobile app testing survey responses



The participants suggested the application to use rather easier words or well-known pictures. From the twelve participants one invalid answer was picked up.

Eighty-three (83%) percent of the learners strongly agreed that the mobile counselling application could help in motivating them to endure when faced with life challenges.

Figure 4. 23: Mobile app testing survey



All six of the identified themes were included in the mobile counselling application as per the thematic analysis done. The themes were finance, education, social, emotional, relationship and personal life. A vocabulary list with a collection of main themes, phrases and other words commonly used in the application was added to help the learners to understand. A list of all supporting organisations and government offices with their contact details were added to the application. Furthermore, a search option was also added to give the functionality to search for a certain theme, type of story or a story by a certain individual.

#### **4.7 Evaluation**

Here we present the results of the resilience measurement and the reflections on the methods used for this study. A total of ten (10) learners participated in the workshop to measure the level of resilience. This session aimed to discover resilience through the children's life satisfaction evaluation and their feelings.

Sixty (60%) percent of the participants were males and forty (40%) percent were females. Ten (10%) percent of the learners were nine (9) years of age; thirty (30%) percent were between ten (10) and twelve (12) years of age; twenty (20%) percent were between thirteen (13) and fifteen (15) years of age and forty (40%) percent were between sixteen (16) and eighteen (18) years of age.

The diagrams below in figure 4.28 and 4. 29 illustrate the abovementioned figures.

Figure 4. 24: Resilience survey learner demographics

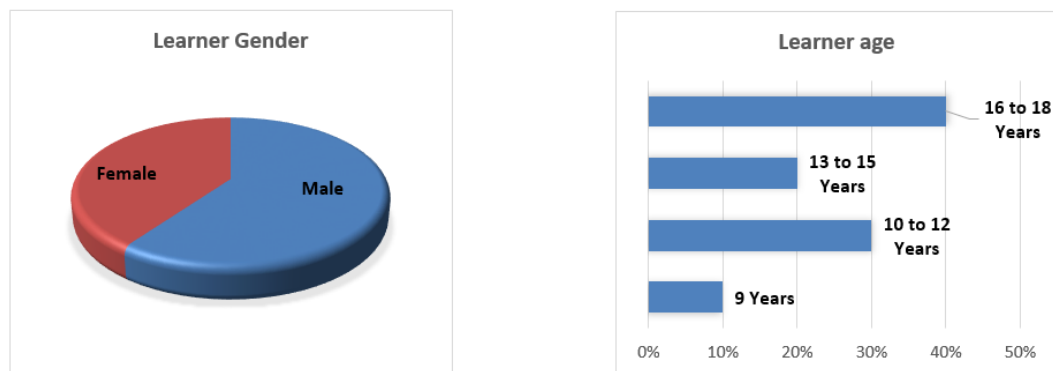


Figure 4. 25: Learner using the app



Figure 4. 26: Learner completing the resilience survey



Figure 4. 27: Resilience questionnaire: Family support

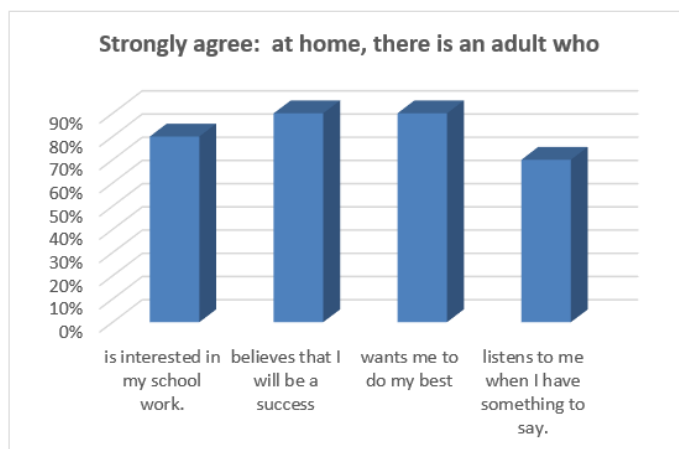


Figure 4. 28: Resilience questionnaire: School support

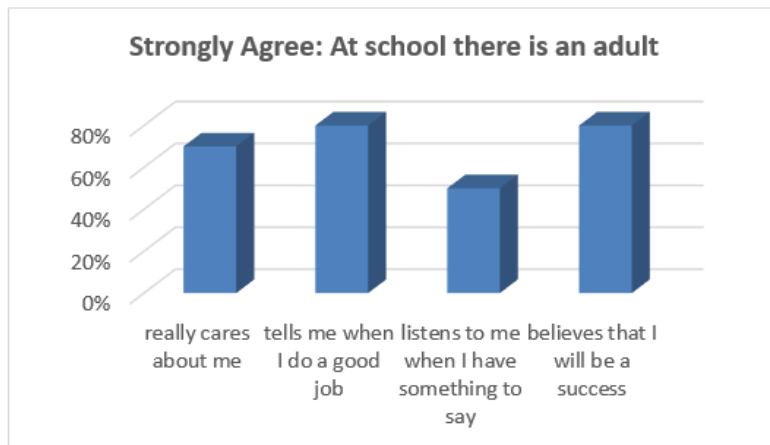


Figure 4. 29: Resilience questionnaire: Social support

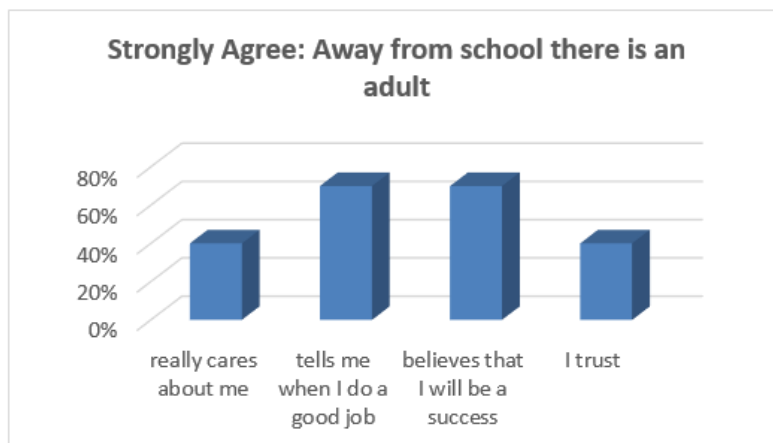
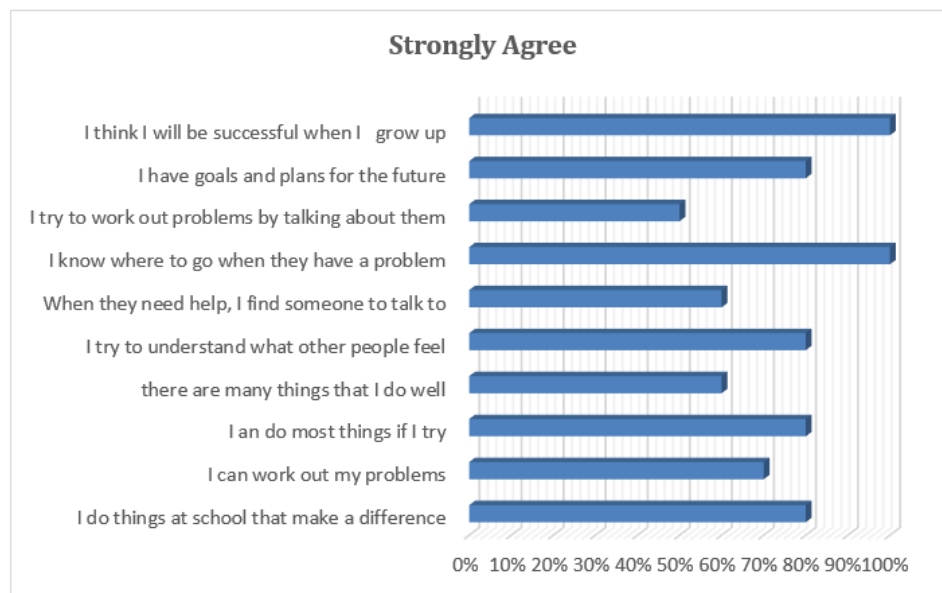


Figure 4. 30: Resilience questionnaire: Extra mural activities



Figure 4. 31: Resilience questionnaire: Goals and aspirations





Below are some general comments from the resilience questionnaire by the learners:

Learner 1:

*"My general comment is to finish school and help my parents and to have a better life."*

Learner 2:

*"I would like to be a lawyer when I finish school. I would like to go for training at Polytech (NUST)."*

Learner 3:

*"I always want to be a cool and calm boy at school."*

Learner 4:

*"I love school. I love to eat toms."*

Learners are captivated by stories and they learn something through stories as they connect themselves with the story teller. Furthermore, the results show that there is a positive change in the learners' understanding of others' feelings, awareness of self, self-esteem, coping with stress, demonstrating empathy to others and knowing whom to go to when in need of assistance. These learners showed an understanding of the importance of well-being and they are wired for a successful school life. They are more mentally and emotionally competent and they have a bigger chance to overcome challenges as they grow up.

#### **4.7.1 Resilience**

The SWLS as a measurement tool was used to measure the learners' life satisfaction. This is a unifactorial life satisfaction scale, and consists of 5 statements where the individual should indicate the degree of the agreement with each presented statement, using a Likert scale of 7 levels (from 1=strongly disagree, to 7=strongly agree)" (Pavot, & Diener, 2008, p. 137-152).

The satisfaction with life is a measurement using the Likert style response scale with a score range of 5 to 35. When an individual's score is from 5 to 9 it shows that they are extremely dissatisfied with life; a score between 31 and 35 shows that they are extremely satisfied with life; 10 and 14 shows dissatisfied; 15 and 19 shows slightly below average in life satisfaction; 20 and 24 average

score; 25 and 29 high score; 30 and 35 very high score, or highly satisfied with life (Pavot et al., 2008).

However, for this study, we had seven statements and six (6) level scales from 1 = strongly disagree, to 7 = strongly agree. The calculation was adjusted based on the factors concerning the statements asked and scale levels. The satisfaction with life is a measurement using the Likert style response scale with a score range of 6 to 42.

When an individual's score is from 6 to 11 it shows that they are extremely dissatisfied with life; 12 to 17 shows dissatisfied with life; 18 to 23 shows slightly dissatisfied; 24 shows that the individual is neutral; 25 to 30 shows slightly satisfied; 31 to 36 indicates that they are satisfied with life and 37 to 42 shows that the individual is extremely satisfied. The higher the score the higher the satisfaction in the life of an individual. Table 4.4 below shows the description of the SWLS and table 4.5 shows the scores of the learners.

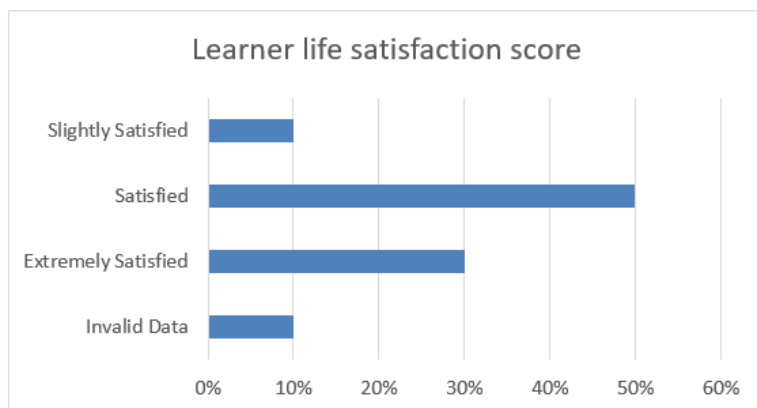
Table 4. 3: Description of life satisfaction

Score	Description of life satisfaction scale
6-11	Extremely dissatisfied
12-17	Dissatisfied with life
25-30	Slightly satisfied
31-36	Satisfied with life
37-42	Extremely satisfied

Table 4. 4: Learner life satisfaction score

Learner ID	Score Point	Description of life satisfaction
1	30	Slightly satisfied
2	36	Satisfied
3	36	Satisfied
4	41	Extremely satisfied
5	36	Satisfied
6	40	Extremely satisfied
7	35	Satisfied
8	35	Satisfied
9	40	Extremely satisfied
10	-	One of the learners did not complete.

Figure 4. 32: Life satisfaction survey responses



For participants who scored a high score between 37 to 42, this shows that things are going on well which is an indication that they love their lives. It does not necessarily mean that they are content with their life or that they have it all going well but rather they see growth during their challenges and take their challenges as a positive contributing factor towards their growth. Individuals in this score range are enjoying life and their most important areas in life like for example family, school and the development of the self is going well (Pavot, & Diener, 2013).

Furthermore, individuals who are in the score range of 31 to 36 like their life and they are satisfied with their lives. Even though not all is perfectly well, they still feel that things are alright. They also enjoy life as they believe that it is going well with the family and school but they are rather motivated by their challenges in their personal life.

Sadly, the score within the 6 to 11 range shows that the individuals are extremely not satisfied with their lives and they are unhappy. What could have contributed to this feeling might be a most recent happening like losing a loved one for example. Sometimes it could be an indication of a chronic problem they are experiencing. This type of individual needs intervention where a counsellor or fellow friend or a relative could help.

The lowest score for this study was by ten percent (10%) of the participants who scored a 30 which indicates slightly satisfied, with the rest of the participants showing a satisfaction to extreme satisfaction with life.

On a one to five Likert scale, eighty (80%) percent of the learners strongly agreed and twenty (20%) agreed that they have goals and they plan for the future. All of the learners strongly agreed with the statement, "I think I will be successful when I grow up". However, when they were asked to write a general comment on how they feel about their goals and aspirations it was not very clear and some did not respond to the question. This could be due to the language barrier as they found it difficult to express themselves. Only about four of the ten learners answered this question. The diagrams below in figure 4.25, 4.26 and 4.27 illustrate the abovementioned figures.

Figure 4. 33: Learner goals and aspirations



Furthermore, the findings on the resilience survey comments show that the learners have a long-term plan, immediate action and a motivation to achieve their goals. Table 4.6 shows learner responses on the resilience survey.

Table 4. 5: Resilience survey: Learner comments

#	Statement	Resilience Factors
1	My general comment is to finish school and help my parents to have a better life.	Goals and aspirations, self-efficacy, empathy
2	"I would like to be a lawyer when I finish school, and when I finish school I will go train at Polytech"	Goals and aspirations
3	"I wish to be a cool and calm boy because I have to be a calm boy."	Self-efficacy
4	"Police"	Goals and aspirations

The data from comments of the resilience evaluation shown in table 4.6 above was used to identify traits for the level of resilience in the learners. Goals and aspirations, self-efficacy, and empathy were identified as traits to show some level of social, emotional and cognitive competencies of resilience. With empathy the learners show sympathy in relation to how their parents feel and have a sense of concern to support them. With self-efficacy the individuals believe in their ability to thrive to accomplish a task which is a way of encouragement on how to approach the task to achieve goals and how to overcome challenges (Beightol, Jeverson, Carter, Gray, & Gass, 2012).

#### 4.7.2 Me and My Feelings questionnaire

Me & My Feelings (M&MF), sometimes referred to as Me & My School, was used as a measurement tool to measure the mental health state of the learners. M&MF has brief 16 statements across 3 Likert scales. It covers two domains namely emotional difficulties and behavioural difficulties. The emotional difficulties subscale includes all statements from the first until the tenth (1st to 10th). The eleventh to sixteenth (11th -16th) statements are the behavioural difficulties subscale. We add all items belonging to the respective subscales. For example: for emotional difficulties, we add all statements with 1 to 10 scores and for behavioural difficulties, we add statements with 11 to 15 scores. Emotional difficulties have a total score of 20 and behavioural difficulties have 12 and this gives us an overall score of 32. The scores are analysed using Deighton's Strengths and Difficulties Questionnaire (SDQ) as shown in table 4.7 and table 4.8 (Deighton et al., 2013). Table 4.9 shows the results on the learner scoring.

Table 4. 6: Mental health measurement tool: Emotional difficulties

Score	Emotional difficulties subscale
10 and 11	Borderline difficulties
12 and above	Clinically significant difficulties

Table 4. 7: Mental Health measurement tool: Behavioural difficulties

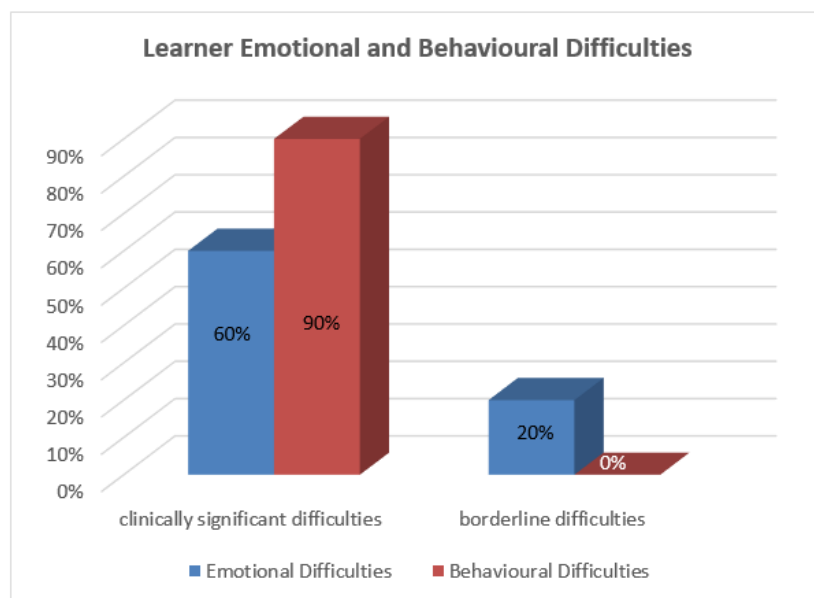
Score	Behavioural difficulties subscale
6	Borderline difficulties
7 and Above	Clinically significant difficulties

Table 4. 8: Learner emotional and behavioural difficulties score

Learner #	Score	Emotional Difficulties subscale	Behavioural Difficulties subscale
1.	16	Clinical significant difficulties	Clinically Significant difficulties
2.	22	Clinical significant difficulties	Clinically Significant difficulties
3.	11	Borderline difficulties	Clinically significant difficulties
4.	17	Clinical significant difficulties	Clinically significant difficulties
5.	14	Clinical significant difficulties	Clinically significant difficulties
6.	8		Clinically significant difficulties
7.	12	Clinical significant difficulties	Clinically significant difficulties

8.	11	Borderline difficulties	Clinically significant difficulties
9.	14	Clinical significant difficulties	Clinically significant difficulties
10.	-	No response	

Figure 4. 34: Emotional and behavioural difficulties (Me and my feelings questionnaire)





Individuals who are in the borderline difficulty also have what is called borderline personality disorder (BPD), and they show a clinical disorder in regulating emotions. These types of individuals express more sadness and less positive feelings. This disorder can cause the learner not to be able to endure life challenges. It affects the way an individual thinks of him/herself or others and this can be a problem for these individuals to cope in their daily lives. Twenty (20%) percent of the learners who participated had a borderline of emotional difficulties which is a concern. The rest are in a clinically significant range which is not a sign of emotional difficulties but rather is clinically acceptable. Being in the range of clinically significant does not mean that all is perfectly well; however, they are in an acceptable range. Unfortunately, the emotional disorder is a clinical difficulty phenomenon and rather outside the scope of this study.

#### **4.7.3 Reflection on resilience evaluation tools used**

Psychology tools and resources like SWLS, SRS and M&MF that were used for the evaluation of resilience in San learners' added value to the study. It provided easy analysis steps and provided quick results. Advantages of these tools include psychometric aspects concerning psychological measurement and they are suitable for all age groups (Galanakis, Lakioti, Pezirkianidis, Karakasidou, & Stalikas, 2017). Psychometrics are a psychological measurement to test an individual's mental state. Galanakis et al. (2017) reason that these tools are ideal when there is a need to assess the reasoning factor of an individual's well-being and they are the most used scale in the scientific literature on life satisfaction worldwide. These psychology tools and resources that are used for evaluation have provided the study with a reflection on the learner's level of resilience.

In an attempt to test the resilience level in San learners, a profile for each participant was created in which information gathered from the SWLS resilience questionnaire was summarised. The average score was then calculated for each participant per life satisfaction scale (e.g. strongly disagree = 1, moderately disagree = 2, etc. ....) as all items in the scale assess the same construct. In other words, it is expected to obtain a true reflection of a real answer by repeatedly asking the participant about something. Similarly, asking participants seven times about their life satisfaction projected the best indicator thereof.

In support of the intervention and prevention initiative, the SRS student resilience survey looks at protective and risk factors (Lereya, Humphrey, Patalay, Wolpert, Böhnke, Macdougall, & Deighton, 2016). Studies done by Lereya et al. (2016) suggest that the SRS is a valid measure assessing these

relevant protective factors, thereby serving as a valuable tool in resilience and mental health research.

Besides, self-control, empathy, intelligence, self-esteem and problem-solving skills have been identified as beneficial individual characteristics (Lereya et al., 2016). Thus, this study used "Me and My Feelings" questionnaire as it is important for young persons to reflect their understanding of their psychological state and sense of wellbeing (Patalay, Deighton, Fonagy, Vostanis, & Wolpert, 2014). Likewise, the "Me and My Feelings" questionnaire helped the study to evaluate the learner's behavioural and emotional state to see how their spirits were raised after their continuous involvement in the project for a span of about 12 months.

Above all, having looked at some advantages of the psychology tools, challenging implications were also reflected on. Foremost, though these tools are helpful we were running a risk of participants not being a hundred per cent (100%) truthful with their responses or some questions being ignored or left unanswered. The challenge to convey true answers or capture feelings from questionnaire responses could influence the final results. Moreover, analysing open-ended questions were a bit tricky and challenging as the study relied on the researcher's interpretation. Similarly, if the participant is having hidden agendas it could influence the data analysis and thus depict a false reflection of the results.

In conclusion, to avoid losing out on vital data, a face to face method can be used in parallel to administer the questionnaires.

Finally, the outcome from the resilience evaluation phase is the level of resilience the learners were left with. A follow-up resilience evaluation test is suggested with these same learners in high school. So the ideal data would be to compare their state before they left for high school with the level of resilience while at high school after having been using the application.

## **CHAPTER 5**

### **REFLECTIONS AND DISCUSSION**

#### **5.1 Introduction**

In chapter three (3) we shared insights about the research design and methodology used to carry out the research study whereas the fourth chapter showed the results of what was done in chapter three (3). The current chapter reflects back on the research study and shares a brief discussion on the methods used, the technologies and a discussion of future work.

#### **5.2 Study contribution**

School dropouts are a nation-wide concern in Namibia but more specifically amongst the indigenous communities like the San community as they are amongst the lowest with educational success rate. The Namibian government has been putting a lot of effort into the education system of the country. The study looked into ways to use technology to intervene in the drop out challenge in the country. Thus the study developed a mobile counselling platform to help build resilience in San learners to help them to be more emotionally, mentally, socially, personally, financially and academically competent when faced by adversity. Finally, the parents and community as a whole were sensitised on the matter for them to understand that there is hope for the problem and that they should join hands with the researcher to help their children not to drop out.

#### **5.3 Objectives**

The discussion in this section focusses on the main research objective which was to develop technology to strengthen resilience in San learners as a way to reduce school dropouts and then give a reflection on the research study. The research study went through six (6) phases namely: contextual inquiry, define, design, prototype, test and evaluation, to successfully develop a counselling tool. The research objectives were namely establishing success and failure indicators of former San learners; determine current issues of San learners; evaluate existing technologies for contextual application and develop a counselling platform that is an appropriate tool for the Namibia San learners to promote the resilience of those at risk of dropping out of school using narratives collected from former San learners and this was achieved.

### **5.3.1 Success and failure indicators of former San learners**

This study aimed to collect success and failure stories from San youths. The method used to accomplish this objective was semi-structured video and audio recorded interviews. The collected stories were analysed in chapter three. Furthermore, a validation with the San youths on the counselling system was conducted to check the soundness of the data. The results of the collected and analysed data were as shared in chapter four. The dropout factors causing learners to drop out of school are indicators of learners who dropped out of school, including factors such as social, family, communities, households, harsh living conditions, lack of resources, lack of parenting responsibility, lack of a role model to look up to, peer pressure or teachers' mobbing can also be negative to a young learner. These were then categorised into themes such as finance, social, education, relationship, personal life and emotional.

### **5.3.2 Current issues of San learners**

The object was achieved through the rich picture method conducting sessions with the identified learners. The rich pictures were then reviewed and analysed. The results of the current issues were identified as loneliness, lack of a communication network, lack of financial support, accommodation, transport, support, and emotions. The issues were finally categorised into themes such as finance, social, emotional, educational, relationship, and personal life.

### **5.3.3 Evaluate existing technologies for contextual application**

The aim of this objective was to look at counselling systems currently in use and to evaluate these systems by systematically exploring the benefits and challenges of the counselling technologies used. Web and mobile technologies such as apps to build resilience, providing counselling activities and mood enhancing were explored. The findings contributed to the idea considered for the mobile counselling application development.

#### **5.3.4 Developing a counselling tool**

Finally, the overall objective of the study was to develop a counselling tool. The counselling system was developed and tested for refinement. The counselling mobile application was tested twice with the success and dropout youths as well as the primary school learners. From the first testing process prototype version one was produced. Version two was the outcome of a second testing process. The mobile counselling application was deemed fit to be deployed.

#### **5.4 Resilience**

The study chose the resilience approach instead of counselling to build resilience in the learners before they leave their parents' home to attend high school elsewhere in the urban areas. Most of the systems currently used rather focused on counselling in the sense that they provided counselling for a learner that is bullied for example. What this study focused on was to target the learners while they are still in their comfort zone and are still getting support from their parents. The parents were involved from the start as they had to understand what the study was all about before giving consent for their children to participate. Most of the dropout youths who participated in the study themselves had children enrolled in primary school. During discussions with the whole community and detailed background understanding on what the identified problem was and how the study wants to contribute to a solution, the objective of the study was shared with them. The entire community was advised and encouraged to be part of the initiative to help the learners to be successful in their school career and to make it a joint effort. In conclusion, the high school dropout rate is not necessarily just related to harsh economic conditions but rather how an individual is prepared to be resilient in life.

#### **5.5 Sustainability and scalability of the application**

It is important to sustain the system to ensure that it will still be functional over some time by putting proper supporting systems and resources in place. The system is developed in such a way that anyone assigned as an administrator can add a new story or story type when given the access to do so. However, this person needs to be trained to maintain the system so the person can upload new stories or videos or audios on the application.

Furthermore, system scalability is not a challenge as such to go beyond the study's intended scope which was the San learners. The system is developed in such a way that other learners from other ethnic groups or outside the country can also use the system since an assigned individual can evaluate the stories before it is loaded on the system.

## **5.6 Reflection**

Critical reflection is vital for any researcher as it can contribute to the research knowledge and practices. A reflection was done to share the feasibilities and knowledgeable lessons acquired through this study. What surprised the researcher the most while doing this research was the willingness of the San community, the youth, and the learners to openly share their personal and sensitive stories with a researcher they have just met for the first time. Listening to their stories made the researcher to feel empathy for them which gave the researcher the urge to give what it takes to help these learners to endure in life and become successful like others elsewhere in Namibia.

One challenging situation we had to deal with was to get the same participants involved throughout the project scheduled time. I suggest that we pay sitting allowances for our participants to make the workshops more attractive instead of just providing taxi money and food.

During my research over the past two years, I have learnt a lot through experiments, workshops, questionnaires, and interviews. What I have observed is that with interviews individuals were a bit more nervous than with questionnaires. With questionnaires, they could privately state their views or feelings and they did not have to worry about being judged on their responses. However, this was not a guarantee to get an honest opinion as participants could still give an answer they thought be socially accepted which could lead to false conclusions for the researcher. Also, another challenge with questionnaires is that you might encounter a situation where not all questions are answered or questions are not answered as they are intended to be answered.

Interviews are also a great way to avoid the challenges that could be encountered with questionnaires especially when the participant does not clearly understand the question. However, what also plays a role is where the interview is conducted. The venue should be more conducive

and relaxing for the participant. It might be better to give the participants the option to choose the venue of their choice.

Another challenge we faced was to keep track of the answers of the interviewees as we used a semi-structured approach. This made the analysis of the audio or video recorded data a tiring process. A better way to keep track and record of the data would be to have a checklist or a printed version of the questions to record the answers. However, this might also cause some distractions in observing non-verbal communication so it is important not to mainly focus on the written data. We suggest having someone else besides the interviewer to do the note writing.

Furthermore, Design Thinking was one of the methods that I've learnt a lot from as I now understand that problem solving is more than just coming up with a solution but rather a process of activities starting with understanding the need of your client. This method gives you the opportunity and allows you to explore the problem at hand and encourages innovative and creative thinking to solve a problem. What I have enjoyed the most was the involvement of the parents of the learners as well as the community.

## **5.7 Future work**

The overall objective of the study was to develop an appropriate counselling tool which was successfully achieved. However, there is currently a challenge to get the counselling application to the learners as they do not have mobile phones to use it. Nevertheless, we are in the process of requesting for sponsorship to acquire enough mobile phones for the San learners to build their resilient levels.

Furthermore, we take into consideration the recommendations that came through when usability and refinement testing of the counselling application was done. Recommendations such as the inclusion of audio and video recordings of the motivations can be considered for future work.

## **5.8 Conclusion**

This study aimed to develop a technology tool to strengthen resilience in San learners as a way to reduce school dropouts. The study used a qualitative analysis in response to the research objective

to develop counselling technology. We concluded that internal and external factors contribute to an individual's level of resilience. The research results indicated that counselling technologies can assist in building resilience in learners.



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## **APPENDICES**

### **Appendix A**

#### **Interview questions**

The interviewer do not necessarily have to ask all questions but based on the individual's response to question 1 and 2, any of the other questions in the list could be asked to help them open up more.

Question 1 - Can you tell us your personal life story in relation to your school career?

Question 2 - Add any other information or comments which you feel one should know about why you were successful to complete school.

#### **Success Youth Questions:**

Question 3 - What motivational message or lesson's learned would you want to give to those still in school.

Question 4 - Number of older or younger brothers and sisters in the family? What is your position (e.g. oldest, youngest, or middle)?

Question 5 - Did your brothers and sisters complete high school?

Question 6 - Did you enjoy school? Why or why not?

Question 7 - Describe your attendance while attending school (e.g. good, average, and poor).

Question 8 - Were you ever absent from school?

Question 9 - Describe the attendance of your friends while in school (e.g. good, average, poor).

Question 10 - Thinking back over all of your years in school, do you remember a teacher whom you really liked? Describe this teacher.

Question 11 - Thinking back over all of your years in school, do you remember a teacher whom you really did not like? Describe this teacher.

Question 12 - Did you have friends who dropped out of school?

Question 13 - Where are you currently in your career, and where do you want to go next?

**Dropouts Questions:**

Question 14 - Explain your reason(s) for deciding to quit school.

Question 15 - How old (age) were you when you dropped out of school?

Question 16 - How did your parents react to your decision to quit school?

Question 17 - How did your brothers and sisters react to your decision to quit school?

Question 18 - How did your friends react to your decision to quit school?

Question 19 - Did your decision to drop out of school affect you as you thought it would?

Question 20 - Today, do you regret that you dropped out of school?

Question 21 - What could you, your parents, the school system have done differently to prevent you from quitting school?



Appendix B:

Mobile Counselling Platform Evaluation Form

Testing of the mobile counselling platform to help San children in school to endure challenges.

Thank you for your interest in this study!

Are you male or female?

☐ Male ☐ Female

How old are you?

☐ 10-12 ☐ 13-15 ☐ other specify:.....

Here are two examples: Please circle the number for the answer you wish to give.



Strongly disagree  
1



Disagree  
2



Not sure  
3



Agree  
4



Strongly agree  
5

a. The counselling mobile application was very easy to use.

Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	2	3	4	5

b. The counselling mobile application was helpful.

Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	2	3	4	5

.....

1. Do you think that, this mobile application would solve your challenges?

Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	2	3	4	5

2. The mobile application was very easy to use.

Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	2	3	4	5

3. Do you like the application design?

Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	2	3	4	5

**4. It is easy to find what I am looking for in the mobile application.**

Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	2	3	4	5

**5. I felt motivated while using the application.**

Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	2	3	4	5

**6. The mobile counselling applications can help in motivating learners endure when faced with challenges. What is your opinion?**

Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	2	3	4	5

**7. Do you understand all terms for the types in the mobile application? (E.g. Finance, Education, Emotional, Social, Family and Personal)?**

☐ Yes

☐ No

**8. If your answer is “No” in question 7, which of the terms in the mobile applications do you not understand? You can select more than one.**

☐ Finance ☐ Education ☐ Emotional ☐ Social ☐ Family ☐ Personal Life

**9. Explain the reason(s) for your selection in question 8?**

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I thank you for your response.

## Appendix C

**Date:** 23 August 2019

**Place:** Windhoek

**Facilitated By:** Rosetha Kays

**Background:**

This questionnaire is to feedback for the mobile application developed for the San learners in respect of the research topic: "DEVELOPING A COUNSELLING PLATFORM TO REDUCE SAN LEARNERS' SCHOOL DROPOUT RATES"

The study's main focus is to develop a counselling platform that will help the San learners to endure school for their entire school career and also reduce school dropout rate and low academic achievement among their community.

**VOLUNTARY PARTICIPATION:**

Feel free to ask the facilitators as many questions as you like.

---

**SECTION A: DEMOGRAPHICS**

**1. Are you:**

- ☒ Male
- ☐ Female

**2. What is your age?**

- ☒ 18-24
- ☐ 35-44
- ☐ 55-64
- ☐ 25-34
- ☐ 45-54
- ☐ 65 or over

**3. What is the highest level of formal education you have completed? (Please check only one.)**

- ☐ Attended High School
- ☐ Attended College
- ☐ Post-Graduate Study Without Degree
- ☒ Graduated High School
- ☐ Graduated College
- ☐ Post-Graduate Degree

4. How easy is it to use and figure out the mobile application?

- ☒ Extremely easy
- ☐ Somewhat easy
- ☐ Neutral
- ☐ Somewhat not easy
- ☐ Extremely not easy

5. How do you like the application design?

I actually like it much as it is extremely easy to use and understand. I personally believe it is the best platform to motivate my fellow struggling san learners.

6. Are there any functions you would like us to add for the mobile application?

Yes of course! I would recommend that clear audios and video clips should be added to visualise what the content really means. I am sure it will kill the boredom.

7. How do you think this mobile application can help San learners to endure school and not dropout?

The mobile application has real life stories that I think are similar to the learners' current ~~and~~ livelihoods. They are motivations from experienced students that learners will get and stay positive, hence, they will not drop out.

8. How likely are you to recommend this application to family and friends?

- ☐ Extremely unlikely
- ☐ Somewhat unlikely
- ☐ Neutral
- ☐ Somewhat likely
- ☒ Extremely likely

9. Any other suggestions and comments?

As said earlier, I suggest humbly suggest some sources of audio and video clips to be added in the app. Otherwise, everything is superb. Thank you.

**Request for research and development collaboration with your child/children**

Dear Parents/Guardians,

My name is Rosetha Kays, I am a staff member at the Namibian University of Science & Technology and currently engaged in a 2 year Master programme, enrolled with Namibian University of Science & Technology (NUST). The high rate of school dropouts of San learners have been a huge concern for the country. Thus, my thesis focuses on developing a counselling platform to reduce San learner's school dropout rates.

The research will be conducted under the supervision of Heike Winschiers-Theophilus Professor in the Computing and Informatics Faculty, Computer Science Department at NUST.

Your child is selected to take part in this research and mobile counselling application development activities. We'll have discussions, questionnaires, and interviews enquiring about your child's needs, thoughts, and personal information regarding school issues.

There are no known risks to taking part in this study beyond those of everyday life. Any information that identifies your child individually will not be passed onto third parties; only members of the team will have access and will treat your child's information confidentially.

We would like your permission to take pictures of your child, take video and or/voice recordings during the sessions.

With your permission, your child will be taking part in the research sessions.

If you give permission to your child to participate in the research project, he or she is free to decide not to continue participation at any time. Your child's participation or non-participation in the project will have no effect on your child's schoolwork. It is fine to give or refuse permission.

If you agree that your child can participate, we will not use your child's name in any of our records. Your child's name will be removed from the writing samples we collect, and a number code will be used instead.

If you have questions about the research project or your child's participation, please do not hesitate to contact me on 061 207 2405, rkays@nust.na. You may also contact Professor Heike Winschiers-Theophilus by sending an email: hwinschiers@nust.na.

(Please keep this top section for your records.)

- - - - -

Please tear off and return this section to the researcher: Rosetha Kays.

☐ I give permission for my child, \_\_\_\_\_, to participate in  
(child's name)

the research conducted by Rosetha Kays.

☐ I do not give permission for my child, \_\_\_\_\_, to participate  
(child's name)

in the writing project conducted by Rosetha Kays.

\_\_\_\_\_

(parent's signature)

\_\_\_\_\_

(date)

## Appendix E

### Consent/Assent form for learners

1

We'll support the new students with the testing of mobile counselling application to enhance resilience in San primary school children! Questionnaires.

2

You can decide if you want to take part or not. Taking part is your choice; you are welcome to stop taking part at any time.

3

If you take part, any information about you will not be given to other people but used for this research purpose only.

I agree that I have read and understand the information above and that I want to participate in this research.

No	First Name	Surname	Do you want to take part?	Can we take picture of you?	Can we take video of you?	Signature
1.			Yes/No	Yes/No	Yes/No	
2.			Yes/No	Yes/No	Yes/No	
3.			Yes/No	Yes/No	Yes/No	
4.			Yes/No	Yes/No	Yes/No	
5.			Yes/No	Yes/No	Yes/No	
6.			Yes/No	Yes/No	Yes/No	
7.			Yes/No	Yes/No	Yes/No	
8.			Yes/No	Yes/No	Yes/No	
9.			Yes/No	Yes/No	Yes/No	
10.			Yes/No	Yes/No	Yes/No	
11.			Yes/No	Yes/No	Yes/No	
12.			Yes/No	Yes/No	Yes/No	
13.			Yes/No	Yes/No	Yes/No	
14.			Yes/No	Yes/No	Yes/No	

15.			Yes/No	Yes/No	Yes/No	
16.			Yes/No	Yes/No	Yes/No	
17.			Yes/No	Yes/No	Yes/No	
18.			Yes/No	Yes/No	Yes/No	
19.			Yes/No	Yes/No	Yes/No	



Appendix F:

Retrieved from <https://www.corc.uk.net/outcome-experience-measures/student-resilience-survey/>

STUDENT RESILIENCE SURVEY

**Testing of the mobile counselling platform to help San children in school to be more resilient to endure challenges.**

Thank you for your interest in this study!

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Are you male or female?

☐ Male ☐ Female

How old are you?

☐ 10-12 ☐ 13-15 ☐ other specify:.....

Please read every statement carefully and circle the answer that fits you best.



Strongly disagree  
1



Disagree  
2



Not sure  
3



Agree  
4



Strongly agree  
5

1. AT HOME, THERE IS AN ADULT WHO...

... is interested in my school work	1	2	3	4	5
... believes that I will be a success	1	2	3	4	5

... wants me to do my best	1	2	3	4	5
... listens to me when I have something to say	1	2	3	4	5

2. AT SCHOOL, THERE IS AN ADULT WHO...					
... really cares about me	1	2	3	4	5
... tells me when I do a good job	1	2	3	4	5
... listens to me when I have something to say	1	2	3	4	5
... believes that I will be a success	1	2	3	4	5

3. AWAY FROM SCHOOL, THERE IS AN ADULT WHO...					
... really cares about me	1	2	3	4	5
... tells me when I do a good job	1	2	3	4	5
... believes that I will be a success	1	2	3	4	5
... I trust	1	2	3	4	5

4. AWAY FROM SCHOOL...					
... I am a member of a club, sports team, church group, or other group	1	2	3	4	5

... I take lessons in music, arts, sports, or have a hobby	1	2	3	4	5
---	---	---	---	---	---

5. ARE THERE STUDENTS AT YOUR SCHOOL WHO WOULD...
---

... tell you you're good at doing things	1	2	3	4	5
... explain the rules of a game if you didn't understand them	1	2	3	4	5
... invite you to their home	1	2	3	4	5
... share things with you	1	2	3	4	5
... help you if you hurt yourself	1	2	3	4	5
... make you feel better if something is bothering you	1	2	3	4	5
... miss you if you weren't at school	1	2	3	4	5

I do things at school that make a difference (i.e. make things better)	1	2	3	4	5
I can work out my problems	1	2	3	4	5
I can do most things if I try	1	2	3	4	5
There are many things that I do well	1	2	3	4	5

I try to understand what other people feel	1	2	3	4	5
When I need help, I find someone to talk to	1	2	3	4	5
I know where to go for help when I have a problem	1	2	3	4	5
I try to work out problems by talking about them	1	2	3	4	5
I have goals and plans for the future	1	2	3	4	5
I think I will be successful when I grow up	1	2	3	4	5

**Your general comment here.**

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I thank you for your response.

## Appendix G

### LEARNER'S LIFE SATISFACTION SCALE

We would like to know what thoughts about life you have had during the past several weeks. Think about how you spend each day and night and then think about how your life has been during most of this time. Here are some questions that ask you to indicate your satisfaction with your overall life. Tick the box next to each statement that indicates the extent to which you agree or disagree with that statement. It is important to know what you REALLY think, so please answer the questions the way you really think, not how you should think. This is NOT a test. There are NO right or wrong answers.

statement	strongly disagree	moderately disagree	mildly disagree	mildly agree	moderately agree	strongly agree
My life is going well						
My life is just right						
I would like to change many things in my life						
I wish I had a different kind of life						
I have a good life						
I have what I want in life						
My life is better than most learners						

## Appendix H

### ME AND MY FEELINGS

Below is a questionnaire which is going to ask you how you feel. There are no right or wrong answers. You should just pick the answer which is best for you.

Statement	Never	Sometimes	Always
I feel lonely			
I cry a lot			
I am unhappy			
Nobody likes me			
I worry a lot			
I have problems sleeping			
I wake up in the night			
I am shy			
I feel scared			
I worry when I am at school			
I get very angry			
I lose my temper			
I hit out when I am angry			
I do things to hurt people			
I am calm			
I break things on purpose			

## Appendix I

### Categorised challenges and resilient factors for success youth

Youth #	Age	Challenge	Effects	Resilient factors
1		Financial	<ul style="list-style-type: none"> <li>- No toiletries</li> <li>- Discriminations</li> </ul>	<ul style="list-style-type: none"> <li>- I know where to go for help when I have a problem.</li> </ul>
2	>25	Financial Educational Emotional	<ul style="list-style-type: none"> <li>- Lost my dad and grandmother</li> <li>- No Stationery</li> <li>- No money to pay for exam fees</li> <li>- I was in a very dark emotional place of pain and sorrow.</li> </ul>	<ul style="list-style-type: none"> <li>- I try to work out problems by talking about them.</li> </ul>
3	>25	Emotional Financial Transport Hunger Relationship	<ul style="list-style-type: none"> <li>- No school shoes</li> <li>- Unemployed parents</li> <li>- I felt inferior</li> <li>- I had to walk long distance to school.</li> <li>- Starvation as you would stay a whole week without eating.</li> <li>- I became pregnant and dropped out of school but returned after giving birth.</li> </ul>	<ul style="list-style-type: none"> <li>- I have goals and plans for the future</li> <li>- I can work out my problems.</li> </ul>

			- Being bullied made me feel inferior.	
4	24	Transport Financial Hunger	- School was 12 km away from my house where I walked about 24km daily. - No winter school clothes to wear.	- I have goals and plans for the future. - I know where to go for help when I have a problem.
5	>25	Transport Financial	- The distance from home to school was too far and I had to walk daily.	- I believe I will be successful.
6	<25	Educational Support Personal Life	- I had no interest in school but rather loved music. - I got involved in fights frequently and I later got expelled from school as a result. - My parents later gave up on me as they too were tired of keeping up with me as a troubled kid.	- My parents are interested in my school work. - I know how to solve my problems
7	26	Transport Social Education	- I was introduced to alcohol and ladies which caused me to fail grade 8. - I could not control my bad behaviour and as a result was frequently expelled from school.	- My teacher is interested in my school work. - I know where to go for help when I have a problem. - I try to work out problems by talking about them



8	>25	Social Education Financial	<ul style="list-style-type: none"> <li>- I had a tough time during my school career as my parents were often changing jobs frequently and had to move from one town to another.</li> <li>- My physical health was another challenge.</li> <li>- Bully went to such an extent that my fellow learners were calling me names and discriminating me as a san.</li> <li>- I started to waste my time with girls and bad friends which caused me to lose focus on my school work.</li> </ul>	<ul style="list-style-type: none"> <li>- I know where to go for help when I have a problem.</li> <li>- I try to work out problems by talking about them.</li> </ul>
9	>25	Social Education Family Finance	<ul style="list-style-type: none"> <li>- My living environment as a child were not conducive as my parents were addicted to alcohol and were constantly fighting.</li> <li>- My parents were absent in my life.</li> <li>- In Drimopsis there were a lot of distractions for the youth like too many shebeens (bars). Young girls aged 12 falling pregnant.</li> </ul>	<ul style="list-style-type: none"> <li>- I have goals and future plans</li> <li>- I believed that I will be a success</li> </ul>

			- I had no soap or toiletries to take a proper bath.	
10	Between 19 and 20	Finance Transport	- A challenge I had to face was the distance I had to walk to school daily.	- I know how to solve my problems

## Appendix J

### Categorised challenges and factors that caused them to dropout

No	Challenge	Reason	Dropout factors
1	Finance Transport	- Some of us were lucky enough to get into secondary schools closest to our villages that in the end resulted in transport issues.	- Finding the courage to go back to school after the holiday was tough. - I could not find enough reasons to go back to school. - There were no teachers to encourage, although the head girl showed interest and helped where she could, however; she could not make me stay.
2	Personal Life Relationship	- My biggest distraction was my boyfriend who kept me busy. - Shortly after leaving school I fell pregnant - The principal of the school was really motivating all girls not to give up and to stay away from boys but we never listened to her.	- My sister also dropped out of school the same way I did as she had a boyfriend and had no interest in school. - My friends who was attending the same school with me also dropped out of school and got boyfriends and children as well.
3	Transport Financial	- Lack of transportation to go to school and back to the village	- School was far from home so my parents was not always be around to support or motivate me.

	Education	<ul style="list-style-type: none"> <li>- Lack of financial support as I had no pocket money to buy my own toiletries.</li> <li>At times, I would get so lonely and miss home so much.</li> <li>- The pressure was also very high from teachers, as they required us to buy our own stationery and covers for the book.</li> </ul>	<ul style="list-style-type: none"> <li>- Teachers also never supported us, as they would have promised in the beginning of the semester and neither did our parents.</li> <li>- It was a group decision between me and others from the same village not to return to school after holidays.</li> <li>- There was no one to talk to at school to consult for assistance.</li> </ul>
4	Education Transport Finance	<ul style="list-style-type: none"> <li>- Teachers would chase me out of class if I am not wearing school uniform and this was one of the reasons I did not want to go to school any more.</li> <li>- Transport was another problem to get to school and back to the village. I had not pocket money to pay for transport myself.</li> <li>- Accommodation was another challenge as I had to stay with relatives in the location as the school had no hostel and no food was provided by the family.</li> </ul>	<ul style="list-style-type: none"> <li>- I tried to talk to the teachers about my challenges but they wouldn't show any sympathy or support me in anyway but rather chase me away from school.</li> <li>- I then decided to drop out as I had no support.</li> </ul>
5	Finance	<ul style="list-style-type: none"> <li>- I couldn't pay for my grade ten exams.</li> <li>- I talked to the counsellor for help and got an exception letter to allow us to sit for exams but the school did</li> </ul>	<ul style="list-style-type: none"> <li>- No support from school.</li> <li>- My older brother who also dropped out.</li> </ul>

		not allow me to sit for end exams. That's when I dropped out of school.	
6	Education Support	<ul style="list-style-type: none"> <li>- I dropped out of primary school.</li> <li>- The principal used to whack me.</li> <li>- On a daily basis we had to go get water from Sonneblom village before going to school which is a bit far from where I stay.</li> <li>- I started to stay away from school to avoid being the one to go get water every day.</li> </ul>	<ul style="list-style-type: none"> <li>- I didn't have anyone to talk to about the issue or complain.</li> <li>- My friends also dropout of school like me.</li> <li>- My brothers dropped out of school.</li> </ul>
7	Transport Finance	<p>After completing grade 7 I left the village for high school.</p> <ul style="list-style-type: none"> <li>- I had financial challenges.</li> <li>- The hostel was fully occupied so I had to stay with extended family.</li> <li>- Not enough food at home and as a result you go to school while hungry.</li> <li>- Transport was always a problem to go to school beginning a new semester or to go back to the village for out weekends or school holidays.</li> </ul>	<ul style="list-style-type: none"> <li>- My parents were far away in the village.</li> <li>- My uncle was really supportive as he tried to talk to the government for assistance.</li> <li>- Four of my friends also dropped out of school.</li> </ul>
8	Financial Education	<ul style="list-style-type: none"> <li>- I had a challenge to complete school as I had not clothes and shoes to wear</li> </ul>	<ul style="list-style-type: none"> <li>- My brother also dropped out of school like me.</li> </ul>

		<ul style="list-style-type: none"> <li>- I lost interest due to lack of clothing</li> <li>- The teachers where not supportive.</li> <li>- I developed fear because of corporal punishment at school</li> </ul>	
9	Finance Transport	<ul style="list-style-type: none"> <li>- I left my home in the village for high school.</li> <li>- I had toiletries and transport problems.</li> </ul>	<ul style="list-style-type: none"> <li>- I did not had anyone to talk to although there are counsellors of which I wasn't actually aware about.</li> <li>- All my friends dropped out of school just like me.</li> </ul>
10	Finance Transport	<ul style="list-style-type: none"> <li>- My parents could not afford to buy me school uniform or toiletries.</li> <li>- The school teachers were not happy that I did not wear school uniform so they put a lot of pressure on me.</li> <li>- I would hide in the bushes and only coming back to the hostel for lunch.</li> <li>- Coming back for holidays was one of the biggest challenge I had to face.</li> </ul>	<ul style="list-style-type: none"> <li>- I ended up joining other San learners with the same problem to go hide in the bushes and only coming back to the hostel for lunch.</li> </ul>

## Appendix K

### Codes and Themes from Current Issues

<b>Theme : Financial</b>  <b>Codes</b>  <ul style="list-style-type: none"> <li>- Do not have enough food to eat.</li> <li>- No snacks.</li> <li>- We need a bus for transportation.</li> <li>- I travel by horse to go see my parent.</li> </ul>	<b>Theme : Social</b>  <b>Codes</b>  <ul style="list-style-type: none"> <li>- I am always being bullied</li> <li>- Our parents need brick houses</li> <li>- No mobile communication Network available.</li> <li>- Always eating the same porridge and stamp-millies.</li> </ul>	<b>Theme : Emotional</b>  <b>Codes</b>  <ul style="list-style-type: none"> <li>- Sometimes I miss my family.</li> <li>- Cellphone for communication to our family.</li> </ul>
<b>Theme : Education</b>  <b>Codes</b>  <ul style="list-style-type: none"> <li>- The Government should provide us with computers at school.</li> <li>- In the hostel we do not get enough food to eat.</li> </ul>	<b>Theme : Personal</b>  <b>Codes</b>  <ul style="list-style-type: none"> <li>- I feel lonely sometimes.</li> </ul>	<b>Theme : Family Support</b>  <b>Codes</b>  <ul style="list-style-type: none"> <li>- My family cannot afford public transport.</li> <li>- We do not have school uniform or shoes to wear.</li> <li>- We do not have school bags.</li> </ul>