



Graduate School
of **BUSINESS**
UNIVERSITY OF CAPE TOWN

MPhil

2019

The impact of work seeker support platforms on the development of South Africa's unemployed youth

SIMONE PEINKE



The copyright of this thesis vests in the author. No quotation from it or information derived from it is to be published without full acknowledgement of the source. The thesis is to be used for private study or non-commercial research purposes only.

Published by the University of Cape Town (UCT) in terms of the non-exclusive license granted to UCT by the author.

Contents

Abstract	6
1. Introduction	1
1.1. Research area	1
1.2. Research Aims and Objectives	5
1.2.1. Research Aims	5
1.2.2. Research objectives	5
1.2.3. Research Question	7
2. Literature Review	7
2.1. Theoretical responses to youth unemployment in South Africa	7
2.1.1. The predominance of macro level approaches	7
2.1.2. Why a micro-level view of youth unemployment important: the cycle of poverty and mental ill-health for young people	10
2.1.3. Micro-level responses to youth unemployment in South Africa	11
3. The promise of ICTs for development	16
3.1. Why do ICT4D projects Fail?	18
3.2. The future of ICT4D	20
3.3. ICT4D in South Africa	22
3.4. The potential of ICT4D to leapfrog the skills and digital divide for South African youth	24
3.5. Measuring the intangible impacts of ICT4D	27
3.6. Conclusion	30
4. Research Methodology	30
4.1. Research strategy and approach	30
4.1.1. Hermeneutic Phenomenology	30
4.1.2. Actor Network Theory	31
	2

4.1.3.	Combining ANT and Hermeneutic Phenomenology: An introduction to postphenomenology	34
4.2.	Research Design, Data collection methods and research instruments	42
4.2.1.	Data collection methods	43
4.2.2.	The context	45
4.3.	Sampling	46
4.4.	Data analysis methods	48
4.5.	Research criteria	49
4.6.	Limitations	51
4.7.	Research Ethics	52
5.	Findings	53
5.1.	What are the needs and aspirations of the end-users?	54
5.1.1.	Aspirations	54
5.1.2.	Need for immediate income from <i>any</i> job	55
5.2.	What are the social, personal and environmental factors impacting on users' abilities to meet their needs and aspirations?	56
5.2.1.	Personal factors an asset to realising needs and aspirations	56
5.2.2.	Social factors: set up for failure and excluded from success	58
5.2.3.	Environmental factors: Bold aspirations bound by scarce realities	61
5.3.	How does the work seeker support platform under study help users to achieve what they consider to be valuable?	63
5.3.1.	What the platform communicates	63
5.3.2.	How users respond	66
5.3.3.	How does the platform help users to achieve what they find valuable?	70
5.4.	Focus Group Findings	75
5.5.	Conclusion	78

5.6. Discussion	79
5.6.1. Contributing to users' capability sets	79
5.6.2. The mediating role of a user's context on technology: The reduction from platform to job post	86
5.6.3. An erosion of resilience in the search for opportunities?	90
6. Recommendations	94
6.1. Co-creation and collaboration for positive development	94
6.2. Move beyond technological determinism and supply-side measures of success	98
6.3. Appreciating the heterogeneity of the user, and the need for individualised content	99
6.4. Move to a value exchange	101
7. Conclusion and recommendations for future research	103
Reference list	105

Appendices

Appendix 1. WhatsApp focus group visual illustration of emergent themes	120
Appendix 2. Data collection procedure for interviews	121
Appendix 3. Interview questionnaire	122
Appendix 4. Website usage data for 2020	125

List of figures

Figure 1. Impact of conversion factors on users of a work seeker support platform.....	80
Figure 2. Defining the work seeker support platform from two perspectives	86
Figure 3. The mutually reconstituting cycle between platform and human user	88
Figure 4. Potential reconstituting cycle between platform and human user	100

List of tables

Table 1. Yin 2x2 matrix of case study design.....	43
Table 2. Age distribution of participants	47

Table 3. Gender distribution of participants	47
Table 4. Education of participants	47
Table 5. Post-school education and career goals	58
Table 6. Experience of high school.....	58
Table 7. Post-school education	59
Table 8. Financial independence.....	62
Table 9. Website analysis	63
Table 10. Platforms used by respondents to access job opportunities online.....	66
Table 11. Number of respondents who accessed skills development content	69
Table 12. Number of respondents who conflated the platform under study with other websites.	71
Table 13. Challenges experienced when using online platforms, and the impact on the user.....	71
Table 14. Summary of recommendations in relation to findings and extant literature.....	92

Abstract

Youth unemployment remains an enduring and significant challenge in South Africa, with 43.2 % of people aged 15-34 and 59% aged 15-24 remaining unemployed, respectively. Similarly, economic discouragement among young people is on the rise. Micro-level barriers contribute significantly to the inability to access employment opportunities. These include the low skills levels of many young South Africans, the high costs of job-seeking, a lack of social capital, a lack of access to relevant job-seeker information, as well as the adverse mental health impacts of alienation, poverty and unemployment. With the rise of the Fourth Industrial Revolution and the rise of ICT for Development (ICT4D) interventions, several digital solutions have been developed in South Africa. These attempt to provide low-cost, scalable solutions to youth unemployment by addressing some of the barriers that young people experience. Despite the increased prevalence of such digital interventions, the degree to which they are capable of engaging and transforming the lives of the unemployed youth they target remains unclear. With increasing investments into 4IR interventions to address youth unemployment, closer examination is required. Accordingly, this study appraises one digital work seeker support platform in South Africa that provides skills matching and development opportunities to unemployed youth. The study focuses specifically on their experience of the platform. It uses postphenomenological constructs to analyse how young unemployed South Africans interpret the digital intervention and examines how these interpretations promote or inhibit their sense of agency and wellbeing. The findings suggest that digital youth employment interventions can inadvertently exacerbate some of the existing barriers, while also providing insight into how ICT4D interventions may be reimaged to address some of the factors that drive economic discouragement among young people.

1. Introduction

1.1. Research area

Youth unemployment remains an enduring and significant social challenge in South Africa (De Lannoy et al., 2020; Lam et al., 2008; Mlatsheni & Leibbrandt, 2015). With the rise of the 4th Industrial Revolution, and as a result of the COVID-19 pandemic a number of work seeker support interventions aimed at unemployed South African youth have digitised. However, the degree to which these interventions have transformed the lives of the unemployed youth at which they are targeted, remains unclear. To make the significant financial investment that ICT interventions require worthwhile, the personal, social and environmental factors that shape the phenomenon of youth unemployment need to be considered (Dodson et al., 2013; Robeyns, 2005; Zheng, 2009).

South Africa has one of the highest unemployment rates in the world (World Bank, 2019). The most vulnerable to unemployment are youth aged 15 – 34 years' old who make up 63.4% of South African's unemployed population (Statistics South Africa, 2019b). This vulnerable group of young people have shown increased levels of economic discouragement (Statistics South Africa, 2020). In the first quarter of 2020, 1.9 million unemployed young people were discouraged from looking for work, according to the official definition of discouragement¹ (Statistics South Africa, 2020). Micro-level barriers contribute significantly to young people's inability to access employment opportunities. These include the low skills levels of many young South Africans, the high costs of job-seeking, a lack of social capital, a lack of access to relevant job-seeker information, as well as the adverse mental health impacts of poverty and unemployment (De Lannoy et al., 2020). These micro-level barriers reflect enduring structural inequalities with which South African youth need to contend. With the rise of the Fourth Industrial Revolution and of Information Communication

¹ Statistics South Africa defines a discouraged work seeker as a person who was not employed during the reference period, wanted to work, was available to work/start a business but did not take active steps to find work during the last four weeks, provided that the main reason given for not seeking work was any of the following: no jobs available in the area; unable to find work requiring his/her skills; lost hope of finding any kind of work.

Technology for Development (ICT4D), several youth employment interventions have been digitised. These digital interventions (defined in this study as work seeker support platforms²) attempt to provide low-cost, scalable solutions to youth unemployment by addressing some of the micro-level barriers that young people experience.

The structural inequalities inflicted by apartheid are evidenced by the unequal distribution of power in the South African labour market, and by South Africa's unequal education system. According to the World Bank, South Africa has one of the highest inequality rates in the world with a Gini Coefficient of 0.63. Surprisingly, the inequality rate has increased since the country's transition to democracy (World Bank, 2021), and has remained racialised, gendered and spatialised (Statistics South Africa, 2019a). Most people in South Africa who are not in employment, education or training (NEET) are black and female and have less than a matriculant level of qualification (Department of Higher Education and Training, 2018). Black people who do have secure employment typically earn up to three times less than their white counterparts (Statistics South Africa, 2019a).

Racial inequalities extend beyond the labour market; they are equally pronounced in our education system. South Africa has one of the most unequal education systems in the world, where “children in the top 200 schools achieve more distinctions in maths than children in the next 6600 schools combined” (Amnesty International, 2020, p. 7). In addition to being highly unequal, South Africa's education system is one of the worse performing in the world. South Africa came last out of 50 countries in the recent Progress in International Reading Literacy Study (Mullis et al., 2017) and was one of the worst performing countries in terms of student achievement for maths and science in the latest Trends in International Maths and Science Study (Mullis et al., 2020). South African schools also struggle with high learner dropout rates, with over 40% of young people exiting the schooling system before writing their final matriculant exams (van Broekhuizen et al., 2016). Taking these drop-out rates into account, the true matric pass rate is much lower than what is published in our national papers. In 2015 for example, the

² In this study, the term work seeker support platform is used to describe digital platforms that provide intermediary and skills development services to unemployed youth. These are distinguished from other digital employment platforms whose main function is as an intermediary for all work seekers (including youth).

true matric pass rate was calculated at 57% (Department of Basic Education, 2016). Poor quality education directly impacts on one's ability to secure a job, and determines how much one earns (Spaull, 2015). Hence, the dysfunctional education system that most young South Africans experience places them at a significant disadvantage when they enter the labour market.

Most young South Africans remain prejudiced by the unequal systems inherited from the apartheid era; systems that keep them locked out of opportunities to improve their socio-economic status. The need for interventions aimed specifically at this most marginalised group of young people is recognised in the National Youth Development Policy (National Youth Development Agency, 2015):

“[The policy] seeks to align the development of young people with government’s approach to addressing poverty and underdevelopment, as diagnosed in the NDP. Disadvantaged youth must be empowered through effective institutions and policies to overcome conditions that disadvantage them. In the same manner, marginalised youth and those that have fallen out of the educational, social and economic mainstream must be re-integrated through second-chance measures and other supportive actions.”

Several Youth Employment Programmes (YEPs) have been implemented in South Africa to act as such second-chance measures. These programmes have been found to have to have a positive impact on the youth they serve but are costly to implement (Graham et al., 2019). ICT interventions that focus on skills development and intermediary services are much lower cost options (Graham et al., 2019), and a number of such interventions exist. Most notable is the recently-launched sayouth.mobi network which forms part of the Presidential Youth Employment Intervention³ (SA Youth, 2020).

While such digital work seeker support platforms show great promise, the degree to which ICT interventions in general promote development and economic transformation in emerging market

³ The Presidential Youth Employment Intervention (PYEI) was established as government’s response to South Africa’s soaring youth unemployment rates. The PYEI include the implementation of five key interventions over a five-year period, of which the sayouth.mobi network is one (Dicks, 2020).

contexts remains contested within the field of ICT for development research – popularly known as ICT4D (Ebad, 2018; Harris, 2016). One major critique is that ICT4D interventions typically adopt a top-down perspective that overlooks the contextual realities of recipients (Dodson et al., 2013). In South Africa, as with the broader Global South, the success of ICT4D interventions rarely goes beyond the supply-side metrics of access provision (Gillwald et al., 2018) and so our understanding of the impact of these interventions is limited. Hence an important question to consider when grappling with scalable, technological solutions to youth unemployment in South Africa is: despite the promise of work seeker support platforms as low-cost solutions to the significant and complex issue of youth unemployment in South Africa, to what degree (if any) are these solutions enabling end-users to achieve their goals?

Accordingly, this study appraises a digital platform that provides skills development and access to employment opportunities to unemployed South African youth from marginalised communities. The platform was chosen for this study, as it is one of the only work seeker support platforms in South Africa that provides intermediary and skills development services exclusively digitally to South Africa's most marginalised young work seekers (those living in low-income communities and with low education levels). The organisation who developed the platform agreed to be part of this study on condition that they remained anonymous. For this reason, links to the platform and images of the platform have been excluded.

This study uses Sen's Capabilities Approach (CA) (Sen, 1999) to define development and employs postphenomenological constructs to analyse the impact of the work seeker support platform on its users' development. Postphenomenology posits that technology should be understood in terms of the relations humans have with them, and not as entities within themselves (Rosenberger & Verbeek, 2015). It is through this lens that the findings are presented. What emerges from the findings is the complexity in delivering digital work seeker support solutions that cater to a variety of young people who experience multiple deprivations and are repeatedly derailed by the number of structural barriers they face in accessing opportunities. To overcome this complexity, it is recommended that work seeker support

platforms⁴ collaborate to enhance the user experience, move beyond purely quantitative measures of success, and provide a genuine value exchange for their users. This study aims to support the development of work seeker support platforms that establish fit-for-purpose user experiences that enable positive developmental outcomes for South Africa's most vulnerable young work seekers.

1.2. Research Aims and Objectives

1.2.1. Research Aims

This research project sought to understand how an ICT intervention aimed at facilitating greater access to information and employment opportunities for unemployed, low-skilled South African youth is impacting the lives of end-users. Specifically, this study seeks to understand how personal, social and environmental factors impact on how users experience and therefore respond to a digital intervention aimed at supporting their development, and how this interaction affects a user's ability to realise their needs and aspirations.

This research project set out to provide a micro-level view of the end-users' experience of a work seeker support platform, so as to better understand how users respond to the technology, and how this response shapes subsequent use of the platform. These user perspectives provide rich insight into how the technology is used to achieve development goals, or not. These insights were then translated into recommendations for how existing work seeker support platforms aimed at low-skilled, unemployed youth may be adapted for improved impact.

1.2.2. Research objectives

⁴ While this study initially sought to appraise a particular work seeker support platform, it emerged from interviews that users were unable to distinguish the platform under study from other job websites, and so the findings apply more broadly to how the platform's users experience job websites in general

In order to relay the experience of digital work seeker support platforms from an end-user's perspective, this research project employed a methodology that focuses on the accounts of the individual in relation to the technological intervention. Postphenomenology provides a useful methodological framework to meet this objective, as it examines the interplay between human and technological subjects (Rosenberger & Verbeek, 2015), while retaining an emphasis on the human experience (Aagaard, 2017).

To assess the impact of technological interventions on end-users, Sen's CA was employed. This approach is appropriate to this study as it:

- Adopts a user-centered, bottom-up perspective which is needed to understand the impact and sustainability of ICT4D interventions (Zheng, 2009),
- Offers a lens to view inequalities in e-development (Zheng, 2009), and
- Moves beyond the traditional supply-side measures of development, which are commonly used in the Global South to assess impact of ICT interventions (Gillwald et al., 2018), by evaluating a person's advantage in terms of their freedom to attain that which they value (Zheng, 2009).

Sen's CA helps to address the question often raised as a critique of ICT4D: "development to what end?" From a CA perspective, ICT goods and services are useful in the light of their contribution to a user's capability set. ICT interventions provide a potential means to achieve what one values, which subsequently can be converted into a set of capabilities for the user (Zheng, 2009). However, while ICTs provide the means to achieve what one values, they need to be considered in relation to conversion factors that affect adoption of the ICT commodity. These include personal, social and environmental factors. For example, an unemployed youth looking for a job may have access to a job listing website on their cell phone but may not have the digital literacy skills required to use the website. In this instance, the technology (the cell phone and internet connection) provides the potential means for the young person to achieve what they value (a job), but their personal digital literacy levels inhibit them from translating this potential means for achievement into actual achievement. In addition to considering such conversion factors, when evaluating an ICT intervention through the lens of Sen's CA, emphasis is required on the agency of the user (Zheng, 2009). This implies that an evaluation of ICT interventions

needs to be based on the extent to which it meets the needs and expectations of users (Madon, 2004). Accordingly, this study's research question is underpinned by an understanding of the conversion factors, needs, expectations and values of the platform's users.

1.2.3. Research Question

The research aims listed above are captured in the following research question: considering the promise of work seeker support platforms as low-cost, scalable solutions to youth unemployment in South Africa, how are these interventions impacting on end-users?

This central research question is underpinned by the following secondary questions. These questions help to evaluate the extent to which the ICT intervention under study positively impacts on the development of end-users:

- What are the needs and aspirations of the end-users?
- What are the personal, social and environmental factors (the conversion factors) impacting on the user's ability to realise their needs and aspirations?
- How does the ICTD intervention under study help users to achieve what they consider to be valuable?

2. Literature Review

2.1. Theoretical responses to youth unemployment in South Africa

2.1.1. The predominance of macro level approaches

Contemporary understandings of unemployment in South Africa are informed by theories that adopt predominantly macro level perspectives, leaving a huge gap for understanding how labor market dynamics are experienced at a micro level (Kruss et al., 2019). Examples of the existing predominant macro theoretical frameworks include human capital theory, the varieties of capitalism school and the skills ecosystem model (Kruss et al., 2019).

Human capital theory proposes that society derives economic benefit from investing in individuals, specifically by investing in an individual's education (Sweetland, 1996). In relation to employment, human capital theory focuses on investments in education and training as a means for driving economic development, and thereby reducing unemployment. This approach is criticised for focusing too heavily on the labour supply side and was countered by other institutionalist approaches in the 1990's that argued for a shift in focus to labor demand (Kruss et al., 2019).

The varieties of capitalism school and the skills ecosystem model arose as major critiques of human capital theory (Kruss et al., 2019). The varieties of capitalism school places firms as central players in shaping the nature of the political economy. It argues that firms need to be able to effectively coordinate with other market actors in order to produce positive economic outcomes. The varieties of capitalism school describes employment as a result of the firms' ability to successfully coordinate with vocational training and education actors in order to secure the requisite skills that enable economic productivity (P. A. Hall & Soskice, 2001). The skills ecosystem model differs from the varieties of capitalism school in that it does not place firms at the center, but rather as part of a network of workforce skills and knowledge. Skills ecosystem strategies seek to improve both the labour demand and supply side, by enhancing collaboration between the education and training system and firms (Windsor & Alcorso, 2008).

Both the varieties of capitalism school and the skills ecosystem model infer a focus on both skills development and skills matching with firms, and therefore counter human capital theory that focuses squarely on skills development as a means of improving economic development and employment rates. In the South African context, the enduring conviction that low levels of skills, or a skills mismatch, is the main driver of unemployment belies a human capital approach (Vally & Motala, 2014), as this conviction speaks only to issues of labour supply – and ignores the role of the firm and government in addressing unemployment.

While human capital theory, the varieties of capitalism school and the skills ecosystem model remain some of the most influential theoretical perspectives on labour market dynamics in South

Africa, there are a number of contextually relevant approaches that have emerged. These approaches challenge how most research and policy conceptualise the relationship between education and work (Kruss et al., 2019). An example of such a criticism is found in the work of Vally et al. (2014, p. vii), who argue that unemployment is not the result of the poor quality of education and training or skills mismatching, but rather a structural consequence of capitalism because “full employment is neither a feature nor a goal of capitalism.” In the South African context, employing human capital perspectives where human beings are perceived as resources that need investment so that they may be economically productive, will prevent us from addressing the vast levels of inequality and human suffering that are experienced by the population’s majority (Vally & Motala, 2014). A quote by Neville Alexander eloquently captures this sentiment, “Once the commodity value of people displaces their intrinsic human worth or dignity, we are well on the way to a state of barbarism” (Vally & Motala, 2014, p. 1).

In South Africa, where human worth and dignity are increasingly elusive states for the vast majority – we are called to be more mindful of how policies and interventions aimed at reducing unemployment serve to promote or hinder people’s wellbeing. The tragedy now is that even those acting on behalf of the poor work from the premise that labour supply in South Africa is the main issue (Vally & Motala, 2014).

While arguments by the likes of Vally and Motala aim to generate responses that are more contextually relevant to South Africa, they too are focused on the top-down view of the state and market and do not speak to the dynamics at play at the micro level. Accordingly, Baatjes (2018) provides a micro-level view of unemployment by examining the personal accounts of unemployed South Africans. His work counters the general perception of unemployed people as skills deficient and inactive. Instead, he surfaced how people who were not formally employed were involved in “a wide variety of activities to make a life for themselves, their families and their communities” (Baatjes, 2018, p. 41). These findings help challenge the perception of unemployment as a state of deprivation and a lack of dignity.

The dominance of macro-level human capital perspectives of youth unemployment is evidenced by programmatic responses to the issue. The majority of programmes focus on skills

development and/or skills matching at the macro-level (De Lannoy et al., 2018) and do not consider the individual's experience.

2.1.2. Why a micro-level view of youth unemployment important: the cycle of poverty and mental ill-health for young people

Unemployed youth from marginalised communities are especially vulnerable to socio-economic exclusion. These young people who have fallen out of education or employment opportunities are subject to not only economic poverty, but are also at risk of experiencing the adverse mental health impact of unemployment, poverty and adolescence. Conditions of poverty increase one's susceptibility to mental health issues, and mental health issues typically pose additional barriers to accessing employment opportunities, thus sustaining periods of unemployment and poverty (Lund et al., 2011). Unemployment, in itself, poses risks to young people's mental well-being, with unemployed youth being more likely to experience mental health problems (Axelsson & Ejlertsson, 2002; Thern et al., 2017; Winefield et al., 1991). Poor, unemployed youth are therefore arguably at an increased risk of being ensnared in a cycle of poverty and mental-ill health that pushes them to the socio-economic periphery.

Mental health issues among young people seem to have been exacerbated by the COVID-19 pandemic. In South Africa, an online survey found that 72% of respondents out of a sample of 5693 young people between the ages of 18 and 35, had experienced depressive symptoms – much higher than pre-COVID-19 periods (Mudiriza & De Lannoy, 2020). These depressive symptoms were significantly negatively associated with being employed and with providing family care (Mudiriza & De Lannoy, 2020). This is explained as employment and being occupied with family care may serve as protective barriers to the impact of the COVID-19 lockdowns.

For young South Africans between 15 and 25 years old, the developmental life stage they find themselves in poses another risk to their mental health. Almost half of those defined as 'youth' in South Africa (people between 15 and 35 years old), are considered adolescents between the ages

of 15 and 24 years old (Statistics South Africa, 2020). Adolescence is defined as the period from the onset of puberty to the mid-twenties (National Academies of Sciences Engineering and Medicine, 2019). During adolescence there is an increased likelihood of depression, anxiety and addiction (Casey et al., 2008). Depression and anxiety are especially likely to be experienced by adolescence exposed to violence and trauma (National Academies of Sciences Engineering and Medicine, 2019). Young unemployed South Africans from deprived communities are therefore arguably at a heightened risk of experiencing mental health issues, as they are exposed to the potential adverse mental health effects of poverty, unemployment and adolescence simultaneously.

Poor mental health makes overcoming the multiple barriers that young people face in respect of employment opportunities, even harder. Developmental life stage and economic status are examples of micro-level barriers to a young person's ability to source, secure and retain employment opportunities, and therefore must be acknowledged when considering solutions to youth unemployment. Other micro-level drivers of youth unemployment in South Africa include: low skills levels, a lack of information, the high cost of work seeking, a lack of work experience and limited social capital (De Lannoy et al., 2020). Understanding these micro-level barriers are particularly important when discussing ICT interventions, as micro-level contextual realities significantly impact on the success of ICT interventions, as discussed in more detail below.

2.1.3. Micro-level responses to youth unemployment in South Africa

Until recently, there has been little systemic evidence on the efficacy of youth employment programmes and there remains a limited understanding of the cost-effectiveness of different interventions (De Lannoy et al., 2018; Fox & Kaul, 2017; Kluge et al., 2019). In South Africa, there are a number of programmes that have been established to address some of the micro-level contributors to youth unemployment. In a review of youth employment programmes in South Africa, De Lannoy et al. (2018) describe the following categories of micro-level interventions: skills development and training interventions, intermediary interventions, impact sourcing and

comprehensive interventions. Skills development and training interventions are the most prolific, and can be categorised as either workplace-based learning programmes (including internships, apprenticeships and learnerships), services programmes and skills training programmes. Most of these types of programmes focus on technical skills, and soft skills to promote work-readiness, although few of these programmes addressed the well-documented low literacy and numeracy levels of South Africa's young work-seekers (De Lannoy et al., 2018).

Intermediary interventions are those that match work seekers to relevant employment opportunities. They are based on the supposition that unemployment is partially the result of inefficient skills matching (De Lannoy et al., 2018; Kluge et al., 2019). There is little robust evidence on the degree to which these types of interventions improve employment outcomes for South African youth, but the programmes are perceived as addressing an important need – as many young South Africans lack the required social capital, and access to information to find appropriate opportunities (De Lannoy et al., 2018).

Impact sourcing is when employers deliberately recruit from a pool of work seekers who are typically excluded. While there are examples of interventions that appear to be promoting and implementing impact sourcing strategies successfully in South Africa, there is little research on how effective these interventions are at shifting employer perceptions (De Lannoy et al., 2018).

Comprehensive programmes appear to be the most effective interventions at improving youth employment outcomes according to international research (De Lannoy et al., 2018; Kluge et al., 2019); however, there are very few of these types of interventions in South Africa (De Lannoy et al., 2018). Comprehensive programmes may prove more effective, as unemployed youth from marginalised communities face multiple barriers to employment, and so programmes that address these multiple barriers are more likely to have a positive impact on employment outcomes.

A recent study of eight such youth employment programmes show that they have a positive effect on employment outcomes: these programmes improve the chances of youth securing employment by 11% (Graham et al., 2019). The programme feature that most significantly impacted on employment outcomes was matching, where matching is defined as “a process of

bringing young people directly into contact with employers who are looking for the skills they have and orientating training to employer demands” (Graham et al., 2019, p. 10). Where there was an absence of matching, human capability training became the most significant predictor of employment (Graham et al., 2019). Despite the relatively positive impact of these programmes on employment outcomes, none of these interventions have been able to achieve the scale of impact required to address the magnitude of the youth unemployment crisis in South Africa, due to their high cost and having a matric qualification as a minimum entry requirement (Graham et al., 2019).

The significance of matching identified in the study mentioned above, highlights the importance of intermediary services. Both Graham et al. (2019) and De Lannoy (2018) describe intermediary services in their studies as those that seek to improve the efficiency with which labour demand is matched to labour supply by reducing “the barriers, costs and risks faced by youth whilst looking for work and/or by employers wishing to hire youth” (De Lannoy et al., 2018, p. 46). It is unclear from both studies whether career counselling services would form part of this type of intervention. The lack of explicit focus on career counselling as a type of youth employment intervention signals its relative obscurity in South Africa, although this appears to be changing.

Career guidance refers to “services and activities intended to assist individuals, of any age and at any point throughout their lives, to make educational, training and occupational choices and to manage their careers” (Hansen, 2006, p. 1). In South Africa, the term career development services has been adopted to describe these services and activities (Department of Higher Education and Training, 2016). Career development services have been shown to improve lifelong learning, improve labour market outcomes and promote social equity and inclusion by reintegrating marginalised individuals into education, training or employment opportunities (Hansen, 2006). In South Africa, it is argued that broadly accessible career development services provide an important vehicle to address social inequality (Flederman, 2011; Pillay, 2020). Historically in South Africa, career development services were used to advance the lives of the white, middle-class minority, and were dominated by western-centric methodologies and assessments (Flederman, 2011). However, during the 1970s there emerged an approach that sought to be more contextually-relevant and inclusive; an approach that challenged the apartheid

ideology and encouraged the individual ‘to become a critical actor in the world’ (Flederman, 2011, p. 114). This approach was developed by community-based career centres in collaboration with the Careers Research and Information Centre (CRIC), which was founded in 1977 in response to research conducted by the historically black University of the Western Cape (Flederman, 2011).

It appears there is political recognition in South Africa of the power of career development services to improve labour market outcomes and promote social equality. In 2004 South Africa’s cabinet approved the development of a national policy for career development services. It was noted that “a coordinated career development service (CDS) is urgently needed to ensure that youth, students, underemployed workers and unemployed citizens have access to quality career information and career services” (Department of Higher Education and Training, 2017, p. 2)(Department of Higher Education and Training, 2017, p. 2). In 2010, the Minister of Higher Education and Training was tasked with establishing a “framework for cooperation in career guidance and information services in the country” (Department of Higher Education and Training, 2017, p. 2). This resulted in the establishment of the Career Development Service, a national initiative that provides national coordination of career development activities, a career advice helpline, career development services outreach and radio programmes (Department of Higher Education and Training, 2020). Additionally, the framework mandated the creation of the South African Career Development Association, a professional body for Career Development Practitioners in South Africa (South African Career Development Association, 2020). The Career Development Services released a competency framework in 2016 in an attempt to standardised how career development services are delivered in South Africa (Department of Higher Education and Training, 2016), and a national policy for an Integrated Career Development System was produced in 2017 to promote inclusive access to quality career development services across the country (Department of Higher Education and Training, 2017).

While South Africa appears to be making strides in this area, there remains limited evidence of the impact its Career Development Services have had on the lives of young people. While career counselling has shown to improve employment outcomes for unemployed youth in developing

countries (Hansen, 2006), a recent study suggests that the type of employment intervention matters less than how the intervention is designed (Kluve et al., 2019). A quantitative review of 113 impact evaluations of youth employment programs worldwide describes how comprehensive programmes were more likely to be successful, regardless of the types of interventions they comprised of: as long as the core programme offering was complemented with another type of service, its likelihood of success increased (Kluve et al., 2019). A second design feature that positively impacted on programme outcomes, was profiling young people based on the level of support they required. This allows for programmes to effectively meet the diverse needs of different groups of unemployed youth. This finding aligns with research by De Lannoy et al. (2019), which describes South African NEETs as a heterogeneous group of young people who require different types of support. A third important design feature of employment programmes is individual follow-up with young people to keep them engaged and prevent drop-out (Kluve et al., 2019). This necessitates an effective monitoring system, and possibly incentives. Regarding the monitoring and evaluation of youth employment programmes, larger positive effects were more notable in the long-term. It is therefore suggested that evaluation of a programme's impact take place in the medium and long-term (Fox & Kaul, 2017; Kluve et al., 2019). While programme design appears to improve youth employment programmes' impact on employment outcomes for beneficiaries, there remains limited evidence on the degree to which these interventions improve employment rates, or whether they merely displace unemployment by shifting programme beneficiaries to the front of the employment queue (Kluve et al., 2019; McKenzie, 2017). It is also unclear what effect these programmes have on long-term career outcomes. A recent evaluation of active labour market policies that provided various employment programmes (such as those described above), showed that few interventions had any significant impact on employment or earnings (McKenzie, 2017).

While such programmes' ability to reduce unemployment rates may be argued, these interventions have other positive impacts on young people and how they orientate themselves to the labor market (Graham et al., 2019). However, their potential to reintegrate the most marginalised unemployed youth is curtailed by: (1) their entrance criteria of a matric certificate, which excludes the majority of South African NEETs, and (2) by the fact that there are insufficient employment opportunities for young people. A hopeful finding for the South African

context is the potential of youth employment programmes that focus on human capability skills training to reduce the negative effects of low education levels and distance from urban areas. Graham et al. (2019, p. 11) found that, “exposure to such skills training is particularly important to ‘bridge the gap’ that geographic location and low education create in employment prospects and points to the very important role that YEPs can play in supporting young people to navigate the labour market.” While youth employment programmes may be limited in their ability to improve employment, programmes that provide comprehensive, individualised support appear to offer some real hope for the reintegration of young South African NEETs into the socio-economic mainstream. A critical question to then consider, is how to effectively scale these interventions so that they reach South Africa’s most marginalised youth.

3. The promise of ICTs for development

“The persistent legacy of apartheid has left our country with extreme structural problems – both economic and social. At the same time, we are having to contend with rapid technological change that is ushering in a new world of work... We will expand our high-tech industry by ensuring that the legal and regulatory framework promotes innovation, scaling up skills development for young people in new technologies, and reducing data costs.”

(Ramaphosa, 2019)

The fourth industrial revolution is an undeniable buzzword of the 21st Century. The term featured prominently in the 2019 State of the Nation Address (Ramaphosa, 2019), and has been the driving force behind many policy changes in education and employment initiatives (such as introducing coding as a school subject, introducing tablets to schools and increasing the number of technical schools in South Africa) (Ramaphosa, 2019). The potential of technology to achieve social and economic development is recognised in South Africa’s National Development Plan, that by 2030 aims to achieve the following key objective, “...a widespread broadband communication system will underpin a dynamic and connected vibrant information society and a

knowledge economy that is more inclusive, equitable and prosperous” (National Planning Commission, 2012, p. 2).

The notion of using technology for development is a research field that has been in existence for approximately the last 30 years, and is commonly referred to as “ICT4D research” (Walsham, 2017). ICT4D research, or Informatic Development as it is also sometimes called, is used to describe a range of activity which considers how electronic technologies can be used towards socio-economic development of developing communities worldwide” (Donner & Toyama, 2009, p. 1). However, this definition of ICT4D continues to evolve, as it has done since its emergence 30 years ago, retaining few of its original principles such as the principles of participative and cooperative design (Walsham, 2017).

The history of ICT4D may be divided into 3 major periods (Heeks, 2014; Walsham, 2017). The first period from the 1980s to the 1990s signified increased academic focus with the establishment of the first ICT4D journal, the Information Technology for Development Journal, and the IFIP WG9.4 academic group on “Social Implications of Computers in Developing Countries” (Heeks, 2014). During this period, the main focus of ICT4D was providing ICT access to developing countries (Walsham, 2017). The intention was to make the access experienced in developing countries universal; however, this approach was subsequently critiqued during the second major period (1990s to the mid-2000s) for not addressing the ‘Development’ component of ICT4D (Walsham, 2017). The simultaneous establishment of the Millennium Development Goals (MDGs) and the internet triggered this shift in focus according to Heeks (2008): the MDGs prioritised international development on the global political agenda and provided tangible development targets, while the internet provided new avenues for achieving these targets. Similarly, the United Nations Development Programme (UNDP) encouraged this shift by providing more defined Human Development goals with the introduction of the Human Development Index to replace GDP per Capita as the main means of national development (Brown & Brown, 2009).

Major issues studied during this period of ICT4D research included local adaptation and cultivation of ICTs, standardization versus localization of technology, and in-depth studies of particular technologies such as GIS (Walsham, 2017). This period has been critiqued for the view it adopted of ICT4D recipients or beneficiaries. Solutions were designed for, not with, poor communities. This often resulted in the development of programs that made little contribution from a development perspective. This technocentric approach has been cited as the cause of failure for a number of ICT4D projects during this period (Heeks, 2008; van Biljon, 2016).

The third period of ICT4D from the mid-2000s to now is what Walsham (2017) describes as “Proliferation” due to the unprecedented availability of ICTs in developing countries thanks to the mobile phone. This phase has seen a continuance of multidisciplinary approaches to ICT4D research, with increased involvement from the Development Studies field in particular. The prevalence of ICTs in developing countries has continued to raise questions about how notions of development, power relations and gender are considered in ICT4D research and interventions (Walsham, 2017).

While there is still much debate about the efficacy of ICT4D interventions in achieving development goals, their potential is widely recognised. Prominent development theorists have recognised the transformative role that ICT can play in development (Walsham, 2017) in addition to international development institutions, such as the World Bank (Dodson et al., 2013).

3.1. Why do ICT4D projects Fail?

While there have been huge financial investments into ICT projects over the years, many ICT projects fail to achieve their development goals (Gomez & Pather, 2012). Dodson et al. (2013) conducted a review of 40 articles published in *Information Technologies and International Development* between 2003 and 2010 to identify commonalities among projects that failed to meet some or all of their development objectives. The authors found that ICT interventions have limited

development impact as a result of: the project's development perspective, the project's development objectives and focus, and a lack of learning from failures (Dodson et al., 2013).

ICT4D projects that adopt a top-down, goal-diffuse and techno-centric approach experience limited success in contributing to development goals when compared with those that employ a bottom-up, community-centered approach with clearly associated development goals (Dodson et al., 2013). Top-down approaches have long been noted as ineffective by development researchers (Dodson et al., 2013), but technologists are not often well-versed with these Development approaches. Technologists are typically focused on the technology aspect of an intervention. This leads to another commonly adopted ICT4D approach that is equally ineffective in achieving development goals: techno-centricity.

Projects that are not based on a nuanced understanding of a community's needs, developed through ongoing consultation and collaboration, produce inappropriate and therefore unsustainable technological solutions - although these solutions may be technologically impressive (Dodson et al., 2013). In addition to having a community-centered development focus, a bottom-up development perspective is required for successful ICT4D implementations. While sponsorship from authoritative institutions and people is necessary for an intervention's success, adopting an exclusively top-down approach fails as the solutions created do not speak to the needs of the end user. While the intention for many projects is to adopt a bottom-up approach, this process demands increased time and resources which are often not at the disposal of ICT4D project implementers and researchers (Brown, 2019).

The final success factor highlighted by Dodson et al. (2013) relates to project objectives. Projects that are not linked to clear development goals place the project design process at risk – leading to unwanted or irrelevant outcomes. This is clearly an area in need of attention by ICT4D researchers as the majority of research projects reviewed by Dodson et al. (2013) were not linked to clear development goals.

While the aforementioned factors are commonly highlighted as influencing an intervention's success, even when best practice is followed for each of these areas ICT projects can still fail as a result of political, economic or social issues affecting the broader system (Dodson et al., 2013). They may also fail as a result of slight deviations from best practice. For example, research by Brown (2019) asserts that working with local partners does not constitute community collaboration and therefore does not assure project success. For ICT4D projects to be impactful and sustainable, they need to include the entire community throughout the project.

Research on South African ICT interventions confirms that understanding the context in which ICTs are implemented is crucial for their success in meeting development goals (Johnston et al., 2015). The success of ICT interventions as employment intermediaries for unemployed South African youth remains inhibited by low levels of digital literacy, and a lack of internet access (Matli & Ngoepe, 2020; Oyedemi & Choung, 2020). In keeping with the findings of Dodson et al. (2013) described above, the results of these South African studies imply that techno-centric, top-down approaches that overlook the contextual realities and capabilities of the end-user may experience limited success in achieving their development goals. For example, an ICT employment intervention that embodies the latest technology and is functionally sound, is unlikely to positively impact on the development of its users if the technology does not consider the users' capabilities and contexts (which may be low levels of digital literacy, and a lack of online access).

3.2. The future of ICT4D

The global ICT4D research landscape has started to emphasise themes that infer a stronger development focus. One such theme looks at the impact of ICTs on underprivileged communities according to a broader ICT value chain that goes beyond issues of access. Another theme focuses on gender in ICT4D, especially how we understand the role of women in relation to ICT in developing countries (Walsham, 2017). A third theme, that has been coined by Heeks (2010) as Development 2.0, looks at how ICT4D may “transform the processes and structures of development” (Walsham, 2017, p. 26). This theme will be explored further in the remainder of this section.

Development 2.0 describes ICT-enabled models that may transform how development is done (Heeks, 2010). These models include direct development, networked development, and grassroots development (Heeks, 2014). Underlying each of these models is the rapid diffusion of technology into poor communities (Heeks, 2010). Direct development models refer to ICT enabling resources and services to be delivered without an intermediary (such as government services being received online). Networked development enables access to services through a digitised network of actors, that were previously accessible through either the state or the market exclusively (such as online job sites connecting poor communities to job opportunities). Grassroots Development refers to models where ICTs have been used innovatively by poor communities to deliver certain services (such as using airtime as currency) (Heeks, 2010).

While Development 2.0 describes ICT models that may enable transformation, it fails to clearly define what is meant by transformational development (Heeks, 2014). This is an important consideration, as many digital interventions may initially appear transformational but upon closer inspection present a mere replication of traditional processes, as has been the case with e-commerce: initially e-commerce was perceived as a way to transform how people do business; however, most e-commerce offerings represented only an incremental change from traditional economics (Heeks, 2014).

While there remains some contestation on what the exact narrative for future ICT4D research will be, there is agreement that ICT4D research needs to focus more deeply on development, and how ICTs can enable or drive transformation ((Brown & Brown, 2008; Heeks, 2014; Walsham, 2017). To make ICT4D a transformative development approach, a shift in the worldview of the poor is paramount (Dodson et al., 2013; Heeks, 2008; Walsham, 2017; Zheng, 2009). Where earlier periods of ICT4D were characterised by imposing designs on poor communities based on a perception of their needs, more recent thinking proposes basing designs on what communities identify as their needs and wants. Poor communities should therefore no longer be perceived as passive beneficiaries of ICT4D interventions, but as active co-designers and producers of ICT4D solutions.

3.3. ICT4D in South Africa

The proliferation of mobile phones in South Africa has made it fertile grounds for ICT4D research and interventions; there have been a number of technological interventions created by government and civil society to try and address the country's pressing social issues (Turpin, 2018). According to data collected by the World Bank, as of 2018 there were 153.25 mobile phone subscriptions per 100 users (World Bank, 2019), more than double that of the global average.

Despite the proliferation of mobile phones, the majority of South Africans remain digitally marginalized (de Lanerolle et al., 2017; Gillwald et al., 2018). There is a high correlation between income levels and education, and digital adoption (de Lanerolle et al., 2017; Gillwald et al., 2018). While mobile phone technology is prevalent in South Africa's poor communities, its prevalence is skewed towards the wealthier groups (Johnston et al., 2015). The high price of devices and data mean that those with low incomes are more likely to be digitally excluded, and those with low education levels are unlikely to engage with new technologies due to their limited exposure to these tools (de Lanerolle et al., 2017; Phokeer et al., 2016).

Despite the general inequality in ICT access and usage, South African youth appear at the forefront of internet adoption, so there is certainly potential to leverage digital platforms to meet the socio-economic needs of young people (Chair & De Lannoy, 2018). According to Gillwald et al. (2018) South African youth have significantly more smartphones (71%) and greater Internet penetration (70%) than the national averages (55% and 53% respectively). Enhancing our understanding of young people's needs is crucial to ensure that the technological solutions provided have a positive impact (Chair & De Lannoy, 2018; de Lanerolle et al., 2017). As a recent study by Research ICT Africa attests, "understanding the way in which young people navigate the online space provides insight on how using the Internet can impact on their lives in the light of social and economic challenges faced" (Chair & De Lannoy, 2018, p. 8).

A report by de Lanerolle et al. (2017) provides some insight into how low-income South Africans use mobile phones, through the use of mobile diaries. The report finds that low-income South Africans use mobile phones to connect with close friends and family members, manage finances, earn an income, share news, listen to music and radio, and to take and view photographs (de Lanerolle et al., 2017). The use of mobile phones by low-income South Africans is characterised as fragile and frugal: fragile as users' access to mobile internet is not constant as most use pay-as-you-go services that require topping up, and frugal because users employ various cost-saving strategies to maximise the use of the little airtime and data they can afford. The implication of this fragile and frugal use of the mobile internet, is that users' mobile online worlds remain relatively small – and include mostly other low-income users. The World Wide Web for this group is therefore not the same that is experienced by better resourced groups of the population (de Lanerolle et al., 2017).

Deepening our understanding of how low-income groups experience digital interventions, requires research contributions from emerging markets that capture the contextual realities of the environments for which ICT4D interventions are envisioned. Sadly, ICT4D South African (and indeed African) contributions to the field globally have not been representative. While South Africa does have a presence in the ICT4D journals, it is limited to one research institution and one ICT4D journal (Turpin, 2018). The general lack of research from developing countries creates a gap between what international research dictates and reality, which may impact the successful implementation of ICT interventions in Africa (van Biljon, 2016). Similarly, it may be argued that a gap is created when researchers are too distanced from the recipients of ICT4D interventions. These gaps threaten the ability for ICT4D research to make a “positive and meaningful difference” (van Biljoen, 2016, p. 87). While there are examples of ICT4D interventions in South Africa that have successfully employed co-design principles to deliver interventions that positively impact on development outcomes for users (Jacobs et al., 2019), these outcomes are seldom measured. Many of the ICT development indices in the Global South measure tangible outputs largely related to access based on data from the ICT supply side (such

as the number of subscriptions or devices sold), and do not focus the transformational power of ICTs in the lives of users (Gillwald et al., 2018).

While the focus on tangible outputs in the Global South is explained as a result of lack of demand-side data (Gillwald et al., 2018), many ICT4D projects globally focus on such tangible outputs as they typically adopt the same impact approaches used for ICT implementations in business (Gomez & Pather, 2012). While it has been acknowledged that the intangible benefits of ICT are significant, there has been limited attention paid to measuring these – largely due to the difficulty in evaluating intangible outcomes. One study by Gomez & Pather (2012), for example, noted that ICT access can improve a sense of empowerment amongst poor communities. In this study it was found that due to poor people often feeling marginalised and having their lives characterised by a sense of powerlessness and instability, even the perception of benefits can assist in empowerment, which is likely to lead to proactive initiatives by the poor themselves (Gomez & Pather, 2012). It may be argued that without an understanding of the intangible impact of ICT interventions, their potential to positively impact on the holistic development of their intended recipients will remain limited.

3.4. The potential of ICT4D to leapfrog the skills and digital divide for South African youth

As described above, Sub-Saharan Africa is one of the fastest growing regions in mobile subscription access (Isaacs et al., 2019), and so provides fertile grounds for mobile learning interventions. Mobile learning interventions hold great potential to leapfrog youth who have been failed by a poorly functioning education system. Mobile interventions provide an opportunity to increase access to quality learning experiences by reducing the spatial and temporal limitations imposed by traditional learning (Panigrahi et al., 2018). There is some contention in the literature on how to define mobile learning, which may be broadly understood as “learning across multiple contexts, through social and content interactions, using personal electronic devices” (Crompton, 2013, p. 4). The contention arises from divergent views on mobile technologies’ ability to enable learning, but most research over the last decade has advocated that mobile phones are able to support existing and new ways of learning, across space

and time (Isaacs et al., 2019). However, the ability of mobile learning platforms to achieve quality learning outcomes is not guaranteed. Similarly, the ability of these platforms to impact on development outcomes is not yet fully understood (Isaacs, 2020).

Isaacs et al. (2019) conducted a review of four different m-learning interventions in Africa. The study illuminates some of the impediments to and enablers of success for m-learning interventions. Firstly, it is noted that accessibility to m-learning is enhanced when devices are provided, although this does drive up programme costs. Secondly, device accessibility does not guarantee affordability, as the need to purchase data drove up costs (Isaacs et al., 2019). Thirdly, the provision of digital learning materials does not guarantee use as “driving widespread adoption and active use of mobile learning platforms requires ongoing and concerted activities that are focused on raising awareness of the education resources available and encouraging active use of these resources” (Isaacs et al., 2019, p. 10). This is in keeping with findings of another study, that describes low learner retention rates of online learning platforms as a common and significant issue (Panigrahi et al., 2018). Some of the dominant theories on technological adoption attribute perceived usefulness (PU) and the perceived ease of use (PEU) of a technology as the main drivers of adoption and of continued use of the technology; however, there are several other complex factors that interact with these to affect adoption and continued use (Isaacs, 2020; Panigrahi et al., 2018).

When reviewing literature on mobile learning interventions in low-income contexts specifically, there are studies that describe key lessons learned. These lessons include the importance of involving users and curriculum decision-makers in the m-learning design, and the importance of designing with scale in mind (Isaacs et al., 2019). One study evaluating 80 initiatives using mobile phones to promote youth workforce development, found that: cost remains a significant barrier to the access of mobile learning material, the quality of education techniques matters more than the mobile device used, blended learning approaches show better outcomes than device-only approaches, and that local adaptability and sustainability of mobile programs remains a challenge due to several issues, such as the lack of translated and culturally relevant content (Raftree, 2013).

The success of online learning interventions globally has been found to have marginal positive effects at most, but more commonly have been found to have little or no impact on student learning and are thus beginning to be more critically evaluated (Isaacs, 2020). While there has been much research available on digital learning evaluation approaches and factors contributing to improved learning outcomes, there is little focus on development outcomes. In South Africa specifically, Isaacs (2020) argue that there has been little attention paid to social justice and issues of equity in South Africa's Digital Learning policy. This lack of focus on social justice and equity perhaps explains why South Africa has not yet fully capitalised on the potential of online learning to achieve development goals.

There are sadly multiple examples of where the digital divide has negatively impacted on the development outcomes of young people using mobile learning. The UkuFunda Virtual School (UVS) was the South African Department of Basic Education's first attempt to develop a mobile-learning platform, in partnership with UNICEF, and the Reach Trust (Spencer-Smith & Roberts, 2016). While access to the content was free for both learners and educators, users needed to pay for their own data. Despite this free service offering, only 17% of the 1,048,576 users registered (Spencer-Smith & Roberts, 2016). An evaluation of the project deduced that the low up-take was partly due to the data costs associated with the use of the service, and recommended that interventions requiring users to use their own data are at risk of excluding the most marginalised (Spencer-Smith & Roberts, 2016). Another m-learning project, MoMath, was considered to be an immense success but was still a far cry from realising full adoption. Learners had the opportunity to complete more than 10 000 maths questions, but only nine learners completed this many. For MoMath, 62.4% of registered learners at the 30 pilot schools completed at least 10 questions over one school year. More than 150 questions were completed by 20.7% of the learners in that same school year, while nine learners, from four different schools, completed more than 10,000 questions each (Roberts et al., 2015).

Despite the challenge of creating digital learning experiences that continually engage young people, mobile technology is often heralded as an opportunity for disadvantaged youth to leapfrog the digital divide (Napoli & Obar, 2013). This leapfrogging was evidenced in a study by

Harpur & De Villiers (2015), which found that students who were considered ‘digitally disadvantaged’ mastered mobile learning, unlike their ‘digitally advantaged’ counterparts, presumably because they did not have access to other more expensive forms of online learning devices, such as computers (Harpur & De Villiers, 2015). Despite the promise of mobile to leapfrog that digital divide, Napoli and Obar (2013) caution that policymakers should be weary of assuming mobile phones are sufficient as an exclusive means to access the internet due to the inferiority of mobile phones in terms of memory and speed, content availability, network architecture, and patterns of information seeking and content creation amongst users compared to personal computers. Assuming that personal computers are redundant for people who have access to mobile phones, may exacerbate the already burgeoning digital divide.

While the proliferation of mobile phones undoubtedly increases opportunities to broaden access to online learning, the aforementioned studies illustrate how access to online learning does not necessitate engagement. M-learning interventions (as with ICT4D interventions more generally), need to look beyond measures of access when measuring impact. Harpur & De Villiers (2015) argue that evaluation strategies for m-learning interventions should differ from evaluation strategies used for other technological products, as learning systems have distinct characteristics. They advocate for a more comprehensive model of evaluation that stresses usability and user experience in mobile educational contexts, thus emphasising the importance of a micro-level view of m-learning interventions from the perspective of the user. While understanding the user’s educational context may improve learning outcomes, understanding the personal, social and environmental factors that shape a user’s interaction with and perception of a technology, is critical for ICTs to realise development outcomes, as this study argues below.

3.5. Measuring the intangible impacts of ICT4D

Sen’s CA has been widely used to try and understand the impact of ICT4D interventions on development, beyond the narrow quantifiable measures of economic development (Zheng, 2009). Sen’s CA is used across a wide range of fields to provide a normative framework for the evaluation of individual well-being and social configurations, the design of policies, and proposals about social change in society (Robeyns, 2005). It promotes “the expansion of freedom . . . both as the primary end and as the principle means of development” (Sen, 1999, p. xii). A

central tenet of the capabilities approach is therefore its focus on “what people are effectively able to do and to be, that is, on their capabilities” (Robeyns, 2005, p. 94).

This principle is captured by the concepts of functionings and capabilities (Zheng, 2009). Functionings are described as “beings and doings” of a person, whereas a person’s capability is “the various combinations of functionings that a person can achieve.” Capabilities are distinct from functionings in that they represent the freedom to achieve certain functionings (Zheng, 2009). For example, a woman in a particular area may have the necessary academic qualifications to become a medical doctor, but perhaps due to gender discrimination may not have the freedom to achieve a career in this field. The CA differs from other economic approaches to development by distinguishing between “means to achieve” (what one values), “freedom to achieve”, and “actual achievement” (Zheng, 2009). As illustrated in the example above, the freedom to achieve something that one values does not necessitate the actual achievement of that value. The ability to convert these different aspects is influenced by personal, social and environmental characteristics. Personal characteristics include mental and physical conditions, literacy, and gender. Social factors refer to social norms, social institutions (e.g., rule of law, political rights, public policies), and power structures (e.g., hierarchy, politics). Environmental characteristics include climate, infrastructure, institutions, and public goods (Sen, 1999).

What an individual is actually able to achieve (a person’s capability set) represents his or her freedom to achieve agency and well-being (Zheng, 2009), and this is what the CA proposes an individual’s advantage be measured upon. As reflected by Robeyns (2005, p. 94): “The focus for evaluation should be, on the quality of their life, and on removing obstacles in their lives so that they have more freedom to live the kind of life which, upon reflection, they find valuable.”

The challenge with using Sen’s CA as a means of evaluating ICT4D interventions, is that the approach is vague. Rather than providing a directly applicable toolkit for development, “the capability approach is primarily and mainly a framework of thought, a mode of thinking about

normative issues; hence a paradigm — loosely defined — that can be used for a wide range of evaluative purposes” (Robeyns, 2005, p. 96). While the vagueness has been a source of criticism for this approach, it is arguably also its source of strength in that it challenges us to move beyond narrow, top-down economic understandings of development to bottom-up, holistic understandings of development as freedom.

A challenge with using Sen’s CA as an evaluation framework for digital youth unemployment programmes in South Africa, lies in the diversity of unemployed South African youth. Young South African NEETs are an exceptionally heterogeneous group with diverse needs and aspirations (De Lannoy & Mudiriza, 2019), and so a single ICT intervention’s ability to meet these various needs and expectations may present a challenge. The heterogeneity of young South African NEETs may be described according to a number of variables. Firstly, youth are defined as those aged between 15 and 35 – a broad range describing young people in several developmental stages. Secondly, there is great socio-economic variance within this group of young people, as well as differences in educational outcomes: while the majority of young NEETs do not have a matric qualification, those who do have matric or higher qualifications are likely to have received differing qualities of education due to the extreme variances in South Africa’s education system (De Lannoy & Mudiriza, 2019). Thirdly, young NEETs experience unemployment differently: some are in varying phases of discouragement, while others are inactive (i.e., not looking for employment). Within ‘inactivity’ there is also variance: some are inactive as a result of household responsibilities, some due to health reasons, and others voluntarily (De Lannoy and Mudiriza, 2019). Lastly, there are the geographic differences of rural and urban which carry implications for online access and usage. Another important source of heterogeneity in South Africa is language, and levels of English proficiency. Proficiency in English has a great implication for online usage and engagement, considering that English is the most widely used language on the internet (Statista, 2020). The diversity of South African NEETs according to some of the variables described above, presents a challenge in using an evaluation framework that places the user at the centre. However, without an appreciation for the heterogeneity of users’ needs, aspirations and contexts, ICT4D interventions will arguably fall short of their development goals.

3.6. Conclusion

The previous sections have explored the literature domains of youth unemployment in South Africa, ICTs for Development (ICT4D), mobile learning and the evaluation of ICT4D interventions. Across these domains, it emerges that a micro-level view from the perspective of the human receiving an intervention is critical to achieve developmental goals, where development is understood as the user's freedom to achieve what they find valuable. Youth unemployment in South Africa is significantly impacted by micro-level barriers, as is the adoption of technologies by low-income communities – technologies that spark potential for addressing the endemic joblessness experienced by young South Africans. While there is an acknowledgement of the importance of this micro-level view to create impactful interventions, there is limited research available on how unemployed youth experience the ICT interventions that are being heralded as low-cost, scalable solutions to their socio-economic exclusion. This understanding is crucial in order to fully appreciate how ICTs may better support young South African NEETs trying to connect to the labour market and may best protect them from becoming economically discouraged. As discussed in the ensuing section, postphenomenology provides a suitable methodological approach for understanding this micro-level view.

4. Research Methodology

4.1. Research strategy and approach

4.1.1. Hermeneutic Phenomenology

In order to bring the lived experience of unemployed youth using work seeker support platforms into sharp focus so that we may balance out the 'top-down', macro view with a 'bottom-up', micro-level perspective, hermeneutic phenomenology offers an appropriate theoretical framework. An unpacking of this approach requires firstly an unpacking of its constituent terms: phenomenology and hermeneutic. Phenomenology is the study of lived experience, where experience is understood as something that happens to us and is not learned or mastered by us. Hermeneutics describes the act of interpretation and meaning-making, where meaning is described as a fluid, iterative process constantly open to change through re-interpretation

(Friesen et al., 2012). Hermeneutic phenomenology is therefore the study of the meaning of human experience, as it is lived (Dowling, 2007).

Hermeneutic phenomenology focuses on the subjective experience of individuals and groups, as it attempts to “unveil the world of the subject as experienced by the subject through their life world stories” (Kafle, 2013, p. 186). This approach is not naïve to the fact that an expression of someone else’s experience as described by a researcher cannot be objective. Hermeneutic phenomenology acknowledges that what is presented as an individual’s experience is in fact the researcher’s interpretation of that experience (Kafle, 2013). In order to provide the best interpretation, the researcher must adopt a disposition that is open and sensitive to the experiences being relayed. It is a matter of being open to everyday experienced meanings, as opposed to theoretical ones (van Manen, 1990).

Hermeneutic phenomenology differs from other brands of phenomenology in that it acknowledges the researcher’s inability to describe and interpret a phenomenon without bias. The researcher’s historical and cultural context manifests in the interpretation of lived experiences. The researcher is called to explicate their biases by reflecting on their position in the world and how this may influence the nature of interpretation provided (Laverly, 2003).

4.1.2. Actor Network Theory

While for the purposes of this study, the individual viewpoint is central, it cannot be considered in isolation due to the multiplicity of actors that interact with the individuals experiencing the phenomenon under study, specifically the technological actors. A useful theoretical perspective to reference here is Actor Network Theory (ANT), which has been widely used in the ICT4D field (Walsham, 2017).

ANT is appropriate for this research project for several reasons. ANT is commonly used in ICT4D research projects. Projects using technology to address pressing social issues can be thought of as networks and their success can be considered as the alignment of actors’ interests (Walsham, 2017). ANT acknowledges the role of non-human actors as a modifier of human experience. Technology is perceived as a social actor with agency equivalent to the human social

actor, and not merely a symbolic projection of the human actor's imagination (Latour, 2005; Walsham, 1997). The equivalence of human and non-human actors as social actors in ANT, impacts on how the relationship between these actors is understood and explained. In ANT, human actors and non-human actors have mutual influence in modifying the other's behaviour. Another characteristic of the ANT approach that makes it relevant to this study, lies in the main aim of this approach: to reassemble the social.

Unlike other social science approaches, ANT does not perceive the social as a fixed state that acts upon all human and non-human actors in the system, but rather as something that emerges from the interactions of various social actors (both human and non-human) at a point in time. Latour (2005) is not naive to the value of existing social theory approaches that delineate fixed social groups, such as the lower class, youth, the unemployed etc. These are valuable and even 'indispensable' constructs, but "in situations where innovations proliferate, where group boundaries are uncertain, when the range of entities to be taken into account fluctuates, the sociology of the social is no longer able to trace actors' new associations." (Latour, 2005, p. 11). In this study for example, the social group under review – unemployed, low-skilled South African youth – do not exist in this fixed social state in all contexts. In different online contexts (such as on chat groups or forums), their social grouping is reshaped.

Considering this view of the social as fluid, the role of the ANT researcher is to engage with the social actors with an awareness of the multiple, heterogenous associations that exist within the network. The researcher should not limit the actors to some predetermined well-known social types but should allow the social actor to use their own theories to describe the social phenomenon (Latour, 2005; Walsham, 1997).

The ANT researcher's first task is to identify the network that constitutes the social phenomenon under study. The definition of a network in ANT differs from common understandings of the word. A network in ANT is not concerned with the distance between entities that constitute the network – there is no spatial relationship between entities, but rather associations (Latour, 1996). The ANT network similarly does not distinguish between macro and micro level social

phenomenon: “a network is never bigger than another one, it is simply longer or more intensely connected” (Latour, 1996, p. 371).

The ANT network is defined only by connections or associations between human and non-human actors that can modify one another through their associations. The actor is a semiotic definition, it is something that acts or enables action in others based on the actor’s interests. In this research project, the actors would include the unemployed youth, the devices used to access the internet, the website or application, the physical space where they access this information etc. It is important to note that each actor in ANT represents a network within itself. The unemployed youth for example comprises several actors: their histories, their family, their home environments, their physical bodies etc. Similarly, the website used to access employment or learning opportunities comprises a specific coding language, website designers, data, and user experience. It is important to be aware of the degree to which a deconstruction of these networks adds value (and is practical). It would be impractical to describe the network that constitutes each actor in the larger network, due to the resource limitations of this project.

ANT describes networks as either stable or unstable. A stable actor-network is one where actors’ interests are aligned through the process of translation (Monteiro & Hanseth, 1996). The process of translation refers to how an actor's interests are represented, or inscribed by the non-human actor (Jones, 1985). The translation process is responsible for the establishment of a network, and constitutes 4 stages: problematisation, interestment, enrolment and mobilisation (Andrade & Urquhart, 2010). During the first stage, the initiator defines the interests and roles of the other actors and positions itself as an indispensable route to achieve the other actors’ interests (Andrade & Urquhart, 2010; Heeks, 2013). For this study, the initiator is the work seeker platform that markets employment and skills development opportunities to unemployed South African youth. The platform positions the unemployed youth as in need of training and access to employment opportunities, and positions itself as the route to gaining access to these services. During the stage of interestment, the initiator tries to convince the other actors to accept their roles and that their interests are aligned with what the initiator proposes. The platform attempts to do this by promoting previous success stories of users with the same demographic as their target users. During the enrolment stage, the roles that have been established in the previous

stages are put into action so as to make the network irreversible (Andrade & Urquhart, 2010; Heeks & Seo-Zindy, 2019). For the work seeker support platform, this stage involves the users registering with the platform and making use of its services. The final stage, mobilisation, describes when actors become spokespeople for the network without betraying the interests of the initiator. During this stage, actors in the network promote the interests of the initiator thereby stabilising the established network. In the case of the work seeker support platform, this stage involves unemployed youth who have registered with the platform advocating its value to others.

ANT recognises that some networks are more stable and long-lasting than others. Features of stable, long-lasting networks include: a robust translation process where a number of actors have joined the network, the incorporation into the network of material objects (the network's durability), and normalisation where an actor is seen as an expression of a network (actors become 'black-boxed' within a network). An example of normalisation is a car. Within our broader networks, a car is 'black-boxed' as a single entity – when in fact it consists of multiple networks (the engine, the wheels etc.) (Heeks, 2013).

4.1.3. Combining ANT and Hermeneutic Phenomenology: An introduction to postphenomenology

Although postphenomenology was conceptualised at about the same time as ANT (Rosenberger & Verbeek, 2015), it has been described as a combination of ANT and hermeneutic phenomenology (Jubien, 2014). The term emerged at the same time as several other philosophical approaches (including ANT) that challenged earlier philosophical conceptions of science and technology as ahistorical and acultural. Instead, these approaches focused on the mediating role technology plays in the life of human beings (Rosenberger & Verbeek, 2015). Postphenomenology offers a complete and relevant methodology for this research project as it explores human-technology relations from the perspective of the human actor. The human actor's perspective is critical in addressing the research question of how ICT solutions are experienced by users.

The term postphenomenology was first coined by Don Ihde in the 1970s as a philosophy of technology that builds on phenomenology (Aagaard, 2017). It is underlined by the following key concepts (Rosenberger & Verbeek, 2015):

1. Human-technology relations
2. Relational ontology
3. The field of awareness
4. Multistability

Human-technology relations refers to Ihde's proposition that there exists a spectrum of relations between humans and technologies (Adams & Turville, 2018; Rosenberger & Verbeek, 2015). Ihde (1990) describes four types of human-technology relations along this spectrum: embodiment, hermeneutic, alterity and background. Embodiment-relations refer to when technology serves as an extension of the physical body. A common example of an embodiment relation is spectacles, as these serve as an extension of one's physical body and transform how the user experiences the world (Rosenberger & Verbeek, 2015). A concept related to embodiment-relations is that of transparency. This refers to the degree to which a technology fades into the background as it is being used. Spectacles are an example of a highly transparent embodiment relation, as users do not focus on the spectacles themselves but rather what the spectacles transform. Hermeneutic-relations describe relations where technology is 'read' for meaning (such as thermometer, map or book). Alterity-relations describe relations to technology that are experienced anthropomorphically; because the technological interface mimics the nature of a human-to-human relation, humans engage with these technologies much in the same way they would relate to other humans (Rosenberger & Verbeek, 2015). An example of an alterity-relation is the voice-recognition functionality of some mobile devices, where the device responds to voice much in the way a human would. Finally, background human-technology relations are those that function in the background, almost unnoticed. Examples of this include heating, electrical and communications systems (Adams & Thompson, 2011).

A concept closely linked to human-technology relations is that of relational ontology (Rosenberger & Verbeek, 2015). This concept describes how technology should be understood in terms of the relations humans have with them, and not as entities within themselves. For

postphenomenology, “subject and object are constituted in their mediated relation” (Rosenberger & Verbeek, 2015, p. 12). This is where postphenomenology is similar to ANT: both approaches can be described as inter-relational and materially sensitive approaches (Rosenberger & Verbeek, 2015). Both ANT and postphenomenology acknowledge the interplay between human and non-human actors as mutually reconstituting forces. They share a disregard for subject/object dichotomies and instead acknowledge how these positions may shift as a result of the vast number of variables constantly interacting with human and non-human actors. For example, a pair of spectacles mediates the human experience of the world by improving a human’s vision. However, a human could choose to use spectacles to magnify the sun and produce fire, thus modifying the role of the technology.

Where postphenomenology most differs from ANT is its starting point of analysis. Where ANT ascribes a ‘symmetry’ to both human and non-human actors, and analyses these relationships by tracing both actors, postphenomenology continues the phenomenological tradition of starting with “deep descriptions of human experience” (Rosenberger & Verbeek, 2015, p. 1).

Postphenomenology holds that to do justice to the human experience, one must start from that perspective. Humans and non-humans cannot therefore be granted the symmetry that is granted in ANT. Where ANT looks at systems from an external point of view, postphenomenology takes a human perspective where technology does not have equal agency to humans, but is not separate from them (Aagaard, 2017). This important distinction from ANT is what makes postphenomenology a better methodological fit for this study. While the role of technology retains a prominent place in analysis, postphenomenology incorporates aspects of phenomenology that retain the centrality of human experience.

A third concept of postphenomenology is an extension of Idhe’s notion of transparency: the field of awareness. This concept argues that transparency is more than a feature of embodiment relations, as it raises the question of how technologies shape a user’s general field of awareness in different ways (Rosenberger & Verbeek, 2015). Two variables that help characterise a user’s technologically mediated field of awareness are field composition and sedimentation. Field composition describes a human-technology relation that drastically reconfigures a user’s field of awareness (Rosenberger & Verbeek, 2015). Binoculars for example can be described as an

embodiment relation as they may become an extension of a frequent user's physical body as they transform the user's experience of distance to objects – but the binoculars also significantly reorganise the user's field of awareness by blocking out any peripheral views of the user's immediate environment. Sedimentation is a concept used in phenomenology to describe how past experiences actively shape our experience of the present. In relation to the field of awareness concept, sedimentation refers to the “force of habit associated with a given human-technology relation” (Rosenberger & Verbeek, 2015, p. 25). A relation that is highly sedimented could be that with a mobile phone, as it is an object that is used in a habitual way.

A fourth concept of postphenomenology is that of multistability. Technologies can be used in multiple ways in different contexts. Technologies are not neutral but are constituted by human-technology relations that may change in different contexts (Aagaard et al., 2018). A principle related to the concept of multistability is amplification/reduction, which states that all technologies involve a trade-off: where one experience is amplified, another is reduced (Aagaard, 2017; Rosenberger & Verbeek, 2015). Technology transforms our perceptions by either amplifying them or reducing them – and what gets amplified or reduced may change in different contexts. For example, while spectacles may amplify one's vision they also reduce one's ability to perform other tasks (such as being in water, or performing certain physical activities or sports). However, in a different context, spectacles may be used to amplify heat from the sun and reduce the experience of cool (Aagaard, 2017).

While these concepts provide a framework for exploring human-technology relations, there is no explicit methodology linked to the postphenomenological approach. However, most postphenomenological studies have certain elements in common that a number of authors have attempted to distill into a methodological approach (Aagaard, 2017; Jensen & Aagaard, 2018; Rosenberger & Verbeek, 2015).

Postphenomenological studies are typically interested in the mediating role that technology plays between humans and the world, and the related implications (Rosenberger & Verbeek, 2015). Technology is accredited with the ability to transform our perceptions of the world in accordance with the characteristics of the technological artefact (Aagaard, 2017). This focus on human-

technology relations requires that postphenomenological studies include empirical work as a basis for analysis: they need focus on actual technological practices and artefacts. For this reason, postphenomenology is described as an ‘empirical philosophy’ (Rosenberger & Verbeek, 2015). Its commitment to an empirical approach is evidenced by postphenomenology’s focus on case study research (Aagaard et al., 2018; Rosenberger & Verbeek, 2015). In order to conduct a postphenomenological case study, the researcher must embark on an in-depth exploration of the typical use of a technology. This approach entails a comprehensive analysis of both the technological artefact and the human experience of that artefact (Aagaard, 2017). The researcher is therefore called to collect data from the technological artifact much in the same way they would collect data from the human subject. “Interviewing” an artefact ensures that the researcher understands, in detail, how the technology works. This is an important starting point to then understand how the technology is interpreted by the human subject, and how that interpretation mediates the human experience.

Adams and Thompson (2011) provide a list of eight heuristics on how to treat educational technologies as research participants, which will provide a useful guide for data collection for this research project. While these heuristics imply (auto-)ethnographic data collection, they can be used to elicit responses from the users of their technologically mediated experiences (Aagaard, 2017). For this project, these heuristics will be used to interview users, given the research question’s concern with the experience of end users (as opposed to the researcher’s experience of the technology). The heuristics will also be used to analyse how users interact with the technological artefact. The heuristics include:

1. Follow the actors: This ANT slogan refers to the task of identifying the actors that make up the actor-network under study. To identify these actors, it is recommended to look for what makes actors act (Latour, 2005). As it is not feasible to trace all the actors, an equally important task is that of ‘boundary-making’ (i.e., deciding what actors to exclude from one’s analysis) (Suchman, 2007). Once actors have been identified, the researcher needs to identify where actors converge by asking the following questions: how are people and objects brought into proximity with each other, how did they come to be configured this way, and what gets related to what and how? (Adams & Thompson, 2011).

2. 'Listening' for the invitational quality of things: Humans are inextricably intertwined with the world of objects that surround us. We respond to these objects based on our 'pathic' knowledge – where pathic refers to one's 'sense of being in the world' (van Manen, 2014). In order to understand how objects shape us, we therefore need to listen for what these objects say rather than what they do.
3. Discerning the spectrum of human-technology relations: This refers to Idhe's four human-technology relations described above.
4. Recognizing the Amplification/Reduction Structure of Human- Technology Relations.
5. Applying the laws of media: The four Laws of Media are proposed as a tool for phenomenologists to reveal the individual and socio-cultural effects of a technology. This approach may provide a way to establish the conceptual implications of human-technology relations that Rosenberger & Verbeek (2015) claim are common to postphenomenological studies. The laws of media consist of four questions that may be posed of any technology or medium: What does [this technology or medium] enhance or intensify, what does it render obsolete or displace, what does it retrieve that was previously obsolesced, what does it produce or become when pressed to an extreme? (McLuhan & McLuhan, 1988)
6. Studying Breakdowns and Accidents: In order to make objects in the actor-network visible, the researcher can look for breakdowns in the network. These breakdowns can help to surface the assumptions that normalise the way in which humans and objects engage (Adams & Thompson, 2011).
7. Untangling tensions: Identifying how actors in the actor-network work to stabilise or disrupt the network helps surface the tensions inherent in the network. These tensions indicate the fluidity of a network's boundaries, and its changing nature. An awareness of the network's 'normal' state of change assists the ANT researcher with the important work of identifying what networks become stabilised (Adams & Thompson, 2011).
8. Construct co(a)gents: A co(a)gent is an analytical tool that helps to identify the patterns of connections that exist between human and non-human entities. To use this heuristic to interview objects, researchers must first construct the co(a)gent, then trace the patterns of connection between the entities that comprise the co(a)gent by posing a series of

questions, such as: when does the co(a)gent make an appearance, what would happen if one of its constituent parts falls away?

According to these heuristics, conducting a postphenomenological study requires that the researcher: (1) observe the interaction between human and non-human actors; (2) analyse the non-human actor to understand what it communicates to humans, and (3) interview human actors to understand how they interpret these messages and how they experience the relationship in their life-world. While these heuristics will help guide the design of interviews with human actors, and the analysis of their interaction with the platform, an analysis of the non-human actors will be conducted using the post-phenomenological constructs for digital interfaces of unit and vibration. These concepts treat digital interfaces as a composition of relational objects that interact with each other and the human user to create responses (Ash, Anderson, Gordon, & Langley, 2018). These concepts help the researcher to ‘follow the actors’ by delineating the components of the work seeker support platform that ‘call the actors to act’ (as described in the first heuristic listed above).

The concept of unit refers to the distinct entities that comprise the digital interface. The units of a digital interface are determined according to: what appears as a distinct entity to the user, and what aspect of the interface is being studied (Ash et al., 2018). The concept of vibration describes how the different units identified interact with one another and the user. The use of this sonic term (which has its roots in the Latin word ‘vibratus’ meaning to move to and fro) “allows us to understand how particular parts of an interface communicate with the user to prime and shape various responses and actions on a series of material and habitual levels” (Ash et al., 2018, p. 173). The concept of vibration is broken down into four aspects: amplitude, frequency, rhythmic articulation and resonance. Amplitude refers to the degree of interactivity that units encourage, without the use of explicit linguistic signposting. The amplitude of a unit’s vibrations can be expressed through a number of design elements including colour, shading, sound and images. The term frequency refers to the speed with which units encourage user engagement. For example, terms and conditions pages are considered high-frequency as they are often designed in such a way that encourages users to skim through the content (by using small print, tight spacing and scroll functions). Rhythmic articulation refers to the degree to which there is a smooth flow

between units of a digital interface that make navigation feel effortless (Ash et al., 2018). An example of a smooth flow between different pages on a website, would be the inclusion of a navigation bar on every web page that allows users to easily navigate from each page without having to return to a home page each time. Resonance, the final aspect of vibration, refers to a digital interface's ability to resonate with users' memories and familiar experiences (Ash et al., 2018). An example of a unit with high resonance is the swipe function on touch screen interfaces. This emulates the turning of a page, which resonates with users' experiences of using books.

In addition to a comprehensive analysis of technological artefacts, postphenomenological studies typically investigate how human subjects and their worlds are constituted by technology. By mediating a human's experience of the world, technologies constitute a particular objectivity of the world and a particular subjectivity of the human (Rosenberger & Verbeek, 2015). For example, spectacles provide a very particular experience of the world for the user (one that is magnified and always framed), while also influencing the nature of the user (wearers of spectacles may need to be more cautious in the world to avoid having their spectacles fall off). Based on the characteristics listed above, postphenomenological studies generally go on to make a conceptual analysis of the implications of technologies (for example, how might the implications of human-technology relations shape politics, knowledge, religious ideologies etc.) (Rosenberger & Verbeek, 2015).

Postphenomenology provides a useful framework for understanding how the contextual realities of young unemployed South Africans impact on how they interact with and subsequently perceive the ICT intervention under study, as the postphenomenological methodology prioritises the user's lived experience. This framework acknowledges the interplay between human and technology, and thus does not overlook the careful examination of the technology (as perhaps a hermeneutic phenomenological approach may do). A limitation inherent in this approach is the auto-ethnographic analysis of the technology by the author (Aagaard et al., 2018); however, the postphenomenological constructs of unit, vibration and tone provide a structured framework that arguably reduces the degree of subjectivity. A conceptual analysis of the implications of the human-technology relations will be discussed in terms of how they impact on the socio-

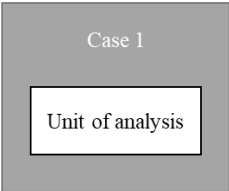
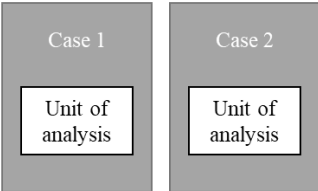
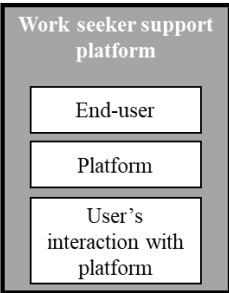
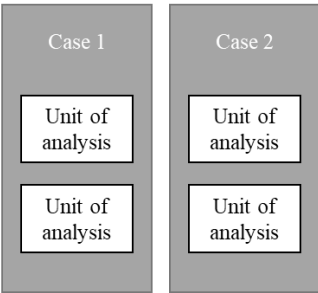
economic exclusion of young NEETs, and the subsequent impact on the country's economic future.

4.2. Research Design, Data collection methods and research instruments

According to Yin (2009) a case study design should be considered when: (a) the focus of the study is to answer “how” and “why” questions; (b) you cannot manipulate the behaviour of those involved in the study; (c) you want to cover contextual conditions because you believe they are relevant to the phenomenon under study; or (d) the boundaries are not clear between the phenomenon and context. Case study research focuses on an in-depth understanding of a phenomenon and its context, and not on the explicit manipulation or control of variables (Darke et al., 1998). Postphenomenological research has been explicitly associated with a case study research approach (Aagaard et al., 2018). A case study was appropriate for this research project as the research question asks ‘how’ a particular phenomenon (the work seeker support platform) is experienced by its users (the unemployed youth).

Yin (2009) discusses the four types of case study design, which are foregrounded by the general characteristics of research design, using a 2x2 matrix (see Table 1 below). The matrix situates every case in a context and distinguishes case designs based on: (1) the number of cases analysed, and (2) the number of units of analyses. Considering the four basic types of case study design, this study can be described as an embedded single-case design. The study is a single-case design as there is only one context that is being explored: the organisation that created the mobile platform. A single case study is appropriate for this research project, as the case is unique (Darke et al., 1998): there are only two known platforms of this kind available in South Africa, and only one agreed to participate in the study. This study is described as an embedded-case, as there are multiple units of analysis: the technological artefact (the mobile platform), the end-user (i.e., the unemployed youth) and the interaction between the end-user and the technological artefact.

Table 1. Yin 2x2 matrix of case study design

	Single-case design	Multiple-case design
Holistic (single-unit of analysis)		
Embedded (multiple unit of analysis)		

4.2.1. Data collection methods

To achieve the objectives of this postphenomenological case study, data was collected via one-on-one in-depth, semi-structured interviews with human actors, ‘interviews’ with the non-human actors (using the analytical tools of unit, vibration and tone), observations of how human and non-human actors engage with one another, and a focus groups to deepen the understanding of the human experience of these human-technology exchanges. Observations of individuals using the technology, in addition to one-on-one interviews, are considered fruitful methods for conducting a postphenomenological inquiry (Aagaard et al., 2018). According to Aagaard et al. (2018), the primary purpose of an interview for postphenomenology research is to elicit lived experience descriptions (LEDs) of the research participants’ everyday engagements with the technology of interest. The researcher must therefore ask the participant to recall particular events, and then provide a lived account of the event. The semi-structured interview is an appropriate format to elicit detailed accounts from individuals, as it provides the researcher with an opportunity to probe for more detailed responses (Hancock et al., 2009).

The focus on eliciting lived experiences from individuals follows the phenomenological tradition. Conducting phenomenological research is “always to question the way we experience the world, to want to know the world in which we live as human beings” (van Manen, 1990, p. 5). The lived experience descriptions should describe the emotions, feelings and mood of the experience, and should avoid generalisations, opinions and explanations (van Manen, 1990). The interview survey was structured in such a way to prompt these types of descriptions.

The observations of how users interact with the platform were intended to be conducted during one-on-one interviews. However, due to COVID-19, face-to-face interviews were not possible. Telephonic interviews were conducted, and website usage data was analysed to observe how users (on average) interacted with the platform. The findings of the one-on-one interviews and website usage data were validated during a focus group. Due to COVID-19, the focus group also had to move to a digital platform. There were multiple attempts to conduct the focus groups using online conferencing tools; however, due to participants’ limited network access and data restrictions this was not possible. Upon consultation with youth development organisations, it was suggested that using a WhatsApp chat group would be a suitable platform to reach young people. Participants were called and invited to join the WhatsApp group. Those who agreed, were added to the group and the questions were posted along with visual illustrations (see Appendix 1).

The focus group was used to verify the themes that arose in the individual interviews. This is an important phase of a phenomenological study, to ensure that the researcher’s biases do not distort the experience relayed by participants (van Manen, 1990). Using these multiple sources of evidence (the focus group, interviews and website usage data) served to strengthen the case study’s findings as it provided an opportunity to corroborate findings across different sources (Yin, 2009).

While using the internet to conduct the focus group was born out of necessity, using online platforms for data collection has been popular for some time in social research (James & Busher, 2014). Using the WhatsApp group to conduct the focus group had some advantages compared to conducting the group in person. Firstly, considering the “concealing contexts of online

discussions, where people's social and personal characteristics are not immediately visible” (James & Busher, 2014, p. 4), participants who would have been shy to speak in person may have been more outspoken during the WhatsApp chat. Secondly, the use of a synchronous platform (where respondents were responding to questions in real time) can promote a sense of joint involvement despite physical distance (James & Busher, 2014). A limitation of using text-based communication to conduct the focus group is the time required to type out responses. This led to conversation overlap, and possibly inhibited the degree of interaction between participants. Another possible disadvantage lies in the relative anonymity of participants and the researcher that is enabled by no cameras. While this anonymity may have advantages (as discussed above), it may also make it easier for people to distort their views (James & Busher, 2014). For this study, the use of voice notes helped to reduce some of this anonymity as the researcher used them to reiterate instructions provided over text, and some participants voluntarily responded using Voice Notes. Voice Notes and emoticons assisted in setting a friendly and permissive atmosphere, which is required for group participation and sharing (James & Busher, 2014).

4.2.2. The context

The context for this case study is a work seeker support platform that was developed by a South African non-profit in 2016. Since the organisation’s inception they have launched a website, social media platforms and a number of mobile learning modules. As of the end of April 2020, there were over 25 000 candidates registered on the platform and 652 employment opportunities.

The platform addresses three key constraints faced by young South African NEETs when trying to access employment, or skills development opportunities:

- A lack of quality, reliable, navigable information.
- A lack of foundational work readiness learning and certification to signal competencies to employers.
- A lack of accessible mechanisms (such as high transport costs and a lack of networks) to effectively match opportunity seekers to opportunity providers.

To address these constraints, the organisation provides free career guidance information on a low-data platform and intermediary services (or skills matching services) to unemployed youth. In terms of the Heeks' Development 2.0 ICT-enabled models, the work seeker support platform may be regarded as a networked development model as it enables access to services through a digitised network of actors, that were previously inaccessible. However, the platform may also be described as a direct development model as it provides mobile learning services to young people that were previously only available through training centres. Both these models depend on the rapid diffusion of ICTs into low-income communities to realise development goals. The limited diffusion of ICTs into rural areas in South Africa is evidenced by the relatively low number of candidates registered on the platform from rural areas.

Based on the services offered by the work seeker support platform it may be described as a labour market intermediary intervention. However, the platform distinguishes itself from other similar interventions by offering the complementary services of career guidance and mobile learning. Another way in which the platform distinguishes itself is by focusing on young NEETs who often lack the information, skills and resources to access career information and work opportunities. Few other online intermediary interventions focus exclusively on marginalised youth with low education levels. Similarly, the platform's focus distinguishes it from other youth employment programmes, most of which have a matric certificate as a minimum criterion for entry.

4.3. Sampling

Sound data gathering is crucial for research so that it may contribute to a theoretical framework (Etikan et al., 2016). This research project used a purposive sampling approach, whereby samples were deliberately selected based on their ability to provide the most "relevant and plentiful data" for the phenomena under study (Yin, 2009, p. 88). This approach is appropriate as it provided an in-depth understanding of a particular group of participants (unemployed South African youth who use the work seeker support platform).

All individuals interviewed were users of the work seeker support platform. They were unemployed, or recently unemployed South African youth from low-income communities. The number of participants interviewed was not predefined but dictated by what information emerged in the interviews. As phenomenology suggests, the researcher should continue questioning until there is no more to be said on the topic (van Manen, 1990). For this study, that point was reached after 14 one-on-one interviews. Analysis of the themes that emerged from these interviews was then evaluated in a focus group of 7 participants. Typically, phenomenological qualitative studies do not require large samples (Hancock et al., 2009)⁵. As is required of the postphenomenological method, the technology that each participant interacts with was also ‘interviewed’ using postphenomenological constructs designed to analyse digital interfaces. The interaction between users and the technology was ‘interviewed’ by analysing website using data that showed (on average) how users interacted with the platform. Themes that emerged from these various interviews were then tested in a focus group. The focus group comprised seven members, which is within the recommended range of participants for focus group research (Hancock et al., 2009).

The sample reflected the user demographics of the mobile platform. The majority of users are females between the ages of 20 – 24 and have a matric. The exact user demographics according to age, gender and education are as follows:

Table 2. Age distribution of participants

Age distribution	15 - 19	20 - 24	25 - 29	30 - 34
Percentage	10.6%	54.3%	30%	2.8%

Table 3. Gender distribution of participants

Male	20%
Female	80%

Table 4. Education of participants

Matric	88%
--------	-----

⁵ See Appendix 2 for more detail on how the data was collected (including how the sample was selected).

Less than matrix	12%
------------------	-----

4.4. Data analysis methods

Data analysis can be described as a “systemic search for meaning” (Leech & Onwuegbuzie, 2007, p. 564). Generally qualitative data analysis is not linear but iterative, with data being analysed as it is collected (Evers & Van Staa, 2010). Despite this iterative process, it is important to start with a selected analytic strategy (Yin, 2018). The analysis of interview and focus group data for this research project followed the five phases typically associated with qualitative data analysis approaches: compiling, disassembling, reassembling, interpreting and concluding (Yin, 2009). An analysis of the platform using the postphenomenological concepts of unit, vibration and tone required an auto-ethnographic analysis by the author.

For the interviews and focus group data analysis, the first phase consisted of compiling and storing the various data in a consistent form in a database. All interviews were recorded, and then transcribed. The transcriptions and recordings were stored digitally. The second phase of analysis involved disassembling the data, which in this study involved the coding of data. Before disassembling the data, the researcher should become well-acquainted with the data as a whole by reading through it and making notes (Vagle, 2014). For this study, the phenomenological thematic analysis was conducted using the selective approach, whereby the entire text is read and statements or phrases that appear relevant are highlighted and coded (van Manen, 1990). As new codes emerge, they were reviewed against existing codes to ensure codes are not duplicated (Leech & Onwuegbuzie, 2007).

Once the data had been reviewed and coded, it was analysed collectively for major themes. These themes were interpreted according to the relevant literature. Phenomenological themes can be understood as the ‘structures of experience’ (van Manen, 1990, p. 79); they describe an aspect of a lived experience. Phenomenological themes serve the purpose of: (a) providing a means to get to the notion under study, (b) giving expression to the essence of an experience, (c) describing the core of what is being studied, and (d) providing a simplification or reduction of a more complex notion (van Manen, 1990). The codes and themes that emerged during the

analysis of the individual interviews were reviewed by participants during the focus group discussion to ensure descriptive validity (Leech & Onwuegbuzie, 2007), after which time the process of disassembling, reassembling and interpreting the data reoccurred. The concluding phase of data analysis took place upon completion of all data collection (i.e., interviews, observations and the focus group).

For the platform analysis, the researcher accessed and interacted with each webpage that formed part of the user journey. Each page was analysed using the postphenomenological concepts of unit and vibration. To determine units, the number of distinct entities per webpage were counted. Examples of distinct entities include buttons, banners, forms, headings and navigation bars. Vibration was determined by the researcher's interaction with each webpage. There are no objective thresholds for what constitutes high or low vibration, and so this imposed a possible limitation on this study. However, using the phenomenological framework of unit and vibration to guide the author's analysis arguably reduced the degree of subjectivity.

The website usage data was provided in the form of heat maps showing (on average) how users navigated each page. In addition to this, data was provided for the number of returning users, the average amount of time spent on each web page, and the registration and profile completion rates. This data was used to triangulate findings from the interviews and platform analysis. See Appendix 4 for a summary of this data. To maintain the organisation's anonymity, heat maps are not presented.

4.5. Research criteria

According to Yin (Yin, 2009), there are four tests that are commonly used to establish the quality of empirical social research. These include construct validity, external validity, reliability and internal validity. Due to the exploratory and descriptive nature of this study, internal validity is not relevant to consider, as this is mainly a concern for explanatory studies where a researcher attempts to explain the causal relationship between things.

Construct validity refers to identifying the correct operational constructs to measure the constructs being studied (Yin, 2009). For this research project, the constructs alluded to in the

research question that require operationalisation include those listed below. These definitions are aligned with how the work seeker support platform defines its user target group. The operationalisation of these constructs informed the selection of research participants, and the selection of the platform for this case study.

- Unemployed: For this study, unemployment will be defined according to Statistics South Africa's definition as people who are willing and able to work and are actively seeking employment (Statistics South Africa, 2019). All youth in this study were unemployed when they registered on the platform but may have been employed at the time of the interview.
- Youth: Youth are defined according to the platform's definition as individuals between the ages of 15 and 35 years. This is in line with South Africa's official definition of youth.
- Users: Those who have registered with the work seeker support platform
- Low-cost: The investment in youth unemployment programmes in South Africa is significant – ranging from R4000 to R60 000 per participant (Graham et al., 2019). The online platform has a significantly lower per participant cost, as it is less resource-intensive than in-person training and job-matching programmes

External validity refers to whether a study's findings are generalisable. It is important to distinguish the difference between quantitative research that relies on statistical generalisation versus case study research that relies on analytic generalisation where the researcher is attempting to generalise to a broader theory rather than to another population (Yin, 2009). The generalisation for theory becomes increasingly possible with the number of cases included in the study (Yin, 2009). Phenomenological methods have been criticised for their lack of generalisability, as they focus on the lived experience of a particular phenomenon (Bloor & Wood, 2006). As this research project is a single-case study that investigated a unique phenomenon in-depth, the theoretical findings are not generalisable but were instead used to build a theory inductively.

The reliability test refers to the ability to reach the same results if the case study procedures are repeated. The goal of reliability is to minimise the errors and biases of the study. To pass this test, is to operationalise and document all case study procedures (Yin, 2009). For this study, the data collection procedures and interview questions have been included as Appendix 2 and Appendix 3, respectively. The validity of a phenomenological study also depends on the adequacy of the descriptions used. To achieve this, the researcher must capture the richness of the experiences relayed by participants so that readers may be able to reach the same conclusions (Bloor & Wood, 2006).

4.6. Limitations

A major limitation of this research is that when the research commenced, there were a small number of technological interventions available in South Africa that provided low-cost skills matching and skills development opportunities exclusively digitally to low skilled unemployed youth. For this study, only two were identified and only one of the two agreed to participate in this study. While there are a number of Youth Employment Programmes in South Africa that utilise technology in some aspects of their programme, most are high cost and require that youth have a minimum of a matric certification to enroll (Graham et al., 2019). The small number of ICT interventions relevant to this study, limited the number of cases that could be included, which in turn restricted the external validity of this study (i.e., the degree to which results may be generalisable) (Yin 2009).

Another potential limitation of this research relates to the retrieval of information from interview respondents. Firstly, respondents were required to answer interview questions in their second language. The richness of participants' descriptions may have been impaired by them having to respond in a second or third language, which may impact on the validity of this phenomenological study (Bloor & Wood, 2006). To address this possible limitation, participants were encouraged to use their mother tongue to communicate an aspect of an experience that they could not adequately communicate in English. The author endeavored to retain the centrality of the respondents' voices by using direct quotes from interviews as extensively as possible. Secondly, respondents may have felt pressured to provide positive accounts of the work seeker support platform if there was a sense that the information they were providing might have

improved their chances of finding employment. To mitigate this risk, the author emphasised that this study was independent and would in no way impact their employment prospects.

The sampling approach adopted for this study (purposive sampling) imposed another limitation, in that another researcher conducting this study may have come up with different characteristics considered to be important inclusions for the sample (Battaglia, 2011). To reduce the impact of this limitation, the author engaged with the organisation who developed the work seeker support platform on the pertinent characteristics of their user population to ensure this was reflected in the sample.

A final limitation is that one-on-one interviews and focus groups needed to take place digitally, as opposed to face-to-face. As discussed above, there are various possible limitations that arise from online interviews. The degree of anonymity may encourage participants to distort their views, and the nature of the focus group conversation may have been stifled as a result of using a text-based platform. To try and reduce the limitations imposed by using a WhatsApp group, the author made use of emoticons and voice notes. For the interview conversations, the author made a deliberate effort to establish rapport during the first call to request an interview. Participants were informed that they could respond in their home language whenever they wanted and were offered assistance with their job-search journey in exchange for their time.

4.7. Research Ethics

All human sciences research requires that the researcher be cognisant of the possible effects the research process will have on individual participants, organisations and others concerned with the research topic (van Manen, 1990). To better understand how this research may have affected stakeholders, I engaged with the organisation's staff and funders for their input. The organisation suggested that participants may perceive the interviews as an opportunity for employment, and so it should be made clear from the start that this study is independent and would not result in employment opportunities. To ensure that the organisation did not experience this research project as extractive, I asked if there were areas of interest that the organisation would like to see explored through this research. They confirmed that they had no additional questions to include.

During my initial engagement with the organisation, I emphasised that this research project endeavored to produce a praxis model that would be shared with them and could be discussed in a workshop, should they be interested.

In terms of ethical considerations for individual participants, all participants were assured that they will remain anonymous and were asked for their consent to participate (see Appendix 5). To ensure that participants did not experience the research process as being extractive, participants were debriefed on the research findings and were kept up to date on any practical implications the research findings may have had on the work seeker support platform. This helped close the feedback loop for participants by showing how their input contributed to the final research project. I also offered my time to provide support in any job search-related efforts (such as CV writing, cover letters, online profiles etc.).

5. Findings

The findings will be presented in terms of how they respond to the following questions that underpin the main research question:

1. What are the needs and aspirations of the end-users?
2. What are the personal, social and environmental factors impacting on the user's ability to realise their needs and aspirations?
3. How do the ICTD interventions under study help users to achieve what they consider to be valuable?

5.1. What are the needs and aspirations of the end-users?

5.1.1. Aspirations

Many respondents aspired to become an expert or professional in a particular industry for which they expressed a passion. A number of respondents had clear ideas of their 'dream job', even if their current work and educational experiences were not in that field.

"I would like to get a job like a tour guide, because I love working with people, and I work well with people."

"If I could only afford to go back to... I mean go to a drama school 'cause I can sing, I can write, so I just wanna become an artist, like to sing and act and become a writer."

"Film and media for me is like, I don't even know what... what is that word, I'm trying to get like these big English words, but it's my one, like, dream. And I really want to follow my dream and I really wanna follow my passion"

Most respondents had financial stability as their main goal. Some spoke of their desire to improve their standard of living, while others described wanting to be able to support their families. Those who had children expressed how providing for their child was now top priority, while those who were dependent on others for financial support, expressed a desire to one day be able to contribute to the household income.

"For me I just want to provide as best as I can, you know, just give myself and my son the lifestyle that I want us to... to live. I just want us to be financially stable and just be well off and not really need anything and just be able to provide for... for us."

"My goal is to get a permanent job in a good company... I'd like to [get a job in a good company] so that I can build a home"

"My big goal? Is to finish studying, getting a job, getting a car and a house, building a family. That's my big goal."

5.1.2. Need for immediate income from *any* job

In order to realise their aspirations of becoming qualified professionals, many expressed the need for finances to fund tertiary studies. Many respondents held tertiary qualifications in high regard, and perceived them as the key to unlocking their future goals. However, a lack of finances presented a barrier to pursuing further studies. The need to fund a tertiary education left many in a position of wanting to take on *any* paying job.

“Yes, I need to save up, to be able to invest in the future and be able to then, you know, become financially stable.”

“The things that I would need now... I would need money, so I can finish with the subjects I have left, because now I have to pay for that subjects for myself. So, I would need money, that's the only thing I would need - just to finish. Nothing else.”

“I just need money... for the course, the accommodation, food, transport, everything.”

For others, the motivation for taking on any paying job was to gain financial independence:

“I think it's about being independent. Because right now, I am depending on my uncle, my mom is paying my fees and everything. So if I could just get a job and do those things myself, it would be much better.”

“I'm at that stage now, you know, the whole I need to start with the whole financial stability and independence.”

Most respondents described their motivation for visiting job sites as a result of their desperation for income so that they could start saving for their studies and contributing to the household or providing for their children. They were using online job sites to satisfy an urgent need for immediate income, and not to find opportunities aligned to long-term career objectives. This behaviour is evidenced by most respondents' nonalignment between their previous work experiences and their long-term career goals.

5.2. What are the social, personal and environmental factors impacting on users' abilities to meet their needs and aspirations?

5.2.1. Personal factors an asset to realising needs and aspirations

All the young people interviewed described how their personal attributes positively impacted on their ability to meet their needs and aspirations. Respondents expressed enthusiasm, determination, adaptability and versatility. Despite the social and contextual barriers that young people faced in achieving their needs and aspirations, they expressed great determination for getting where they wanted to be. One respondent, who has been unemployed for four years, explained, "It hurts. But I don't give up. I believe that something will come up." This sentiment was echoed by numerous others:

"You know I've always, I always remain hopeful"

"I just want to fulfill my opportunities. When I get an opportunity, I have to grab it."

"I will try by all means to find a job."

"I must really work hard so I can achieve what I really want."

"What I can say is, when I want something, I go for it... Like anytime, there are job notifications, so if I see something that I like, I will apply."

"You just need to follow your dreams and put your mind to something and just know that once you do that and give it your all, you'll be able to achieve it. No matter how long it takes, no matter, you know, like it might... things might seem like they're setbacks or, you know, like something's just telling you not to do it. That's just a reason for you to just, like push on, to keep on pushing on whenever you feel like you want to give up or, you know, you must just push and just get... and go for what you want."

Many respondents described how this determination had changed their future trajectories for the better. Three respondents received poor matric results as a result of not having teachers for key subjects in the crucial final years of high school. Two of the learners managed to rewrite their

matric, and a third was able to access an opportunity to pursue tertiary education at a private institution.

All respondents showed an adeptness for languages (many could speak at least three languages) and displayed high degrees of adaptability: most respondents had experienced multiple contexts growing up and were able to adjust to each and continue to achieve academically. Some had transitioned from township schools to model C⁶ or private schools, or vice versa, or had moved from rural to urban areas.

While most respondents articulated an interest in a particular field, they also expressed enthusiasm for a variety of topics and a general love of learning. For example, one respondent had started his own clothing brand, but was also interested in photography and engineering - and had invested time and effort into developing these skills. Another respondent had experience in performing arts, but was also interested in pursuing a career in cooking, although he had enrolled to study Sports and Leisure Management as this was another interest. Another respondent had work experience in Tourism, but had multiple interests that she wished to pursue academically:

“There’s a lot of things, my friend, I’m interested in. It’s the art and the meteorology; the scientist weather - scientist for weather and climate... Private investigating and data analysis, crime scene investigating... those are my things; the things that I love.”

While these divergent interests gave the impression that respondents were full of energy and enthusiasm for multiple disciplines, these multiple divergent interests are often perceived unfavorably by employers. Employers’ typical preference for people to focus on and develop in one or two key areas is at odds with the paths taken by many of the young people interviewed. While they had personally experienced their varied professional and academic endeavors as

⁶ Model C schools refer to government schools in South Africa that were designated for white-only learners during Apartheid.

positive, it often resulted in them pursuing opportunities that did not necessarily build on their existing work or educational experiences (see Table 2 below). Respondents appeared to go through cycles of starting anew in a different field without leveraging their previous experiences. This arguably thwarts their ability to realise their aspirations of becoming professionals or experts in a particular area and securing a stable job, as prospective employers generally look unfavorably on CVs with such diverse experiences.

Table 5. Post-school education and career goals

Indicator		Number of respondents	% of sample
Aspirations to study further (n=14)	Yes	11	79%
	No	3	21%
Study choices aligned to career aspirations (n=14) ⁷	Yes	4	29%
	No	10	71%

5.2.2. Social factors: set up for failure and excluded from success

For some respondents, their divergent experiences resulted from their personal varied interests. However, for most, their work and study choices were governed by the resource-scarce environments in which they lived. The limitation on further study and career options was often imposed from high school. Most respondents who attended what they referred to as ‘township’⁸ schools, described it as a challenging time due to the prevalence of violence, drugs and a lack of teachers (see Table 3 below).

Table 6. Experience of high school

Indicator		Number of respondents	% of sample
	Yes	9	64%

⁷ This indicator refers to study choices that were already made, and those that were intended to be completed in the future

⁸ In South Africa, the term township is typically used to describe “underdeveloped, usually (but not only) urban, residential areas that during Apartheid were reserved for non-whites (Africans, Coloureds and Indians) who lived near or worked in areas that were designated ‘white only’ (under the Black Communities Development Act (Section 33) and Proclamation R293 of 1962, Proclamation R154 of 1983 and GN R1886 of 1990 in Trust Areas, National Home lands and Independent States)” (Pernegger & Godehart, 2007, p. 2).

Attended township-based high school (n=14)	No	5	36%
Experienced high school as challenging (of those who attended township-based high-schools) (n=9)	Yes	6	67%
	No	3	33%

The challenges that respondents experienced with teachers directly impacted on their future prospects as their matric results (which are the key to future opportunities) were negatively impacted.

“The only problem was with high school, since it was a township school. The problems I could say that most of us faced was, uhmm, teaching. We struggled with a lot of maths and science at the school. So yeah getting those teachers was a mission and a half.”

“But the problem there was my physics and maths teacher. I struggled with the subjects but I managed to pass. My maths teacher was always busy with the school stuff so he didn't really have time when he was teaching us. Maybe he would teach us once, twice a week and then in the other periods he would be busy with other stuff.”

After matriculating, most respondents pursued tertiary qualifications (though a few did so after taking ‘gap years’); however, not all were able to complete their tertiary studies due to a lack of finances. Of those who had dropped out, most expressed a desire to go back and complete their studies (see Table 4 below).

Table 7. Post-school education

Indicator		Number of respondents	Percentage of respondents
Applied to post-school education (n=14)	Yes	13	93%
	No	1	7%

Completed post-school education, of those who applied to post-school education (n=13)	Yes	8	62%
	No	5	38%
Desire to complete studies, of those who did not complete post-school education (n=5)	Yes	5	100%
	No	0	0%

Their personal determination and resilience, they believed, meant that one day they would be able to overcome the societal barriers to accessing tertiary education and complete their qualifications.

“One of my dreams or goals is to, so I studied counselling and communication for a bit but then I had to drop out because of fees, I couldn't afford them anymore. In the future, I would really like to go back to study and complete those studies. And eventually venture into psychology.”

“I first want to finish with school, and then after I'm done with my course, then I want to study acting in a professional way like in a university or a college.”

“I am trading so I can get myself to university to become a teacher. That's my passion. I also want to change the situation at home where I was the first one to get a Matric. So I am hoping to be the first one to get the degree as well.”

Regardless of respondents’ levels of educational attainment, all have very limited work experience and only two have ever been offered permanent work contracts. The little work experience that most were able to achieve was cited as a major barrier to their ability to access further employment opportunities. There was frustration voiced at this denial of access to opportunities as a result of no experience. It’s perceived as an unreasonable barrier, as it is deemed as a road-block for people who are eager to acquire opportunities to learn:

“Even if they want just a year's experience, once I leave school, I need experience. Where am I going to get that experience from because I need to look for a job so that I can get experience.”

5.2.3. Environmental factors: Bold aspirations bound by scarce realities

All respondents were from low-income areas, with a number of respondents living in townships. Respondents described these areas as busy, underdeveloped, dangerous and void of opportunities:

“In terms of development it’s very poor, there’s no electricity, lack of water and sanitation. It’s clustered actually.”

“Yoh, it’s very dangerous. And there’s no opportunities for, uhmm, basically if you are a soccer player then it’s rare that you would make it.”

“In the part that I live, it’s not really rough but it can be rough sometimes. It’s a place where a lot of people like to party, like to drink. In a way I would say there is no development.”

The scarcity of their living environments created multiple practical barriers for young people to pursue their aspirations and needs: none of the respondents had access to free and stable internet to leisurely spend time searching for study or work opportunities, many lived in areas far from universities or TVET colleges and did not have the funds to get transport to these institutions, and for many crime had directly impacted on their ability to pursue their future aspirations. One respondent felt she could not open an ECD Centre near her home because of the violence in the area, while another respondent was unable to apply for university because she had her bag and ID stolen just one day before writing the university entrance exam.

As living environments posed challenges to most respondents’ abilities to meet their needs and aspirations, so too did the home environment. The vast majority of respondents, despite being perceived as young adults by society, are still dependent on their parents or other family members for financial support and housing (see Table 5 below). For some this created added pressure to secure any paying job, and not necessarily one that was aligned to their interests or future career goals.

Table 8. Financial independence

Indicator		Number of respondents	% of sample
Financially independent (n=14)	Yes	0	0%
	No	14	100%
Currently looking for employment (n=14)	Yes	12	86%
	No	2	14%

This meant that getting a qualification or work experience in a particular field in order to achieve a future career aspiration had been suspended to instead focus on financially contributing to the household. The need to fulfill household obligations and expectations was often at odds with respondents' personal career goals:

“They used to tell me at home that I should be a doctor so that's why I was doing the sciences. But then I saw that this is not what I want, but it was too late to change and that's why I failed my Matric. So I was so stressed.”

“I am currently looking for work...You know, so I can support my family because I am only living with my mom and my younger sister. And currently I am the only man. Even though I am not old, I am the man of the house.”

Some female respondents with children voiced how this impacted on their ability to fulfill their needs. Two respondents had to drop out due to falling pregnant, and one had to relocate to be closer to family who could support with child raising responsibilities. While these mothers spoke to some of the additional challenges having children presents, they also highlighted how becoming a parent has increased their motivation for pursuing their goals - so as to be able to provide the best care possible for their child and set an example.

“It was more of the goal when I had my first child, when I became a mother. When motherhood hit me in the face, I had to be forced to change my faults.”

“I was thinking that I'm just going to have to refocus as my priorities have changed, so I have to just redirect and focus my energy elsewhere to make sure

first, cause my son comes first now. So, I have to make sure... let's just sort him out, to make sure that I try to provide, you know, the best way I can."

5.3. How does the work seeker support platform under study help users to achieve what they consider to be valuable?

To answer this question using a postphenomenological approach, one first needs to understand what the platform communicates to users, and how users subsequently respond. This will provide an understanding of how the technology is defined in terms of its relationship to the user, and if it enables users to achieve what they find valuable.

5.3.1. What the platform communicates

In order to understand how users interpret and respond to what is communicated by the platform, an analysis of what the platform communicates was required. The postphenomenological constructs for digital interfaces of unit and vibration were used to analyse the web pages that form part of the young person's online journey. The table below summarises the findings for each web page (red illustrates negative performance, amber represents moderate performance and green represents positive performance). As there are no standard thresholds to analyse these constructs with, the thresholds of low, moderate and high were constructed by the author and were applied based on the author's experience of using the platform.

Table 9. Website analysis

Web page	Number of units (Number of distinct entities)	Vibration			
		Amplitude (Interactivity)	Frequency (Speed at which engagement is encouraged)	Rhythmic articulation (Navigation)	Resonance
Home page	5	Moderate	Moderate	Low	Moderate
Candidate page	5	Moderate	Moderate	Moderate	Low
Candidate login	6	High	Moderate	Low	Moderate

Registration page	13	High	Low	Moderate	Moderate
T&C's	1	Low	Low	Low	Low
Dashboard	6	Low	Moderate	Low	Low
Guides and insights	5	Low	Moderate	Low	Low
View articles	4	Low	Moderate	Low	Low
Article	9	Moderate	High	Low	Low

The degree of interactivity required by each web page ranges from low to moderate. Moderate interactivity refers to pages that require some input from the user, but do not necessarily respond based on that input. For example, the Login and Registration page requires the user to input information but does not respond to this information in a way that is interactive. In this regard, the web pages behave in an extractive manner. The pages that have low amplitude are those where there are few or no opportunities for users to interact with units on the page.

While knowledge of the impact of interactivity on user experience is limited (Sutcliffe & Hart, 2017), there are some studies that indicate its positive effect (Al-Shamaileh & Sutcliffe, 2013). A complicating factor for discerning the impact of interactivity on user experience, is that interactivity exists in multiple forms (Cyr et al., 2009; Sutcliffe & Hart, 2017); although, “a common theme is that the website successfully provides information to the user, is perceived as responsive, and allows a sense of connection” (Cyr et al., 2009, p. 850). The generally low interactivity of the work seeker support platform, therefore arguably communicates a lack of responsiveness to the young people attempting to engage with the platform; the young person is expected to provide information without getting much feedback in return. The web pages do not enter into a dialogue with the user, but rather a one-way conversation where the young person is being mined for information.

The frequency of the web pages is generally moderate. A high frequency refers to units that encourage users to briefly engage with material, whereas a low frequency encourages users to take their time to digest the information presented. A high frequency may therefore be perceived

as negative in this instance, as it is intended that young people engage with the information presented. The high frequency is commonly a result of the small and voluminous amount of text on most pages, generally very tightly spaced. This dense cluster of text typically encourages users to skim over information without engaging with it in a manner that is often required.

The rhythmic articulation of the pages is generally low. Most pages have low rhythmic articulation as there are no clear signposts to orientate the user on each page. In some instances, there are three different navigation bars present on one page which creates confusion as to how one is supposed to move between different pages on the site. Poor navigation has been shown to negatively impact on user experience (Sauro, 2015) and significantly impacts on how users perceive website quality (Kincl & Štrach, 2012), whereas “Good navigation enables better recall of website structure and enhances content accessibility, yet allows users to freely move through the website based on their preference” (Kincl & Štrach, 2012, p. 4). Poor website navigation may be particularly frustrating for young people who are already struggling to navigate their transition from school to further education, or employment.

The resonance of the web pages is generally low. The symbols, layouts and language used are not typically considered to be resonant with young NEETs. For example, the concept of a Dashboard may be familiar to professionals who use dashboards as a management tool in a business environment, but they are unlikely to resonate with young South African NEETs, most of whom do not have any level of tertiary education, or work experience (De Lannoy & Mudiriza, 2019). The web pages containing articles are also presumably of low resonance to this target market. The articles emulate the form and style of online news articles, something that young NEETs are not generally exposed to considering how they search the internet (de Lanerolle et al., 2017).

Based on how the web pages measure against the various aspects of vibration, the tone of the platform appears to encourage minimal engagement. The user is presumably unable to meaningfully engage as a result of: the superficial levels of interaction (the interaction is mostly

extractive on the side of the platform), the unlikelihood of users to meaningfully digest information due to its high frequency, and the poor navigation that leaves users unable to find what they are looking for.

5.3.2. How users respond

To understand how users respond to what is communicated by the platform, interview responses were analysed together with website usage data. The website usage data reveals how users (on average) interact with various pages on the platform. The interviews helped to provide more detail on the nature of the interaction. Both the usage data and interviews reveal relatively low levels of user engagement with the platform, indicating that users experienced the tone of the platform similarly to what is described above.

The website statistics indicate that a high number of users reached the site through online searches. Respondents expressed a similar experience (as illustrated in Table 7): many described using Google as an online search directory for job listings (instead of going directly to websites that specialise in this service). Users would search for key phrases, such as ‘jobs near me’, and would then find the mobile platform listed as one the Google findings.

Table 10. Platforms used by respondents to access job opportunities online

Indicator		Number of respondents	% of sample
How job opportunities are accessed online (n=14)	Google search	10	71%
	Social media	1	7%
	Search directly on job websites	1	7%
	Use multiple online platforms (Google, social media and directly on job websites)	2	14%

“I don’t usually go to their app, but when I search and then it shows a job that is under [the platform] ... that’s when I use it.”

“What I usually do is, I say like... if I’m looking for retail jobs, I say retail jobs in Cape Town. If I’m looking for one in Hout Bay and I say retail jobs Hout Bay, then they would show according to their website; Indeed, all those - going down.”

“Usually it's just typing up in the search engine and Google like ‘jobs near me.’ Yeah, that's usually what it was. Or like ‘No experience needed jobs’ type like that because obviously I didn't have experience at the time.”

Using Google as a way to quickly access job listings may have resulted in two other usage patterns noted in both the website data and in the interview responses:

1. Low profile completion rates:

Finding the mobile platform through a Google search for jobs, created the expectation of being presented with a list of available and relevant job posts. When users clicked on the link from Google, and were then faced with what they described as a ‘long’ registration process, many felt discouraged from continuing as the time and data as their expectations were not being met:

“It’s not that you’re gonna apply directly for the job and then they’ll send you a message back that they’ll get back to you with say in two weeks or whatever, it’s ... the questions and answers that they do ask you, and sometimes you get so frustrated, you feel; is this really necessary for me to do? I don’t even know if I’m gonna get the position. You understand what I’m saying?”

Many respondents expressed a limited attention for engaging with content on different websites, and for completing a number of online registration forms requesting the same information:

“I did not complete my application 100%, as I gave up filling all my information as I felt that it was rather similar to other platforms, like Job indeed or is it Indeed Jobs something like that. What was that other one? I forgot. I felt that you fill in such a tedious form, only to not be contacted back or to apply for a job

where they specifically ask for a certain race, although you have the experience and the qualifications for it. And I just felt I should rather give up, due to my experience with other platforms...

"It's very complicated though, because we create so many things like every second week I think I probably forget my Facebook um email address... password I mean. So to make things with a password... I know they want to keep things safe, because ja, you get people who can just go into of yours and take your ID number for example and things, but ja, to create... to log in something and create a password..."

"Just the filling in of information was extremely tedious for me, I will not lie. It felt like filling in an About Me, my interests - like I'm doing it on a dating site."

"So, there was like uh that thing, and whenever I tried to click on that, it really just...then it just crashed... And I was just like, okay, well, I'm just going to like if this is not going to work for me then let me just, you know, lemme just leave, let me just go. I'm just going to exit"

"All of them are time consuming! My goodness."

"When you go to a website, you have to register with them first and that takes time."

2. Low number of returning users:

The website usage data indicates a low number of returning users: in 2020 out of 316 069 total users, only 2878 were returning users (0.91%) This may be the result of users searching for opportunities on Google, instead of visiting particular job websites. This indicates a need for quick access to job posts that one can apply for, without going through a registration process first. This need was expressed by a number of candidates when they described their preference for applying directly with organisations over email:

"The most trusted sites that I would go to is where it's specifically the company looking for a specific position to fill in. I didn't really put my all into the middle

man, your Indeed jobs, your Gumtree and so on. I didn't really invest in the middle man."

"Big companies will do posts when there is an opening in their company and then people share the posts around. That's where I come across them, and then I go onto their website and see what it is all about."

"For me it wasn't as... how can I say... as easy as the other websites when you see a job and send in an email, because I feel that sending an email with your CV is sometimes just easier and quicker to do."

"To make things easier for myself, because sometimes you know days go so crazy and when you do look for new opportunities, to get an email and just forward your CV to a certain email address, it's much more easier than going on a website, logging in and applying for something."

"Because the applications on the websites are easy for me to just load them [directly from the company] and then if I qualify, they will just get back to me and then it's much easier that way."

"It's just more easy for me to get a email address and send a CV."

While the usage statistics suggest that a high number of users do not make it past registration (i.e., they do not complete the process of registering their account), those who do proceed with the registration process are unlikely to engage with the learning modules and other written articles. These findings from the usage statistics align with interview responses (see Table 8 below).

Table 11. Number of respondents who accessed skills development content

Indicator		Number of respondents	% of sample
Accessed skills development learning and information (n=14)	Yes	1	7%
	No	13	93%

Only one respondent had completed the developmental content on the platform, and many struggled to recall what other content was available, suggesting low levels of engagement. Low user engagement is also evidenced by the limited time users spend on the platform, which was reflected in both the website usage data and the interviews. The interview feedback suggests that people were focused on finding jobs to apply for, and if they could not find relevant job posts they would log off:

“You just want to see the job there and you just want to apply. It’s not really like you read about what the site is about.”

“I didn’t read much... it puts your CV out there for any employers that access the app, to see who is out there looking for a job. But I didn’t read much.”

“I kept going back in to check, it would just literally not even be like more than five minutes, depending on how long it took to log me in. Just to go through. Just to click through all my tabs. And I was like, “Ok, nothing’s happening.” And then click through the notifications, no notifications, ok and then I’d log out again. So, it wasn’t even more than five minutes.”

“I only visited the web pages, so... but I don’t quite remember the other stuff... I want to find a job, so that is why I still use it.”

5.3.3. How does the platform help users to achieve what they find valuable?

Based on the website usage data and the interview responses, users appear to have superficial and unsustainable interactions with the platform. They do not engage with the platform’s full offering, and do not seek out future interactions. Based on the interview findings, it is apparent that most respondents are unable to distinguish between the different work seeker support and

job listing platforms (see Table 9 below). Often respondents were unable to recall their specific experience with the platform under study, but spoke about their experience with job listing websites generally - as if they all offered a similar experience:

“I don't want to lie, I have been to many websites. I don't remember registering on this website but maybe I did..., but I can't really remember. I know I applied on a lot of websites so yeah.”

Table 12. Number of respondents who conflated the platform under study with other websites

Indicator		Number of respondents	% of total
Conflated experience of platform with other websites (n=14)	Yes	12	86%
	No	2	14%

The majority of respondents experienced challenges with job websites and described how these challenges had a detrimental impact on how they felt about their future job-search journey (see Table 10 below). Respondents described how most websites require that users provide a vast amount of personal information, which takes valuable time and data, without being able to guarantee anything in return.

“It makes me feel angry, because, obviously I don't have one CV on my phone, I have three, four, five, then when I upload one, it doesn't go through, then it takes me back. It's like I'm going to start everything again. It makes me angry.”

“Oh, it takes a lot of time... It's not really nice when you are starting.”

Table 13. Challenges experienced when using online platforms, and the impact on the user

Indicator		Number	% of sample
Experienced challenges when using job websites (n=14)	Yes	12	86%
	No	2	14%
	Consumed data	2	5%

Challenges of using job websites, of those who experienced challenges (number of mentions = 39)	Scams	6	15%
	Too time intensive	9	23%
	No feedback on applications	10	26%
	All positions require experience	8	21%
	Confusing	4	10%
How these challenges made users feel, of those who experienced challenges (n=12)	Frustrated	5	42%
	Discouraged	5	42%
	Tired	2	17%

A lack of feedback was the most commonly cited challenge. Many respondents how this lack of feedback left them feeling frustrated, tired and discouraged from continuing their job-search journey. There was a sense that respondents spent a lot of time and energy completing online profiles and CVs, and then applying for advertised posts and never receiving feedback. The effect of no feedback was described with particular dismay. Without feedback, respondents explained that they were left feeling uncertain of what was wrong with their application, and where they needed to improve.

“I felt as though I was put on a waiting list that was not promised work. So it was extremely tiring, if I can say. And it gave no sense of hope, as most platforms.”

“I applied for a job and I haven't received any answers about the job. I don't know if the problem is my CV or I don't have enough requirements or qualifications... I feel hopeless... Because I send, and I don't get any response about the applications.”

“You wait because obviously things aren't going to happen, like right off the bat, you know... I mean, obviously I knew that. But, you know, like three months turned into six, six turned into a year. And I was just like, ‘Okay, no, I'm just going to try to find another way...”

“It's actually irritating because you don't know where you stand or which skills, or aspects you could improve on.”

“That's why I don't like to use the internet. Because sometimes, we are busy uploading our CVs and there is no feedback.”

“I think it was difficult because I didn't get any reply. So I think I made a mistake. I think I must start again to apply because there is no feedback.”

“I was always applying and filling my details, submitting my CV and no feedback. So I feel that these online job searches are useless.”

“I get a bit discouraged. When I think of applying again, I just think of the fact that I won't get a response.”

“I think that [feedback] would be better because I would know that I didn't get the job so I can move forward and apply for other jobs.”

“They made me feel worse because of this whole thing I was saying about getting no feedback, because not getting any feedback can really make one feel discouraged.”

“It's very straining. Very emotional sometimes. Feel like giving up because we don't get answers.”

“The companies don't get back to us. Out of ten, there's only two that would say you were unsuccessful and they would get back to us. But the rest just keep quiet.”

“It's to get back to us. Tell us why we missed it. So the next time we apply, we apply knowing based on what they want.”

Most respondents described the sense of exclusion they experience when trying to access and navigate online platforms, partly because it is difficult to find the information you need and partly because the opportunities listed do not align with their skills and experiences. Many described the mobile platform as ‘confusing’ and spoke in particular about how they felt overwhelmed by the amount of reading required. This sense of confusion is evidenced by the website usage data, which illustrates how users are often unable to effectively navigate their way around the platform and spend little time engaging with the written content. Another source of this sense of exclusivity was the requirements for the types of job opportunities listed. All

respondents described how they felt excluded from job market opportunities, as most positions on job websites require work experience. Respondents described how this made them feel trapped in a state of un-employability - as they need work experience to be able to apply for jobs but were not being afforded the opportunity to gain that work experience.

“Most of us don't have enough patience due to the fact that two to three years experience is required for most of these entry level positions, and most of us don't have that experience due to us waiting for an opportunity. Just one single opportunity, even if it's just to job shadow or anything of that sort. But because experience is so worshipped, put on a pedestal - for those who came out of matric, for those who came out of varsity, it's incredibly difficult to get experience right away. [The platform] almost puts you on a waiting list, puts you on hold. And we don't have that time, I certainly don't have time.”

“And the other thing, they are looking for a lot of experience. They say five years experience but I am just 23 years old. Where do I get the five years experience? Some of us are coming from college as the first year out of college so it's too much for experience.”

While the majority of users expressed that job websites negatively impacted on how they felt about their future job-search journey, there were two respondents who spoke of the positive impact that the mobile platform had on their perceptions of finding work (one respondent from the one-on-one interviews, and one from the focus group). Both these respondents had managed to obtain jobs through the platforms and expressed how being able to connect with opportunities through online platforms made them feel hopeful about their future prospects. It may be argued then, that in cases where mobile platforms enable users to achieve what they value (such as securing paid job opportunities), users are positively impacted. The reality however is that this is not the experience for the vast majority of users. Based on how the majority of respondents experienced the mobile platform, it appears that it does not help users to achieve what they find valuable. This unfortunately seems to be the experience respondents had with numerous job listing platforms. The findings suggest that the needs and aspirations of the majority of respondents were not made more achievable through their experience with different online platforms, and that instead, they were made to appear further out of reach.

5.4. Focus Group Findings

For this study, one focus group was conducted comprising seven users of the work seeker support platform. The objective of the focus group discussion was to verify the findings that emerged from the one-on-one interviews, specifically those themes that related to how users respond to the work seeker support platform. There were six initial emergent themes from the interviews regarding how users responded to the work seeker support platform (all of which are detailed above). These themes were tested with the focus group. For each theme, a card was created to provide the group with a visual illustration for the discussion (see Appendix 1).

Theme 1: The conflation of work seeker support platforms with other job websites

What emerged from the interviews was that many respondents were unable to recall their specific experiences with the work seeker support platform under study, and instead conflated their experiences with other job websites. Through the focus group, I wanted to confirm if this analysis resonated. Focus group respondents were asked if they felt that websites like the work seeker support platform under study felt the same as other job websites. Most respondents agreed. One respondent explained that often the same opportunities are advertised across different websites, and so it is difficult to discern different websites. Another respondent added that websites often use a similar layout and format, and so the experience of different platforms feels similar. This suggested the respondents did not engage with the developmental content on the work seeker support platform, and did not experience this as value-adding. This idea is expanded upon in Theme 2.

Theme 2: Young people use the internet to search for jobs, not to read career information

The conflation of work seeker support platforms with other job websites seemed to be as a result of users not engaging with the career development content and m-learning modules. Through the interviews, it appeared that most respondents were under pressure to find work and therefore not inclined to invest time reading career development content or completing online learning activities. Theme two strongly resonated with focus group respondents. The lack of interest in career advice was as a result of urgently needing an immediate income. Some respondents explained that they felt being 'choosy' about their next job may mean it takes longer to secure

employment. One respondent explained: “I feel being choosy will cost me because now I’ll be focusing on getting a job based on what I studied and how long will it then take me to get that job?” Another reason for not engaging with career advice is that it “tends to be long”. This sentiment reinforces findings from the one-on-one interviews where people described their online job-search activity as being driven by a sense of urgency for income.

Theme 3: Work seeker support platforms are confusing to use

During the one-on-one interviews, most respondents described the platform as confusing to navigate. During the focus group, this was not agreed to by all respondents. Two respondents described how job websites were not confusing as they all had a similar layout; however, these respondents appeared to be describing job websites more generally, and not work seeker support platforms that offer e-learning and career information. Two respondents agreed that websites are confusing, but then went on to explain issues they experienced with functionality (for example, being taken to a web page about a competition after clicking ‘apply’). This seems to suggest that respondents did not find the websites confusing to navigate but were confused and frustrated when the websites did not function as they were expected to.

Theme 4: Work seeker support platforms take too much time

All respondents strongly agreed that platforms take too much time. Many referenced the lengthy registration processes, and the requirement to complete information that is often already on your CV. One respondent explained, “Job websites take too much time, trust me! Filling in all your details, and they ask you to upload your CV with all the same information. I find it pointless, it’s time consuming!”

One respondent acknowledged that although registration processes take time, it is generally a once-off requirement and you can then apply for multiple jobs after having registered.

Theme 5: The worst thing about job websites is that you don’t get feedback

I wanted to interrogate whether a lack of feedback was experienced as a particularly negative aspect of using job websites. Some respondents described not getting feedback, but others stated

they did receive feedback when applying on a particular website. Those who did not receive feedback described the negative impact this had on their attitudes towards job-searching.

“I've sent countless emails and only one company replied to say the application was unsuccessful... that was something [...] waiting and hoping for a call or feedback.”

Respondents in the focus group appeared more affected by online scams. One respondent described the prevalence of online scams, which discouraged her from using job websites to find opportunities. Another suggested that websites should be made to verify opportunities, before posting them.

Theme 6: Most job websites say you need experience

Most respondents stated that this reflected their experience. They also then went on to describe how this affected how they felt. Many felt discouraged, hurt and frustrated by this requirement. As emerged in the interviews, the common requirement for experience excludes many young work-seekers and creates feelings of frustration and discouragement.

“It's discouraging because you can never gain experience without being given a chance to learn.”

“It hurts because some of us don't have experience.”

“It's unreasonable, to have experience you have to be given a chance to work and gain experience.”

“It saddens me because now not everyone has experience so if anything, we should be granted opportunities regardless in order to have that experience they are asking for.”

The themes that appeared to resonate most strongly with this focus group were the following:

- Theme 1: The conflation of work seeker support platforms with other job websites

- Theme 2: Young people use the internet to search for jobs, not to read career information
- Theme 4: Work seeker support platforms take too much time
- Theme 6: Most job websites say you need experience

The focus group feedback provided a more nuanced insight into themes three and five (“Work seeker support platforms are confusing to use” and, “The worst thing about job websites is that you don’t get feedback,” respectively). It appears that some respondents found the functionality of some websites ineffective, but did not find navigation confusing. Some respondents stated that the general similarity in layout between job sites made navigation easier, as users became familiar with the layout. It may be that users are fairly comfortable with navigating job websites, but not with navigating learning content that is structured on the work seeker support platform in a way that is dissimilar to other job websites. The confusion expressed in the focus group and in the interviews may be reflective of instances where websites do not function as expected, and not confusion on how to navigate the platform. Regarding theme five, there were some respondents who raised the issue of scams as a major concern for using the internet to search for jobs, and not the issue of a lack of feedback. Scams were also raised as an issue in the interviews. It may be that scams make users weary of online opportunities, but once those users apply for opportunities online - it is the lack of feedback that is particularly damaging.

5.5. Conclusion

It emerged from the findings that the young people interviewed generally aspired to become financially independent professionals. However, none of the respondents were financially independent largely as the result of constrained economic environments in which they lived. These constraints have limited their ability to progress academically and professionally. The need for income appears to override respondents’ long-term aspirations in that they are enticed to apply for any paid opportunity online, and not those that enhance the likelihood of realising their long-term goals. This results in respondents not engaging with developmental content on work seeker support platforms (as is evidenced by the interviews, website usage data and focus group), as this content does not address their immediate needs, though it would support the achievement of their long-term aspirations. In addition to the content not meeting users’ immediate needs, it is

also structured in a way that limits interaction (based on the platform analysis using the concepts of unit and vibration). The way the platform is structured, together with respondents' urgent need for securing paid opportunities, limit engagement with developmental content.

Instead, respondents search for any opportunities using a search engine, apply for positions that do not necessarily align with their skills and experience, and do not receive feedback on these applications. This lack of feedback is experienced as demotivating, and possibly further disincentives young people from investing time and energy into developmental content, as well as registering on other websites where they may find opportunities. Based on these findings, for those young people who do not connect to job opportunities (i.e., the vast majority of the work seeker support platform's users), the work seeker support platform is not experienced as the enabler it was intended to be, but rather as a source of frustration, exclusion and hopelessness to young people who already face multiple systemic barriers to economic emancipation.

5.6. Discussion

5.6.1. Contributing to users' capability sets

This study has adopted Sen's CA as a lens through which to view the experience of young unemployed youth using a work seeker support platform. The findings suggest that the work seeker support platform under study provided a potential means to achieve, but failed to translate into actual achievement. Sen's CA distinguishes between the means to achieve (such as goods and services), capabilities (the freedom to achieve) and functionings (actual achievement) (Robeyns, 2005). According to Sen, it is the expansion of one's capabilities that is important to development as this directly impacts on a human's quality of life, and indirectly impacts on the economic development of society by increasing an individual's opportunities to be productive contributors (Alampay, 2005).

Applying Sen’s concepts of the means to achieve versus the freedom to achieve and actual achievement suggests that the work seeker support platform under study does not promote user development. The work seeker support platform represents a potential means for young unemployed youth to make informed career decisions and get access to the right job. However, the conversion factors present in users’ lives (the personal, social and environmental factors described in the findings section above) negatively impact on the work seeker support platform’s ability to convert from a means to achieve into a freedom to achieve. As discussed above, personal characteristics include mental and physical conditions, literacy, and gender. Social factors refer to social norms, social institutions (e.g., rule of law, political rights, public policies), and power structures (e.g., hierarchy, politics). Environmental characteristics include climate, infrastructure, institutions, and public goods (Sen, 1992).

Figure 1 below illustrates how the work seeker support platform could have expanded users’ capability sets, should the conversion factors have been enabling:

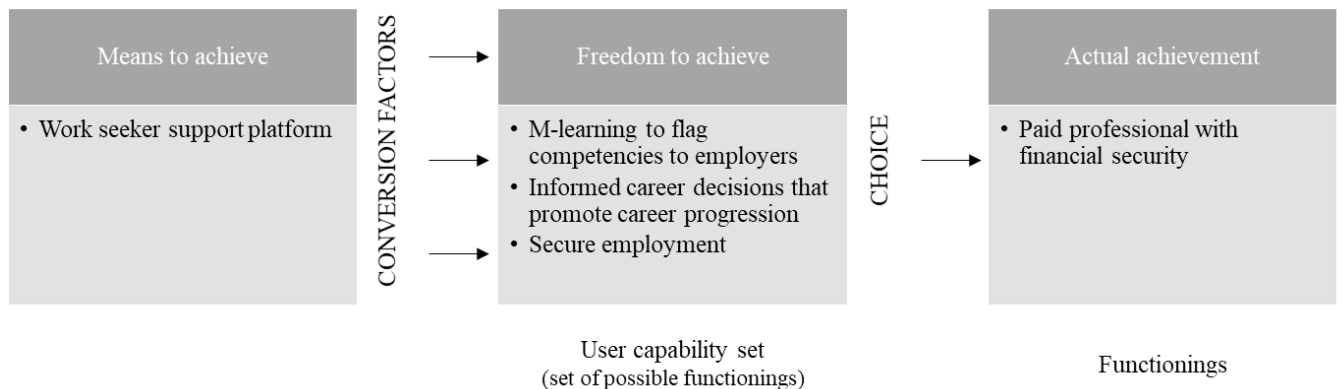


Figure 1. Impact of conversion factors on users of a work seeker support platform

The study’s findings evidence how the conversion factors impacting on users’ lives, negatively impact on the work seeker support platform’s ability to expand users’ capability sets. This section will explain how respondents’ personal, environmental and social factors may have impacted on their freedom to achieve what the work seeker platform provided.

Personal factors

The personal conversion factors include respondents' interests, language and life stage. Based on the findings, the following personal factors appear to have inhibited respondents' engagement with the platform: (1) the platform did not speak to their interests, (2) all the content was in their second or third language, and (3) the platform was not structured in a way that is engaging for a young audience.

Both content and layout are key determiners of how users perceive website quality (Al-Shamaileh & Sutcliffe, 2013; Kincl & Štrach, 2012; Sauro, 2015). Content can serve as a positive determiner of website quality if users find what they are looking for, and a negative determiner if they do not (Kincl & Štrach, 2012). Based on this study's findings, users of the work seeker support platform were looking for content related to getting a paid job. Being unable to find this content created a negative perception of the website, and was possibly the reason for the low user engagement and return rates evidenced by the website usage statistics. A second reason for the low engagement with content, may be that it was all in English (the second or third language of all users interviewed). When users struggle to read and comprehend content easily (due to low literacy levels in that language), they employ a number of strategies to save the cognitive energy required to decode the information (Romano Bergstrom & Schall, 2014). Some of these strategies include: fixating on particular pieces of texts, skipping sections, re-reading words, and 'satisficing' whereby users deduce meaning using the least cognitive effort possible (Romano Bergstrom & Schall, 2014). For those with low literacy levels, 'satisficing' often results in the incorrect meaning being deduced. Based on the website usage statistics, it was clear that users (on average) employed these types of strategies, as they focused on particular sections of the website, then would skip sections before returning to the initial section. These usage patterns illustrate users limited meaningful engagement with the content.

In addition to a lack of relevant content, the way in which the content is structured seemingly failed to engage the audience at which it was aimed, namely unemployed adolescents. The majority of the platform's users are between the ages of 18 and 24. This age group is regarded as being within the developmental period of adolescence, a period characterised by risk-taking, novelty-seeking, impulsivity, heightened sensitivity to incentives, a preoccupation with self-

identity and peer affiliation (Blakemore & Choudhury, 2006; Casey et al., 2008; National Academies of Sciences Engineering and Medicine, 2019). Studies have found that user experience is influenced by age (Brajnik & Giachin, 2014; Kim et al., 2013; Romano Bergstrom & Schall, 2014) , and that young adults' experience of a platform is influenced more strongly by hedonic and pragmatic factors, than other age groups (Kim et al., 2013). Novelty-seeking behaviours may be the reason why adolescent respondents do not visit websites habitually, struggle to complete long online registration forms requiring similar information, and engage with the platform in the erratic manner that the website usage statistics suggested (as described in the paragraph above).

Environmental factors

The initial limited engagement that users described having with various work seeker support platforms may be a result of the socio-economic environments in which they live. All respondents described experiencing various conditions of scarcity: a scarcity of time, of work opportunities, of resources, of data, and of feedback. While there are a number of studies that attest to the impact one's social, economic and cultural contexts have on user experience (Al-Shamaileh & Sutcliffe, 2013; Arhipainen & Tähti, 2003), few studies focus specifically on the impact socio-economic deprivation has on how users engage with online platforms. However, the effect of this type of scarcity on one's cognitive processing is well-known. Scarcity affects decision-making: under conditions of scarcity, people focus on their most pressing needs and are acutely aware of the opportunity cost (Shah et al., 2015). This focus may result in particular economic behaviours that serve to sustain one's state of poverty (Haushofer & Fehr, 2014). Such behaviours include risk-aversion and the inclination to discount future payoffs. These behaviours may manifest themselves in a 'low willingness to adopt new technologies and low investments in long-term outcomes such as education and health' (Haushofer & Fehr, 2014, p. 862).

The low levels of user engagement evidenced by the website usage statistics, interview responses and focus group feedback may be explained by the following behaviours that manifest under conditions of scarcity: (1) the high levels of risk aversion, (2) a focus on immediate goals (and the consequent limited attention for other things), and (3) a keen sense of opportunity costs. The

aversion to signing up for new technologies is evidenced by users' habitual use of Google as a job-search platform, instead of using multiple websites specialising in this service. Limited attention and a recognition of opportunity costs may further explain low levels of user engagement with different job websites. Respondents' limited attention was evidenced by their poor recall of the different websites they had registered for, and of their login details to access these sites.

Respondents' limited attention may be further diminished by slow download speeds, which was expressed as an issue when respondents used public Wi-Fi or were in areas with poor signal. In instances of slow connection or of other technological breakdowns, many respondents gave up using the platform. This giving up may be the result of the increased opportunity cost of using the platform (in terms of time and data), in instances where free, relatively fast internet was not available.

Another cognitive effect of scarcity is the focus on immediate needs versus long-term goals. This focus was evident in respondents' descriptions of the choices they made after school, choices that were often at odds with their long-term aspirations. All respondents experienced what appeared to be very staggered and disjointed transitions from school to further education or employment opportunities. These staggered transitions are reflected by other studies examining the movement of South African youth from school into employment (Branson et al., 2019; Mlatsheni & Leibbrandt, 2015; van Broekhuizen et al., 2016). While there are a number of factors that contribute to these staggered transitions, one factor pronounced in this study's findings was that of young people prioritising an immediate need for income over their long-term academic and career aspirations. This focus on immediate needs may have reduced their engagement with the platform's skills development content, as although this content may have been useful in helping individuals to meet their long-term goals, it did not meet their immediate needs of securing a paying job.

Besides the cognitive impacts of scarcity, educational experiences may also explain limited user engagement with the work seeker support platform. Most respondents expressed challenging

educational experiences and limited financial resources to access or complete qualifications at institutions of higher learning. A number of respondents had challenging high school experiences and many had struggled to realise their aspirations of completing tertiary education. Poor quality education has been shown to create poverty traps for young people in South Africa, as it directly negatively impacts one's labour market prospects (Spaull, 2015). Poverty limits access to online content, and potentially how one engages with that content (as has been explained by the concept of scarcity). While the relationship between users' educational experiences and their levels of engagement with online content and learning lie outside of the objective of this study, other research suggests there may be a link. It may be that negative earlier experiences with learning and education discourage users from engaging with online learning and assessments. Some factors that have been found to improve learner outcomes in online learning include: computer literacy levels and attitude towards online learning (Li & Yang, 2009), academic locus of control, metacognitive self-regulation (Lee et al., 2013), and learner satisfaction with online content (Palmer & Holt, 2009). Learner satisfaction with exclusively online content is positively associated with: how learners felt about their ability to communicate and learn online, having a clear understanding of what was required to succeed in the unit, and how well they thought they were performing in the unit (Palmer & Holt, 2009). It is possible that the demographic of users at whom the work seeker support platform is targeted lack these attributes due to various personal and environmental constraints (such as a lack of access to computer literacy skills, and a lack of exposure to positive learning experiences) and so are unlikely to succeed. Most respondents lacked access to the infrastructure required to easily engage with online content. This arguably prevented respondents from engaging with and successfully completing the online learning content.

While the aforementioned studies illuminate possible explanations for the low completion rates of the platform's m-learning modules, their relevance is unclear as many of these studies focus on students in tertiary education, or learners in school, and not on NEET youth. While this study has not sought to determine the drivers of poor completion rates with online learning content, it has illustrated how personal and environmental factors (such as one's experience with education, or one's home language) may inhibit an ICT intervention's ability to provide its users with the freedom to achieve what they value.

Social factors

In terms of social conversion factors, most respondents had no work experience, and were financially dependent on their parents. Socially, these young people are therefore considered ‘dependents’ and not economically contributing members of society. Many respondents described how this financial dependence created an urgent need to find a paying job, which possibly discouraged them from engaging with online learning content and what they experienced as lengthy registration processes.

Without the aforementioned conversion factors at play, it is imagined that young NEETs would have the freedom to achieve: competencies through online learning modules that could be flagged to prospective employers, better career decisions based on the career information provided, and access to paid employment opportunities. However, when contemplating how work seeker support platforms can be improved, the focus should not be on how to alter the conversion factors experienced by users. Rather, the focus should be on developing an understanding of how these conversion factors impact the relationship users have with a technology. Conversion factors are ever-changing, and impossible to eradicate. For example, one cannot undo users’ educational experiences, or the systemic inequalities that have marked their lives. Therefore, when considering how to improve ICT interventions, a focus on conversion factors as barriers to achievement is arguably misplaced. Instead, this study argues that the contextual factors must be understood in terms of how they mediate the relationship users have with the technological artefact. As discussed in the next section, the work seeker support platform is constituted by its relationship with users, and it is this relationship that needs to be interrogated in order to reimagine how work seeker support platforms may better realise their development goals.

5.6.2. The mediating role of a user's context on technology: The reduction from platform to job post

Postphenomenology posits that technology should be understood in terms of the relations humans have with them, and not as entities within themselves. For postphenomenology, “subject and object are constituted in their mediated relation” (Rosenberger & Verbeek, 2015, p. 12). This study's findings illustrate how multiple contextual factors impact on how users engage with various platforms. These contextual factors, combined with the unit and vibration of the platform's interface, impacted on how users were able to use the technology to meet their needs and aspirations. Through limited, infrequent engagement with the work seeker platform, the technology does not serve the role of work seeker support platform. Instead, Google was used to search for opportunities and information, and the platform (as with other work seeker support platforms) was treated merely as a job post. Users would click on the ‘posts’ and if the webpage they landed on did not immediately appear to be useful or relevant to their search criteria, they left the platform. This finding highlights how a technological determinist view of an intervention can be at odds with how it is experienced by users, as illustrated in Figure 2 below.

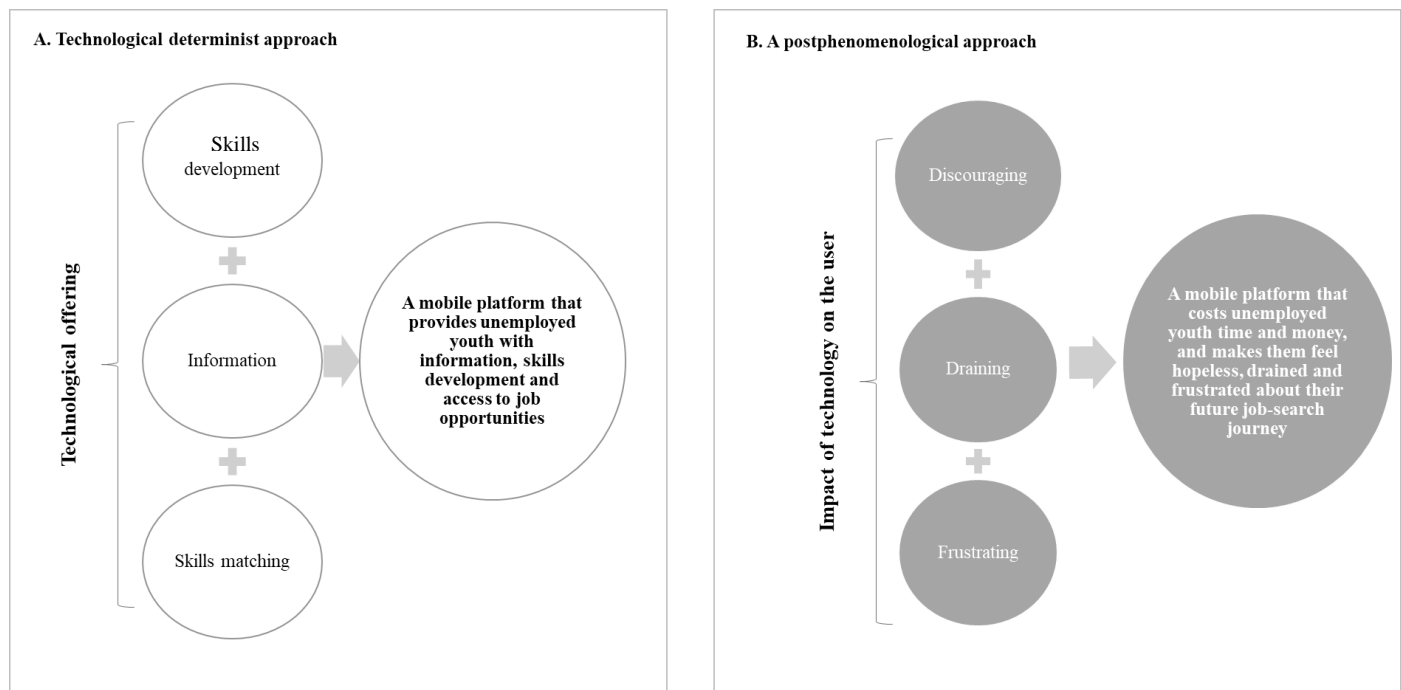


Figure 2. Defining the work seeker support platform from two perspectives

In addition to the two descriptions above, there exists another postphenomenological perspective of the platform: one from the view of users who are connected to job opportunities. As discussed in the Section 4, the few respondents who were able to secure job opportunities through the platform had a positive experience of it, an experience more aligned to the technological determinist interpretation of the platform. These divergent perspectives on the mobile platform illustrate the postphenomenological concept of multistability, whereby technological artefacts are constituted differently by human-technology relations that may change in different contexts (Aagaard et al., 2018). As illustrated by this study's findings, for users who accessed job opportunities, the mobile platform was experienced as an enabler of employment opportunities and economic engagement. While for those who were not able to access job opportunities, the platform was experienced as a source of economic discouragement. The concept of multistability evidenced in this study highlights the importance of understanding the users' different contexts and experiences when designing an ICT intervention.

As described above, the mediating role that technology has on humans, serves to 'reconstitute' how the technology is used (and thus subsequently experienced) by the user. The users' experience of the platform as discouraging, draining and frustrating influences how the technology is 'reconstituted' by the user, and how, similarly, the user is then reconstituted by the technology. This postphenomenological understanding of how technology and humans interact, is illustrated by the findings of this case study where the initial negative experience users have with the platform informs how they interact with the platform going forward. Users who initially found platforms to be confusing and laborious, continued to interact with them superficially. They treated the platforms as job posts, instead of sources of information and learning for career progression. This ongoing interaction with platforms as job posts, arguably continues to reconstitute the platforms as such. Similarly, by not providing users with the needed developmental outcomes and jobs, the platform arguably continues to constitute the user as an unemployed young person, without the skills required to access jobs. This cycle of how the human user and technological platform act as mutually reconstituting forces is described in Figure 3 below.

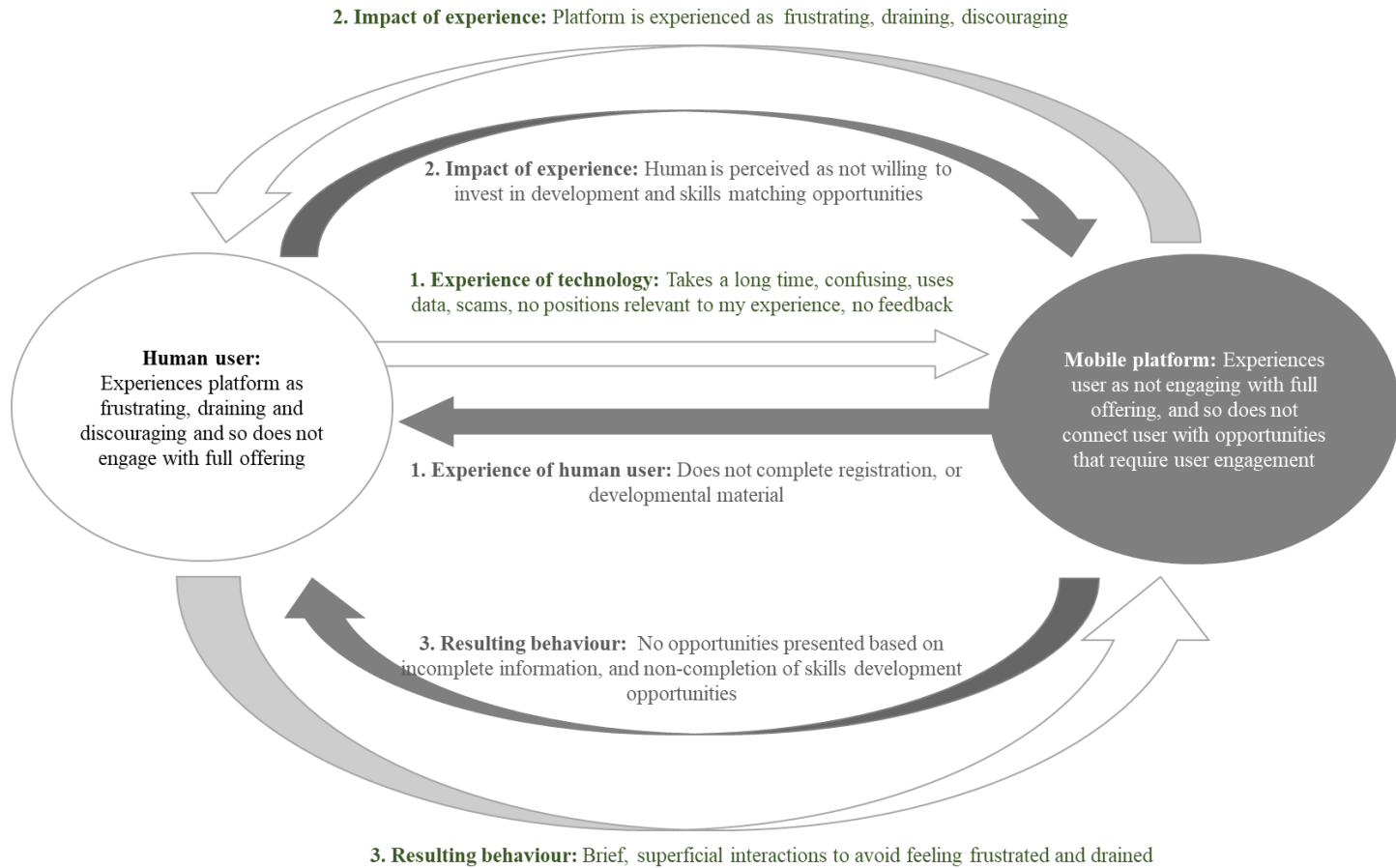


Figure 3. The mutually reconstituting cycle between platform and human user

The human user initially experiences the platform as time-consuming, confusing, data-intensive, a potential scam, not having relevant positions based on the user’s experience and as not providing feedback. These initial impressions as described by many respondents are understandable, based on the unit and vibration analysis of the platform. This initial experience leaves a user feeling frustrated, drained and discouraged. This informs how the user engages with the platform going forward: the user continues to have superficial interactions with the platform to avoid feeling frustrated and drained, the user does not complete their registration information, and does not engage with the online learning that is required to be matched with opportunities. These behaviours reconstitute how the technology perceives the user. The technology perceives the user as not investing in the completion of registration or learning content. This informs how the technological platform engages with the user going forward. The user is not presented with

employment opportunities due to their incomplete information. This lack of opportunities reinforces the users' superficial interaction with the platform.

For young people using worker seeker support platforms where they are unable to find opportunities, the possibility for securing opportunities elsewhere are reduced. For this reason, a number of respondents indicated a preference for either submitting CVs in person, or via email directly to companies. The concept of trade-offs is expressed in postphenomenology by the concept of amplification/reduction, which states that all technologies involve a trade-off: where one experience is amplified, another is reduced (Aagaard, 2017; Rosenberger & Verbeek, 2015). Technology transforms our perceptions by either amplifying them or reducing them – and what gets amplified or reduced may change in different contexts. This possibly explains the low number of returning users to the platform. The time investment the platform required meant a reduction in time available to apply for jobs elsewhere, even though this time investment would amplify users' chances of securing employment on the platform in the long-term.

Another aspect that contributed to how users reconstituted the platform, is the high degree of sedimentation across job platforms. Many users struggled to distinguish their experiences on different websites, which suggests a high degree of sedimentation. In postphenomenology, sedimentation refers to the 'force of habit associated with a given human-technology relation' (Rosenberger & Verbeek, 2015, p. 25). While high sedimentation may be advantageous in some instances where users are able to more easily navigate a technology due to its familiarity, it could be argued that for novelty-seeking adolescence, high sedimentation across different websites offering a similar service may reduce engagement across the respective platforms. This high sedimentation resulted in all websites feeling the same for users, and possibly therefore decreased their levels of engagement with the respective platforms.

5.6.3. An erosion of resilience in the search for opportunities?

The findings suggest that the work seeker support platform does not enable young people to achieve what they find valuable, and instead promotes feelings of frustration and hopelessness. The feeling of hopelessness was attributed mostly to the lack of feedback that websites provided after users submitted applications for jobs, and to the lack of opportunities that matched users' skills and experiences. For many users, feedback was perceived as an opportunity to learn about where they could improve, and so being denied this opportunity left them with a feeling of stagnation and hopelessness. The negative feelings created by platforms arguably serves to erode what was oftentimes the single positive factor that influenced respondents' abilities to meet their needs and aspirations: their personal resilience. The idea that young people have to depend on their resilience to overcome numerous structural barriers to opportunities is evidenced by other studies. Baldry et al. (2019, p. 32) found that "Young people show immense 'grit' in their repeated attempts to make something of their lives. Yet at almost every turn, they are faced with obstacles and hurdles, most of which are structural in nature" (2019, p. 32). Eroding young people's resilience is an important consequence to consider, as work seeker support platforms are designed to reduce the barriers to accessing opportunities, but may be bolstering barriers inadvertently by threatening users' personal capacity for persistence.

A lack of feedback from the work seeker support platform was the most commonly cited reason for respondents experiencing despair and hopelessness. The expectation of feedback is perhaps a result of the type of relationship users have with the technological platform. According to postphenomenological descriptions of human-technology relations, users appear to have alterity-relations with the platform (and with others), as they expect the platform to respond as a human would. Alterity-relations describe relations to technology that are experienced anthropomorphically, where humans engage with technologies in much the same way as they would relate to other humans. This is because the technological interface mimics the nature of a human-to-human relation (Rosenberger & Verbeek, 2015). The work seeker support platform mimics the nature of a human-to-human relation by responding to various inputs that the user makes. They are notified once something is completed, and other prompts are provided to guide certain actions. This series of mini feedback loops create a sense of being in conversation. This

may lead to the expectation that job applications submitted should be acknowledged and responded to. For work seeker support platforms to improve so that users are not left disappointed, the type of relationship that the platform fosters needs to be understood so that those relationship dynamics can be sustained throughout the user's experience with the platform.

In addition to the lack of feedback and lack of relevant opportunities provided by the work seeker support platform, an analysis of its digital interface surfaced additional possible sources of frustration and hopelessness. An analysis using the postphenomenological constructs of unit and vibration revealed how the platform was structured in a way that discouraged high engagement and easy navigation. For users, this arguably created the impression of additional barriers to accessing opportunities. This sense of being excluded from opportunities reinforces the experience of young South African NEETs, who already face multiple barriers to accessing employment opportunities (Baldry et al., 2019; De Lannoy et al., 2020; Graham et al., 2019; Kruss et al., 2019). This sense of exclusion may exacerbate the negative emotions that respondents expressed towards their job-search journey, and mark a missed opportunity to provide sought-after information in a way that is accessible to the user.

The feelings of despair and hopelessness expressed by respondents are arguably particularly detrimental for unemployed youth to experience, as they are already at an increased risk of mental health issues as a result of their socio-economic status, and of the developmental phase they are in (that of adolescence). Poverty has been shown to interact with mental health in a negative cycle, which “increases the risk of mental illness among people who live in poverty and increases the likelihood that those living with mental illness will drift into or remain in poverty” (Lund et al., 2011, p. 1502). Unemployed youth are arguably especially susceptible to mental health problems, due to the link between unemployment and mental illness (Axelsson & Ejlertsson, 2002; Fryer, 1997; Thern et al., 2017; Winefield et al., 1991). The despair at the lack of feedback that many respondents expressed, and their frustration of being excluded from opportunities that require experience, may be particularly crushing for adolescent users who, as a result of the developmental process, feel especially pained by rejection (Blakemore & Choudhury, 2006).

The adverse emotional impact of work seeker support platforms on young, unemployed adolescents living in conditions of poverty is concerning – particularly in the context of steadily increasing levels of discouragement among young people (De Lannoy et al., 2020). The emotional impact of these platforms (as a result of the lack of feedback, the lack of relevant opportunities, and the inaccessibility of information) may be placing an already vulnerable group of young people at an even higher risk of experiencing mental health issues and increase their likelihood of becoming economically discouraged. This study’s findings suggest that work seeker support platforms may be creating experiences that inadvertently undermine the agency and wellbeing of their users, personal factors that many young people depend on to thwart the various structural barriers they face to accessing opportunities.

5.7. Summary

Section 4 discussed the findings that emerged in response to the three research questions: what are the needs and aspirations of end-users, what are the personal, social and environmental factors impacting on the user’s ability to realise their needs and aspirations, and how does the ICTD intervention under study help users to achieve what they consider to be valuable? Table 11 below provides a summary of how the findings in Section 4 were discussed in relation to extant literature in Section 5, and positions the recommendations in Section 6 accordingly.

Table 14. Summary of recommendations in relation to findings and extant literature

Section 4: Findings	Section 5: Discussion of findings in relation to extant literature	Section 6: Summary of recommendations based on discussion of literature
4.1. What are the needs and aspirations of end-users?	5.1. Contributing to users’ capability sets <ul style="list-style-type: none"> • Sen’s personal, social and environmental conversion factors. 	6.1. Co-creation and Collaboration for positive development <ul style="list-style-type: none"> • Adopt ICT4D best practice design approaches: User Centred Design, participatory design and mediated design
4.2. What are the personal, social and environmental factors impacting on the user’s ability to realise their needs and aspirations?		

<p>4.3. How does the work seeker support platform under study help users to achieve what they consider to be valuable?</p>	<p>5.2. The mediating role of a user's context on technology</p> <ul style="list-style-type: none"> • Postphenomenological constructs of: unit and vibration, the mediating role of technology, amplification/reduction, and multi-stability. 	<p>6.2. Move beyond technological determinism and supply-side measures of success:</p> <ul style="list-style-type: none"> • Adopt Sen's CA framework to assess impact of ICT4D interventions
	<p>5.3. An erosion of resilience in the search for opportunities?</p> <ul style="list-style-type: none"> • Cognitive and mental health effects of scarcity and developmental life stage. 	<p>6.3 Appreciate the heterogeneity of users (i.e., the heterogeneity of young South African NEETs):</p> <ul style="list-style-type: none"> • Incorporate NEET programme success factors • Utilise Artificial Intelligence capabilities <p>6.4. Move to a value exchange</p> <ul style="list-style-type: none"> • Follow ICT4D and youth employment programme best practice

The needs and aspirations of users were discussed in terms of the platform's ability to contribute to the users' capability sets. It was found that the platform did not enable users to achieve what they found valuable, as their needs and aspirations were unmet. To mitigate this issue, it is recommended that work seeker support platforms use design practices that enable an understanding the users' needs and aspirations, so that these can be sufficiently catered for by the ICT4D intervention.

Personal, social and environmental factors were discussed in terms of how they acted as conversion factors in the adoption of the work seeker support platform by users as a means to achieve what they valued. It emerged that users' personal, social and environmental factors often

acted to inhibit their achievement of what they valued through the work seeker support platform. The impact of the particular personal, social and environmental factors was discussed in terms of how they may have affected the users' experience of the platform. While it appears that the cognitive effects of adolescents and socio-economic scarcity are well-known, how these effects impact on online engagement is not. It is therefore recommended that further research be conducted on the combined impact of adolescence and unemployment on how users engage with digital work seeker support and online learning platforms.

Section 4 concludes that the work seeker support platform does not enable users to achieve what they find valuable, as the platform does not enable users to realise their needs and aspirations. The impact of the platform on its users is discussed in Section 5 in terms of the postphenomenological constructs of unit and vibration, amplification/ reduction and multistability. Section 5 illustrates how the unit and vibration of the platform may interact with users' personal, social and environmental conversion factors to provide an initially negative user experience. This initial experience mediates how users continue to re-constitute the platform in a way that is at odds with a technological determinist understanding of the platform. Besides the platform's inability to provide users with a means to achieve what they value, Section 5 illustrates how the platform inadvertently may be threatening the positive personal capacities that young unemployed South Africans depend on to overcome the many structural barriers that prevent them from accessing opportunities.

6. Recommendations

6.1. Co-creation and collaboration for positive development

For ICT4D to become truly transformative, or to move to Development 2.0, poor communities cannot be treated as passive recipients of ICT interventions, but as co-creators. Sen's CA is in keeping with this transformational view of ICT4D, in that it bestows agency to the recipients of development initiatives to define development in terms of what they find valuable (Sen, 1990). While Sen's CA has gained international credibility, adoption of such progressive approaches to

development remains limited in most ICT4D projects, as these projects typically employ the same impact approaches used for ICT implementations in business (Gomez & Pather, 2012). There are examples of ICT4D interventions in South Africa that have successfully employed co-design principles to deliver ICT interventions that positively impact on development outcomes for users (Jacobs et al., 2019). However, many of the ICT development indices in the Global South measure tangible outputs largely related to access based on data from the ICT supply side, and do not focus the transformational power of ICTs in the lives of users (Gillwald et al., 2018).

ICT4D interventions that aim to resolve South Africa's pressing youth unemployment crisis need to understand the young people using these technologies in terms of what they value, their personal capabilities, their social and environmental contexts and how ICT4D interventions mediate their perception of the world, and themselves. ICT interventions aimed at unemployed youth in particular, must be cognisant of the compounding effect of poverty, unemployment and adolescence on young people's mental health. Interventions should seek to bolster young people's well-being and agency, so that they are better equipped to sustain the difficult transition from school to further education or employment. Bolstering these capacities in young people would allow ICT interventions to address the significant implications of youth unemployment, such as poor mental health and economic discouragement.

To achieve these aims, the young people at which these interventions are aimed need to be engaged in the design process. User testing alone does not constitute user collaboration, and therefore will not assure project success (Brown, 2019). To include users in the design process, various design approaches are available. User Centered Design (UCD) is one such approach where users are engaged to identify their needs and are often observed to gain a better understanding of user behaviour (Dell'Era & Landoni, 2014). UCD is described as "both a board philosophy and a variety of methods" (Abrams et al., 2004, p. 1). Different methods such as interviews, focus groups and surveys are used to extract the needs from users, and usability tests are typically performed to assess whether the product meets the needs of users by inviting them to test the product (Abrams et al., 2004; Dell'Era & Landoni, 2014). Participatory design attempts to involve all stakeholders in the design process so that the product meets the users' needs and is

usable. In this approach, stakeholders may be engaged throughout the design process, and not only at the beginning needs identification phase (Dell’Era & Landoni, 2014). Compared with UCD, the user in participatory design goes from being at the centre of design consideration to being a co-designer (Abrams et al., 2004). In order to engage users throughout the design process, participatory design calls for the use of prototypes or mock-ups to elicit input from users. This way, participatory design is able to go beyond what users say they need to what they “know, feel and dream” (Dell’Era & Landoni, 2014, p. 143). It is a way of giving users the tools they need to appropriately express themselves as experts in their own lives. Living Labs is another yet lesser known methodology that calls for the active involvement of users throughout the design process, with a strong focus on the contextual factors that shape a user’s interaction with an artefact (Dell’Era & Landoni, 2014). It is described as “a design research methodology aimed at co-creating innovation through the involvement of aware users in a real-life setting” (Dell’Era & Landoni, 2014, p. 139).

Mediated design is an approach conceived by a South African researcher when developing a technological product with a local township community (Gitau, 2012). It is argued that this approach is most appropriate when users come from starkly different social and cultural backgrounds to the designers of an intervention. The need for a different design approach is attributed to the rationality clash that transpires when users and designers are from different cultural and social settings (Gitau, 2012). This rationality clash calls for designers to move beyond co-operating with users as co-designers, but as being reflective practitioners able to discern social and cultural nuances that may result in a divergent understanding (Medhi, 2007). The mediated approach calls for engagement with both users and a mediator and seeks to ameliorate the cultural and social differences that exist between designer and user. A mediator is a local person or organisation who is able to assist with articulation of the community’s needs, interpretation of requirements into design practices (such as prototypes), and ensures that the articulation and interpretations of users' needs are correctly reflected in the technological intervention (Gitau, 2012). This approach appears sensitive to the crucial social and cultural nuances that are often overlooked when following UCD or participatory design approaches. For example, during the design of the technological intervention, it was discovered after conducting

some initial fruitless feedback sessions with users that criticism was deemed a cultural taboo by the users they were engaging with (Gitau, 2012). The characteristics of the mediated approach enable designers to sense these oftentimes imperceptible social and cultural differences, and thus minimize opportunities for misunderstanding.

The need for adopting a design approach that positions users as co-creators goes beyond the impact created by the intervention. The design process itself has the potential to positively impact on the stakeholders involved. Co-creation has the potential to empower the communities who partner with designers to build an ICT solution to address their challenges (Gomez & Pather, 2012; Lorini, 2013).

In addition to collaboration with users, work seeker support platforms should foster a culture of collaboration within the sector, in order to promote developmental outcomes. A failure to speak about challenges is noted as a major reason for some of the repeated mistakes seen in the global ICT4D field (Dodson et al., 2013). Those designing and building work seeker support platforms should engage on failures and successes, to ensure future investments have greater impact. Collaboration between platforms should go beyond sharing lessons learned: it should extend to functional integrations that would enhance the user experience. For example, where possible users' registration information should be able to be shared across platforms to avoid users having to input the same information across various platforms. It has been noted that the most effective youth employment programmes are those that offer comprehensive support (Graham et al., 2019; Kluge et al., 2019). This comprehensive support could arguably come from different service providers working together in a seamless, collaborative referral system. For work seeker support platforms, it is arguably only when the design process is truly collaborative (between service providers and users), and together with the resultant ICT intervention has a positive impact on users' development, that we may consider the intervention to be truly transformative.

6.2. Move beyond technological determinism and supply-side measures of success

This study has illustrated how understanding an intervention from a technological determinist perspective can be at odds with how the intervention is experienced by users. Accordingly, when evaluating the success of these interventions one cannot examine the technological functionality of the intervention, and supply-side metrics exclusively. ICT interventions need to measure their impact in terms of how they are being experienced by the user. Work seeker support platforms should move beyond user numbers and placements as measures of success, especially in a strained economic environment where there are insufficient entry-level jobs available for young people. These measures are too narrowly focused on the experience of the minority of job-seekers engaging with online platforms (i.e., those who get placed or have the skills to at least be shortlisted for opportunities), and ignores the majority of young people who do not have the required skills or experience for the positions advertised. This is particularly salient in the current market conditions, where there are insufficient jobs for the numbers of young people entering the labour market each year. An intervention's ability to protect young people from economic discouragement and mental ill-being, and foster a positive orientation to the labour are important measures to consider (Graham et al., 2021). Herein lies the challenge for youth employment programmes, as developing these protective factors depends on young people's participation. As this study has illustrated, many young work seekers desire immediate access to earning opportunities and are therefore disinclined to participate in programmes ongoingly.

This study has illustrated how Sen's CA poses one possible way in which to measure the success of an ICT intervention in reaching its development goals. Work seeker support platforms that share the development goal of promoting economic participation among young people, must consider their developmental impact as part of their evaluation. Without focusing on the development aspect of the ICT intervention, we will continue to fall short of realising the potential of work seeker support platforms as scalable solutions to youth unemployment and economic discouragement.

6.3. Appreciating the heterogeneity of the user, and the need for individualised content

As discussed earlier in this study, young South African NEETs are a heterogeneous group of young people – all experiencing ‘NEETHood’ differently, for different reasons. This study has illustrated that creating a digital platform that does not recognise and respond to this heterogeneity, will result in limited user engagement. For example, users will not engage with platforms that list opportunities for which they do not qualify. Similarly, users will not engage with platforms that do not appreciate the contextual realities within which users access the platform. For example, if users do not have access to stable and free internet – they are unlikely to spend time and data completing registration and learning modules that do not guarantee any immediate value in return. The importance of individualised support for connecting young people to opportunities is evidenced in a study by Kluve (2019), where it was found that employment programmes that included individualised support were more successful in terms of their impact on participants’ employment outcomes.

To realise developmental goals, work seeker support platforms need to understand the various types of users who may interact with their offering, and create experiences that cater to the needs and expectations of each of these user groups. One important finding of this study is that the vast majority of the platform’s users have a matric. This suggests that the majority of young NEETs who do not have a matric are not being served by this platform, even though the platform does not have any criteria that precludes this group. While work seeker platforms have the potential to be low-cost, scalable solutions to access South Africa’s broader NEET population – if they are unable to attract the majority of young NEETs, then this potential will remain unrealised. It is therefore critical for work seeker support platforms to develop a better understanding of their audience and their various needs, so as to design solutions that will be truly inclusive.

Individualised content may enable a positive shift in how users and platforms are mutually reconstituted. If the platform responds to users in a way that acknowledges their individual needs, they may reconstitute the user more positively. For example, if a young NEET registers

with a platform and states that they do not have any work experience, and do not have a matric, the platform can respond with content that would enable this particular type of user to achieve what they value. The platform could provide opportunities that do not require any work experience, and can provide information on further study and funding opportunities to improve the user’s qualification level. Figure 4 below illustrates how the user-technology interaction may shift to a more positive interaction, should digital platforms respond with individualised content:

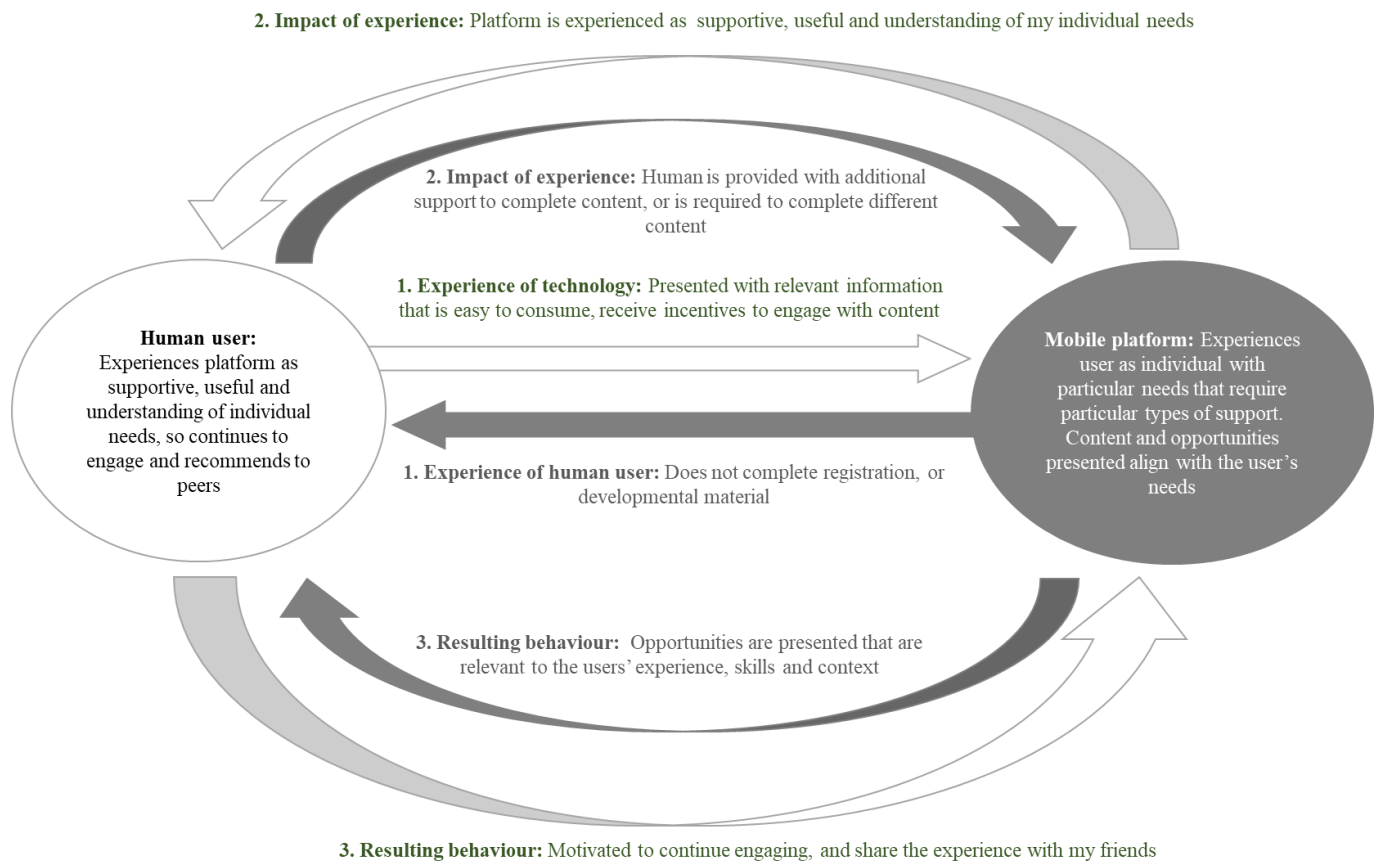


Figure 4. Potential reconstituting cycle between platform and human user

Herein lies an opportunity to employ AI solutions to better respond to the individual needs and behaviours of different users. Education systems need to explore AI in order to meet developmental goals (Isaacs, 2020). There are examples of where AI has been used successfully in online interventions targeted at youth. One example is an online social therapy programme for

youth. The programme uses AI to provide tailored online therapy using an interactive social media-based platform, and has been proven to be effective in a series of clinical trials (D'Alfonso et al., 2017). This system depends on correctly identifying the appropriate tags for categorising content in a way that meets the needs of different user groups (D'Alfonso et al., 2017). An important starting point for work seeker support platforms would therefore be an understanding of the developmental needs of the various groups of young people that they serve, and what content is most appropriate as a response to these needs. However, a key design challenge remains: users need to engage sufficiently with the platform so that there is information to which the platform can respond.

6.4. Move to a value exchange

Considering that there are insufficient jobs available for young people in South Africa, work seeker support platforms need to think more broadly in terms of what value they can offer this audience. For many users, feedback was perceived as an opportunity to learn about where they could improve. It represents a major source of currency and should be maximized at every opportunity within the user experience. For example, for registration and profile completion, feedback or incentives could be provided based on the inputted information, which may shift user experiences away from feelings of extraction towards experiences of transaction whereby the platform is rewarding users for their input. Incentivising engagement is particularly important for young people who are still considered adolescents (those between 15 and 25), as developmentally this group is particularly susceptible to incentives as a means to encourage certain behaviours (Casey et al., 2008). By providing a value exchange, work seeker support platforms would be better placed to achieve their development goals.

Examples of services or features that may add value include access to career development services that improve employability, online learning that increases employment outcomes, and feedback. As evidenced in this study, young people appear to make career and education selections at odds with their long-term career goals, but aligned with their urgent need to escape conditions of poverty. This may result in young people not completing or performing well in their studies, which may have consequent negative effects on the individual and their family. At a macro-level, this

may result in a huge cost of students dropping out of tertiary institutions (Pillay, 2020). There are career development methodologies that claim to promote individual wellbeing. Such methodologies should be explored for the South African context, where mental ill-being and economic discouragement among youth are on the rise (Branson et al., 2019; Mudiriza & De Lannoy, 2020). One method with some evidence of success is life design counselling (Maree et al., 2019). It was found that career adaptability and employability skills were positively affected by group career counselling which draws on life design principles provided to young adults from disadvantaged communities (Maree et al., 2019). A qualitative analysis of six case studies found that (Maree, 2015, p. 332):

“life design counselling enabled the participants to understand themselves better and construct new selves, broadened their perspectives on career-life issues, facilitated change in their lives, encouraged action, and imbued new hope in them”

While career counselling employing life design principles may provide a relevant and impactful approach to career development in South Africa, the way in which it is delivered by work seeker support platforms needs to be engaging for unemployed youth. A key challenge will be for platforms to engage unemployed youth in developmental learning content that does not meet their urgent need to earn an income, but supports their long-term development.

While skills development programmes targeted at unemployed South African youth have been shown to have a positive impact on employability (Graham et al., 2019), the efficacy of online skills development programmes is unknown. Work seeker support platforms need to explore ways of improving mobile learning outcomes by taking note of lessons learned in previous interventions. Such lessons include involving users and curriculum decision-makers in the design process (Isaacs et al., 2019), employing quality education techniques and blended learning approaches, including information that is culturally relevant and translated content, and providing access to content that is data-free or data light (Roberts & Spencer-Smith, 2014).

Finally, work seeker support platforms need to provide feedback to create a value exchange. Based on this study’s findings, feedback has a significant impact on user engagement and on users’ attitudes to their future job-search journey. One recent study evaluating two digital employment

tools targeted at marginalised youth found that positive feedback and self-reflection had positive impacts on users' job search self-efficacy, subjective norms, and job search attitudes (Dillahunt & Hsiao, 2020). Feedback is especially important in economically constrained times, when users are at a heightened risk of experiencing the negative psychological effects associated with being repeatedly rejected from opportunities.

7. Conclusion and recommendations for future research

Youth unemployment is considered a national crisis, with economic discouragement among young people a growing maleficent consequence. Youth unemployment programmes have been shown to have a positive impact on employment outcomes for young people, but in economically constrained, COVID-19 times, the need for these programmes to: (1) think about their impact beyond traditional measures of success, and (2) digitise has become a matter of urgency.

Digitisation is commonly regarded as a silver bullet for scaling effective youth employment programmes, as has been seen with the Sayouth.mobi site (an initiative supported by the Presidential Youth Employment Intervention), which intended to scale a South African non-profit's successful youth employment programme. However, as evidenced by this study, it cannot be taken for granted that digital solutions with development objectives have a positive development impact. A technological determinist perspective of work seeker support platforms presents them as solutions to some of the significant drivers of youth unemployment in South Africa, namely: a lack of access to information, lack of access to work-readiness training, and a lack of access to opportunities. However, this approach assumes that technology is an objective entity that is experienced in a similar way in different contexts, by different users. This study argues that this view does not reflect reality. Technologies are constituted by their relationship with the user, a relationship which changes across contexts. Ignoring the contextual factors that shape user experience, is to overlook the impact technology has on users' lives. This study argues that technologies built with a developmental impact in mind, must go beyond supply-side measures of success, to evaluate how the technology helps users achieve what they find valuable. This

positioning of the user as the expert in their own lives, and of their own development, will result in the creation of sustainable solutions that have a positive developmental impact.

Further research should be conducted on how work seeker support platforms can employ some of the best practice principles from career counselling that have shown to promote mental well-being and improved employability in young people. For a greater understanding of how South African NEETs engage with digital content, and online learning, further research should be conducted on how the various categories of young NEETs respond to different types of online learning content. A better understanding of the impact of education levels on m-learning outcomes for example, would assist work seeker support platforms in designing solutions that meet the needs and expectations of various NEET users. However, as this study has illustrated, practitioners should not look to research alone when designing work seeker support interventions. Users should be engaged as co-creators throughout the design process. By engaging users to co-create work seeker support platforms from the beginning, young people are given an opportunity to be designers of not only the platforms that seek to serve them, but of their own futures.

Reference list

- Aagaard, J. (2017). Introducing postphenomenological research: A brief and selective sketch of phenomenological research methods. *International Journal of Qualitative Studies in Education*, 30(6), 519–533. <https://doi.org/10.1080/09518398.2016.1263884>
- Abras, C., Maloney-Krichmar, D., & Preece, J. (2004). User-centered design. In W. S. Bainbridge (Ed.), *Berkshire encyclopedia of human-computer interaction* (pp. 763–767). Berkshire Publishing.
- Adams, C., & Thompson, T. L. (2011). Interviewing objects: Including educational technologies as qualitative research participants. *International Journal of Qualitative Studies in Education*, 24(6), 733–750. <https://doi.org/10.1080/09518398.2010.529849>
- Adams, C., & Turville, J. (2018). Doing postphenomenology in education. In J. Aagaard, J. K. B. Friis, J. Sorenson, O. Tafdrup, & C. Hasse (Eds.), *Postphenomenological methodologies: New ways in mediating techno-human relationships* (pp. 3–26). Lexington Books.
- Al-Shamaileh, O., & Sutcliffe, A. (2013). Website interactivity and repeated exposure, what influences user experience? *Journal of Universal Computer Science*, 19(8), 1123–1139.
- Alampay, E. A. (2005). Beyond access to ICTs: Measuring capabilities in the information society. *International Journal of Education and Development Using Information and Communication Technology*, 2(3), 4–22.
- Amnesty International. (2020). *Broken and unequal: The state of Education in South Africa*. <https://www.amnesty.org/en/documents/afr53/1705/2020/en/>
- Andrade, A. D., & Urquhart, C. (2010). The affordances of actor network theory in ICT for development research. *Information Technology & People*, 23(4), 352–374. <https://doi.org/10.1108/09593841011087806>
- Arhippainen, L., & Tähti, M. (2003). *Empirical evaluation of user experience in two adaptive mobile application prototypes*. Proceedubgs of the 2nd International Conference on Mobile and Ubiquitous Multimedia (MUM 2003), Norrköping, Sweden. <https://ep.liu.se/ecp/011/007/ecp011007.pdf>
- Ash, J., Anderson, B., Gordon, R., & Langley, P. (2018). Unit, vibration, tone: A post-phenomenological method for researching digital interfaces. *Cultural Geographies*, 25(1),

165–181. <https://doi.org/10.1177/1474474017726556>

- Axelsson, L., & Ejlertsson, G. (2002). Self-reported health, self-esteem and social support among young unemployed people: A population-based study. *International Journal of Social Welfare*, *11*(2), 111–119. <https://doi.org/10.1111/1468-2397.00205>
- Baatjes, I. (2018). *Learning for living: Towards a new vision for post-school learning in South Africa*. HSRC Press.
- Baldry, K., Graham, L., & De Lannoy, A. (2019). *The agency and resilience of NEET youth and what we can do to support them. Evidence from a synthesis of qualitative research with young people in South Africa*. (No. 253; SALDRU). www.facebook.com/LeaveNoSAYouthBehind/
- Battaglia, M. P. (2011). Purposive sample. In P. J. Lavrakas (Ed.), *Encyclopedia of survey research methods* (pp. 645–647). Sage. <https://doi.org/10.4135/9781412963947>
- Blakemore, S.-J., & Choudhury, S. (2006). Development of the adolescent brain: Implications for executive function and social cognition. *Journal of Child Psychology and Psychiatry*, *47*(3–4), 296–312. <https://doi.org/10.1111/j.1469-7610.2006.01611.x>
- Bloor, M., & Wood, F. (2006). *Keywords in qualitative methods: A vocabulary of research concepts*. Sage. <https://doi.org/10.4135/9781849209403>
- Brajnik, G., & Giachin, C. (2014). Using sketches and storyboards to assess impact of age difference in user experience. *International Journal of Human Computer Studies*, *72*(6), 552–566. <https://doi.org/10.1016/j.ijhcs.2013.12.005>
- Branson, N., De Lannoy, A., & Kahn, A. (2019). *Exploring the transitions and well-being of young people who leave school before completing secondary education in South Africa*. (NIDS Discussion Paper 2019/11) Working Paper Series No. 244, National Income Dynamics Study, South African Labour and Development Research Unit (SALDRU). www.opensaldru.uct.ac.za.
- Brown, S. (2019). Why some well-planned and community-based ICTD interventions fail. *Information Technologies & International Development*, *15*, 49–61.
- Brown, W., & Brown, I. (2008). Next generation ICT policy in South Africa: Towards a human development-based ICT policy. *IFIP International Federation for Information Processing*, *282*(74), 109–123. https://doi.org/10.1007/978-0-387-84822-8_8
- Brown, W., & Brown, I. (2009). *Towards a research framework for a human development-based*

- “bottom of the pyramid” ICT development strategy in South Africa. Paper presented at the 17th European Conference on Information Systems.
<https://www.semanticscholar.org/paper/Towards-a-research-framework-for-a-human-%22bottom-of-Brown-Brown/19b99171b59f58611e4f286744b373f952f9de67>
- Casey, B. J., Jones, R. M., & Hare, T. A. (2008). The adolescent brain. *Annals of the New York Academy of Sciences*, 1124(1), 111–126. <https://doi.org/10.1196/annals.1440.010>
- Chair, C., & De Lannoy, A. (2018). *Youth, deprivation and the internet in Africa*. (Policy Paper No. 4; Series 5: After Access – Assessing Digital Inequality in Africa) Research ICT Africa. https://media.africaportal.org/documents/After_Access__youth_and_digital_inequality_in_Africa.pdf
- Crompton, H. (2013). A historical overview of m-learning: Toward learner-centered education. In Z. L. Berge & L. Y. Muilenburg (Eds.), *Handbook of Mobile Learning* (pp. 3–14). Routledge.
- Cyr, D., Head, M., & Ivanov, A. (2009). Perceived interactivity leading to e-loyalty: Development of a model for cognitive-affective user responses. *International Journal of Human Computer Studies*, 67(10), 850–869. <https://doi.org/10.1016/j.ijhcs.2009.07.004>
- D’Alfonso, S., Santesteban-Echarri, O., Rice, S., Wadley, G., Lederman, R., Miles, C., Gleeson, J., & Alvarez-Jimenez, M. (2017). Artificial intelligence-assisted online social therapy for youth mental health. *Frontiers in Psychology*, 8, 796. <https://doi.org/10.3389/fpsyg.2017.00796>
- Darke, P., Shanks, G., & Broadbent, M. (1998). Successfully completing case study research: Combining rigour, relevance and pragmatism. *Information Systems Journal*, 8, 273–289.
- de Lanerolle, I., Walton, M., & Schoon, A. (2017). *Izolo: Mobile diaries of the less connected*. Making All Voices Count Research Report, The Institute of Development Studies (IDS), Brighton, UK. https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/13348/RReport_LessConnected_FINAL.pdf
- De Lannoy, A., Graham, L., Patel, L., & Leibbrandt, M. (2018). *What drives youth unemployment and what interventions help? A systematic overview of the evidence and a theory of change*. (High-level Overview Report) Poverty & Inequality Initiative at the University of Cape Town.

[http://www.povertyandinequality.uct.ac.za/sites/default/files/image_tool/images/95/2018/Publications/Youth Unemployment report_181117_interactive.pdf](http://www.povertyandinequality.uct.ac.za/sites/default/files/image_tool/images/95/2018/Publications/Youth%20Unemployment%20report_181117_interactive.pdf)

- De Lannoy, A., Graham, L., Patel, L., & Leibbrandt, M. (2020). Why is youth unemployment so intractable in South Africa? A synthesis of evidence at the micro-level. *Journal of Applied Youth Studies*, 3(2), 115–131. <https://doi.org/10.1007/s43151-020-00012-6>
- De Lannoy, A., & Mudiriza, G. (2019). *A profile of young NEETs: Unpacking the heterogeneous nature of young people not in employment, education or training in South Africa*. (SALDRU Working Paper No. 249) Southern Africa Labour and Development Research Unit, UCT. <http://www.opensaldru.uct.ac.za/handle/11090/963>
- Dell’Era, C., & Landoni, P. (2014). Living lab: A methodology between user-centred design and participatory design. *Creativity and Innovation Management*, 23(2), 137–154. <https://doi.org/10.1111/caim.12061>
- Department of Basic Education. (2016). *Report on progress in the schooling sector against key learner performance and attainment indicators*. Republic of South Africa. [https://www.education.gov.za/Portals/0/Documents/Reports/Education Sector review 2015 - 2016.pdf](https://www.education.gov.za/Portals/0/Documents/Reports/Education%20Sector%20review%202015%20-%202016.pdf)
- Department of Higher Education and Training. (2016). *Competency framework for career development practitioners in South Africa*. Republic of South Africa. https://www.careerhelp.org.za/sites/default/files/competency_framework_colour_wp_print_0.pdf
- Department of Higher Education and Training. (2017). National policy for an integrated career development system for South Africa. *Government Gazette*, 622(40795). [https://www.dhet.gov.za/Career Development and Open Learning/National Policy for an Integrated Career Development System for South Africa.pdf](https://www.dhet.gov.za/Career%20Development%20and%20Open%20Learning/National%20Policy%20for%20an%20Integrated%20Career%20Development%20System%20for%20South%20Africa.pdf)
- Department of Higher Education and Training. (2018). *Fact Sheet on “NEETs” (Persons who are not in employment, education or training)*. Republic of South Africa. [https://www.dhet.gov.za/Planning Monitoring and Evaluation Coordination/Fact Sheet on NEET - 2021.pdf](https://www.dhet.gov.za/Planning%20Monitoring%20and%20Evaluation%20Coordination/Fact%20Sheet%20on%20NEET%20-%202021.pdf)
- Department of Higher Education and Training. (2020). *Career development services*. <https://www.careerhelp.org.za/main/career-development-services>
- Dicks, R. (2020). *The Presidential Youth Employment Intervention: Five priority actions to*

- accelerate youth pathways into the economy over the next five years*. Paper presented at the CBPEP Colloquium 2020 (Panel 7: Unemployment and Active Labour Market Policies).
<https://www.cbpep.org/colloquium2020/panel-7>
- Dillahunt, T. R., & Hsiao, J. C.-Y. (2020). *Positive Feedback and Self-Reflection: Features to Support Self-efficacy among Underrepresented Job Seekers*. Paper presented at the 2020 CHI Conference on Human Factors in Computing Systems, Honolulu, April 25-30.
<https://doi.org/10.1145/3313831.3376717>
- Dodson, L., Sterling, S. R., & Bennett, J. K. (2013). Considering failure: Eight years of ITID research. *Proceedings of the Fifth International Conference on Information and Communication Technologies and Development*, 19–34.
<https://itidjournal.org/index.php/itid/article/download/1050/1050-2947-1-PB.pdf>
- Donner, J., & Toyama, K. (2009). *Persistent themes in ICT4D Research: Priorities for inter-methodological exchange*. Paper presented at the 57th Session of the International Statistics Institute, Durban, South Africa, June 17-21.
https://www.academia.edu/2716922/Persistent_themes_in_ICT4D_Research_priorities_for_inter-methodological_exchange
- Dowling, M. (2007). From Husserl to van Manen: A review of different phenomenological approaches. *International Journal of Nursing Studies*, 44, 131–142.
<https://doi.org/10.1016/j.ijnurstu.2005.11.026>
- Ebad, S. A. (2018). An exploratory study of ICT projects failure in emerging markets. *Journal of Global Information Technology Management*, 21(2), 139–160.
<https://doi.org/10.1080/1097198X.2018.1462071>
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1–4.
<https://doi.org/10.11648/j.ajtas.20160501.11>
- Evers, J. C., & Van Staa, A. (2010). Qualitative analysis in case study. In A. J. Mills, G. Durepos, & E. Wiebe (Eds.), *Encyclopedia of case study research* (pp. 74–757). Sage.
<https://doi.org/10.4135/9781412957397>
- Flederman, P. (2011). A career advice helpline: A case study from South Africa. *International Journal for Educational and Vocational Guidance*, 11(2), 111–123.
<https://doi.org/10.1007/s10775-011-9202-7>

- Fox, L., & Kaul, U. (2017). *The evidence is in: How should youth employment programs in low-income countries be designed?* USAID & World Bank, Washington, DC.
<https://doi.org/10.1596/1813-9450-8500>
- Friesen, N., Henriksson, C., & Saevi, T. (Eds.). (2012). *Hermeneutic phenomenology in education: Method and practice*. Sense Publishers. <https://doi.org/10.1007/978-94-6091-834-6>
- Fryer, D. (1997). International perspectives on youth unemployment and mental health: Some central issues. *Journal of Adolescence*, 20(3), 333–342.
<https://doi.org/10.1006/jado.1997.0089>
- Gillwald, A., Mothobi, O., & Rademan, B. (2018). *The state of ICT in South Africa*. (Policy Paper No. 5; Series 5: After Access – Assessing Digital Inequality in Africa) Research ICT Africa. https://researchictafrica.net/after-access-south-africa-state-of-ict-2017-south-africa-report_04/
- Gitau, S. (2012). *Designing Ummeli: A case for mediated design, a participatory approach to designing interactive systems for semi-literate users*. (PhD Thesis) Department of Computer Science, University of Cape Town, South Africa.
https://open.uct.ac.za/bitstream/handle/11427/6399/thesis_sci_2013_gitau_s.pdf
- Gomez, R., & Pather, S. (2012). ICT evaluation: Are we asking the right questions? *Electronic Journal of Information Systems in Developing Countries*, 50(1), 1–14.
<https://doi.org/10.1002/j.1681-4835.2012.tb00355.x>
- Graham, L., De Lannoy, A., & Patel, L. (2021, April 14). South Africa’s efforts to tackle joblessness can be more effective: Here’s how. *The Conversation*.
<https://theconversation.com/south-africas-efforts-to-tackle-joblessness-can-be-more-effective-heres-how-155595>
- Graham, L., Patel, L., Chowa, G., Khan, Z., Masa, R., Mthembu, S., & Williams, L. (2019). *Siyakha youth assets study: Developing youth assets for employability*. Centre for Social Development in Africa, University of Johannesburg. www.uj.ac.za/csda
- Hall, P. A., & Soskice, D. (Eds.). (2001). *Varieties of capitalism: The institutional foundations of comparative advantage*. Oxford University Press.
- Hancock, B., Ockleford, E., & Windridge, K. (2009). *An introduction to qualitative research*. NIHR Research Design. www.rds-yh.nihr.ac.uk

- Hansen, E. (2006). *Career guidance: A resource handbook for low-and middle-income countries*. International Labour Office, Geneva.
<http://ilo.org/public/english/employment/skills/index.htm>
- Harpur, P.-A., & De Villiers, R. (2015). MUUX-E, a framework of criteria for evaluating the usability, user experience and educational features of m-learning environments. *South African Computer Journal*, 56, 1–21. <https://doi.org/10.18489/sacj.v56i1.240>
- Harris, R. W. (2016). How ICT4D research fails the poor. *Information Technology for Development*, 22(1), 177–192. <https://doi.org/10.1080/02681102.2015.1018115>
- Haushofer, J., & Fehr, E. (2014). On the psychology of poverty. *Science*, 344(6186), 862–867. <https://doi.org/10.1126/science.1232491>
- Heeks, R. (2008). ICT4D 2.0: The next phase of applying ICT for international development. *Computer*, 41(6), 26–31. <https://doi.org/10.1109/MC.2008.192>
- Heeks, R. (2010). Development 2.0: The IT-enabled transformation of international development. *Communications of the ACM*, 53(4), 22–24. <https://doi.org/10.1145/1721654.1721665>
- Heeks, R. (2013). *Development Studies Research and Actor-Network Theory* (No. 1; Actor-Network Theory for Development). http://hummedia.manchester.ac.uk/institutes/cdi/resources/cdi_ant4d/ANT4DPaper1Heeks.pdf
- Heeks, R. (2014). *Future priorities for development informatics research from the Post-2015 Development Agenda*. (Working Paper No. 57) Centre for Development Informatics, Institute for Development Policy and Management, SEED, University of Manchester. https://www.researchgate.net/publication/334612966_Future_Priorities_for_Development_Informatics_Research_from_the_Post-2015_Development_Agenda
- Heeks, R., & Seo-Zindy, R. (2019). *ICTs and social movements under authoritarian regimes: An actor-network perspective*. (Working Paper No. 51) Centre for Development Informatics, Institute for Development Policy and Management, SEED, University of Manchester. <https://doi.org/10.2139/ssrn.3477335>
- Isaacs, S. (2020). *South Africa's (Unequal) Digital Learning Journey: A Critical Review*. https://doi.org/10.1007/978-981-15-6157-3_11
- Isaacs, S., Roberts, N., & Spencer-Smith, G. (2019). Learning with mobile devices: A

- comparison of four mobile learning pilots in Africa. *South African Journal of Education*, 39(3), 1–13. <https://doi.org/10.15700/saje.v39n3a1656>
- Jacobs, C., Rivett, U., & Chemisto, M. (2019). Developing capacity through co-design: The case of two municipalities in rural South Africa. *Information Technology for Development*, 25(2), 204–226. <https://doi.org/10.1080/02681102.2018.1470488>
- James, N., & Busher, H. (2014). Internet interviewing. In J. F. Gubrium, J. A. Holstein, A. B. Marvasti, & K. D. McKinney (Eds.), *The Sage handbook of interview research: The complexity of the craft* (pp. 177–192). Sage. <https://doi.org/10.4135/9781452218403>
- Jensen, M. M., & Aagaard, J. (2018). A postphenomenological method for HCI research. *ACM International Conference Proceeding Series*, 242–251. <https://doi.org/10.1145/3292147.3292170>
- Johnston, K. A., Jali, N., Kundaali, F., & Adeniran, T. (2015). ICTs for the broader development of South Africa: An analysis of the literature. *Electronic Journal of Information Systems in Developing Countries*, 70(1), 1–22. <https://doi.org/10.1002/j.1681-4835.2015.tb00503.x>
- Jones, P. (1985). Actor-network theory and the Adoption of mobile communications. *Geography*, 88(4), 266–276. <http://www.geography.org.uk>
- Jubien, P. (2014). *Postphenomenology, smartphones, and learning: Students and teachers in higher education*. (Case) Sage. <https://doi.org/10.4135/978144627305013512947>
- Kafle, N. P. (2013). Hermeneutic phenomenological research method simplified. *Bodhi: An Interdisciplinary Journal*, 5(1), 181–200. <https://doi.org/10.3126/bodhi.v5i1.8053>
- Kim, J., Kim, J., Yun Moon, J., & Yun, J. (2013). *Does age matter in mobile user experience? Impact of age on relative importance of antecedents of mobile user experience*. Paper presented at the Pacific Asia Conference on Information Systems (PACIS). <http://aisel.aisnet.org/pacis2013/189>
- Kincl, T., & Štrach, P. (2012). Measuring website quality: Asymmetric effect of user satisfaction. *Behaviour & Information Technology*, 31(7), 647–657. <https://doi.org/10.1080/0144929X.2010.526150>
- Kluge, J., Puerto, S., Robalino, D., Romero, J. M., Rother, F., Stöterau, J., Weidenkaff, F., & Witte, M. (2019). Do youth employment programs improve labor market outcomes? A quantitative review. *World Development*, 114, 237–253. <https://doi.org/10.1016/j.worlddev.2018.10.004>

- Kruss, G., Wildschut, A., & Petersen, I. (2019). *Skills for the future*. HSRC Press.
- Lam, D., Leibbrandt, M., & Mlatsheni, C. (2008). *Education and youth unemployment in South Africa*. (Issue 22). (SALDRU Working Paper No. 22) Southern Africa Labour and Development Research Unit, University of Cape Town.
- Latour, B. (1996). On actor-network theory: A few clarifications. *Soziale Welt*, 47(4), 369–381.
<https://doi.org/10.1113/jphysiol.2011.226266>
- Latour, B. (2005). *Reassembling the social: An introduction to actor-network-theory*. Oxford University Press.
https://is.muni.cz/el/1423/jaro2017/SAN103/um/Latour_Reassembling_the_Social.pdf
- Laverty, S. M. (2003). Hermeneutic phenomenology and phenomenology: A comparison of historical and methodological considerations. *International Journal of Qualitative Methods*, 2(3), 21–35.
- Lee, Y., Choi, J., & Kim, T. (2013). Discriminating factors between completers of and dropouts from online learning courses. *British Journal of Educational Technology*, 44(2), 328–337.
<https://doi.org/10.1111/J.1467-8535.2012.01306.X>
- Leech, N. L., & Onwuegbuzie, A. J. (2007). An array of qualitative data analysis tools: A call for data analysis triangulation. *School Psychology Quarterly*, 22(4), 557–584.
<https://doi.org/10.1037/1045-3830.22.4.557>
- Li, L., & Yang, Y. (2009). *Important elements of quality online learning*. Paper presented at the World Conference on Educational Multimedia, Hypermedia and Telecommunications.
- Lorini, M. (2013). *Collective empowerment through information and communication technologies: Co-creation processes in underserved communities in Cape Town*. (PhD Thesis) Department of Information Systems, University of Cape Town, South Africa.
https://open.uct.ac.za/bitstream/handle/11427/30004/thesis_com_2018_lorini_maria_rosa.pdf
- Lund, C., De Silva, M., Plagerson, S., Cooper, S., Chisholm, D., Das, J., Knapp, M., & Patel, V. (2011). Poverty and mental disorders: Breaking the cycle in low-income and middle-income countries. *The Lancet*, 378(9801), 1502–1514. [https://doi.org/10.1016/S0140-6736\(11\)60754-X](https://doi.org/10.1016/S0140-6736(11)60754-X)
- Madon, S. (2004). Evaluating the developmental impact of e-governance initiatives: An exploratory framework. *The Electronic Journal of Information Systems in Developing*

- Countries*, 20(1), 1–13. <https://doi.org/10.1002/j.1681-4835.2004.tb00132.x>
- Maree, J. G. (2015). Research on life design in (South) Africa: A qualitative analysis. *South African Journal of Psychology*, 45(3), 332–348. <https://doi.org/10.1177/0081246314566785>
- Maree, J. G., Gerrits, E. W., Fletcher, L., & Olivier, J. (2019). Using career counselling with group life design principles to improve the employability of disadvantaged young adults. *Journal of Psychology in Africa*, 29(2), 110–120. <https://doi.org/10.1080/14330237.2019.1594646>
- Matli, W., & Ngoepe, M. (2020). Capitalizing on digital literacy skills for capacity development of people who are not in education, employment or training in South Africa. *African Journal of Science, Technology, Innovation and Development*, 12(2), 129–139. <https://doi.org/10.1080/20421338.2019.1624008>
- McKenzie, D. (2017). How effective are active labor market policies in developing countries? A critical review of recent evidence. *World Bank Research Observer*, 32(2), 127–154. <https://doi.org/10.1093/wbro/lkx001>
- McLuhan, M., & McLuhan, E. (1988). *Laws of media: The new science*. University of Toronto Press.
- Medhi, I. (2007). User-centered design for development. *Interactions*, 14(4), 12–14. <https://doi.org/10.1145/1273961.1273973>
- Mlatsheni, C., & Leibbrandt, M. (2015). *Duration of unemployment in youth transitions from schooling to work in Cape Town*. (SALDRU Working Paper No. 159) Southern Africa Labour and Development Research Unit, University of Cape Town. www.saldru.uct.ac.za.
- Monteiro, E., & Hanseth, O. (1996). Social shaping of information infrastructure: On being specific about the technology. In *Information technology and changes in organizational work* (pp. 325–343). Springer. <https://arxiv.org/ftp/arxiv/papers/1803/1803.04188.pdf>
- Mudiriza, G., & De Lannoy, A. (2020). *Youth emotional well-being during the COVID-19-related lockdown in South Africa* (No. 268). (SALDRU Working Paper No. 268) Southern Africa Labour and Development Research Unit, University of Cape Town. <http://hdl.handle.net/11090/991>
- Mullis, I. V. S., Martin, M. O., Foy, P., & Hooper, M. (2017). *PIRLS 2016: International results in reading*. International Association for the Evaluation of Educational Achievement. <http://pirls2016.org/download-center/>

- Mullis, I. V. S., Martin, M. O., Foy, P., Kelly, D. L., & Fishbein, B. (2020). *TIMSS 2019: International results in mathematics and science*. International Association for the Evaluation of Educational Achievement. <https://timssandpirls.bc.edu/timss2019/index.html>
- Napoli, P. M., & Obar, J. A. (2013). Mobile leapfrogging and digital divide policy: Assessing the limitations of mobile internet access. In *New America Foundation*. (Research Paper No. 2263800) Fordham University Schools of Business. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2263800
- National Academies of Sciences Engineering and Medicine. (2019). *The promise of adolescence: Realizing opportunity for all youth*. National Academies Press. <https://doi.org/10.17226/25388>
- National Planning Commission. (2012). *National Development Plan 2030: Our future - make it work*: The Presidency, Republic of South Africa. <https://www.gov.za/documents/national-development-plan-2030-our-future-make-it-work>
- National Youth Development Agency. (2015). *National Youth Policy 2015-2020*. https://www.gov.za/sites/default/files/gcis_document/201610/nationalyouthpolicy.pdf
- Oyedemi, T. D., & Choung, M. (2020). Digital inequality and youth unemployment. *Communicatio*, 46(3), 68–86. <https://doi.org/10.1080/02500167.2020.1821738>
- Palmer, S. R., & Holt, D. M. (2009). Examining student satisfaction with wholly online learning. *Journal of Computer Assisted Learning*, 25(2), 101–113. <https://doi.org/10.1111/J.1365-2729.2008.00294.X>
- Panigrahi, R., Srivastava, P. R., & Sharma, D. (2018). Online learning: Adoption, continuance, and learning outcome—A review of literature. *International Journal of Information Management*, 43, 1–14. <https://doi.org/10.1016/j.ijinfomgt.2018.05.005>
- Pernegger, L., & Godehart, S. (2007). *Townships in the South African Geographic Landscape-Physical and Social Legacies and Challenges*.
- Phokeer, A., Densmore, M., Johnson, D., & Feamster, N. (2016). *A first look at mobile internet use in township communities in South Africa*. Paper presented at the 7th Annual Symposium on Computing for Development (ACM DEV '16). <https://doi.org/10.1145/3001913.3001926>
- Pillay, A. L. (2020). Prioritising career guidance and development services in post-apartheid South Africa. *African Journal of Career Development*, 2(1), a9.

<https://doi.org/10.4102/ajcd.v2i1.9>

Raftree, L. (2013). *Landscape review: Mobiles for youth workforce Development*. United States Agency for International Development (USAID).

https://youtheconomicopportunities.org/sites/default/files/uploads/resource/mywd_landscape_review_final2013_0.pdf

Ramaphosa, C. (2019, July 20). State of the Nation Address 2019. *Newsroom: Speeches*, 17.

<https://www.gov.za/speeches/2SONA2019>

Roberts, N., & Spencer-Smith, G. (2014). *Landscape review - Mobile education for numeracy: Evidence from interventions in low-income countries* (Issue October). Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

<https://doi.org/10.13140/2.1.2391.0408>

Roberts, N., Spencer-Smith, G., Vänskä, R., & Eskelinen, S. (2015). From challenging assumptions to measuring effect: Researching the Nokia mobile mathematics service in South Africa. *South African Journal of Education*, 35(2).

<https://doi.org/10.15700/saje.v35n2a1045>

Robeyns, I. (2005). The capability approach: A theoretical survey. *Journal of Human Development*, 6(1), 93–117. <https://doi.org/10.1080/146498805200034266>

Romano Bergstrom, J., & Schall, A. (Eds.). (2014). *Eye tracking in user experience design*.

Elsevier. <https://doi.org/10.1016/C2012-0-06867-6>

Rosenberger, R., & Verbeek, P.-P. (2015). A postphenomenological field guide. In R. Rosenberger & P.-P. Verbeek (Eds.), *Postphenomenological investigations: Essays on human–technology Relations* (pp. 7–9). Lexington Books.

http://125.234.102.146:8080/xmlui/bitstream/handle/DNULIB_52011/7071/postphenomenological_investigations_essays_on_human_technology_relations_2015.pdf?sequence=1&isAllowed=y

SA Youth. (2020). *About the SA Youth.mobi network*. <https://sayouth.mobi/About/EN>

Sauro, J. (2015). SUPR-Q: A comprehensive measure of the quality of the website user experience. *Journal of Usability Studies*, 10(2), 68–86.

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

Shah, A. K., Shafir, E., & Mullainathan, S. (2015). Scarcity frames value. *Psychological Science*, 26(4), 402–412. <https://doi.org/10.1177/0956797614563958>

- South African Career Development Association. (2020). *Public mandate*. SACDA.
<https://www.sacda.org.za/about/public-mandate/>
- Spaull, N. (2015). Schooling in South Africa: How low quality education becomes a poverty trap. In K. Hall, I. Woolard, L. Lake, & C. Smith (Eds.), *South African Child Gauge 2015* (pp. 34–41). Children’s Institute, University of Cape Town. <http://nicspaull.com/research/>
- Spencer-Smith, G., & Roberts, N. (2016). *An implementation evaluation of the ukuFUNda virtual school*. University of Johannesburg. <https://doi.org/10.13140/RG.2.2.30180.27528>
- Statista. (2020). *Most common languages used on the internet as of January 2020, by share of internet users*. <https://www.statista.com/statistics/262946/share-of-the-most-common-languages-on-the-internet/#:~:text=Most common languages used on the internet 2020&text=As of January 2020%2C English,percent of global internet users>.
- Statistics South Africa. (2019a). *Inequality trends in South Africa: A multidimensional diagnostic of inequality*. (Report No. 03-10-19).
<https://www.statssa.gov.za/publications/Report-03-10-19/Report-03-10-192017.pdf>
- Statistics South Africa. (2019b). *Quarterly labour force survey*. Statistical release P0211: Quarter 1. <https://www.statssa.gov.za/publications/P0211/P02111stQuarter2019.pdf>
- Statistics South Africa. (2020). *Quarterly labour force survey*. Statistical release P0211: Quarter 1. <https://www.statssa.gov.za/publications/P0211/P02111stQuarter2020.pdf>
- Suchman, L. A. (2007). *Human-machine reconfigurations: Plans and situated actions* (2nd ed.). Cambridge University Press.
- Sutcliffe, A., & Hart, J. (2017). Analyzing the role of interactivity in user experience. *International Journal of Human-Computer Interaction*, 33(3), 229–240.
<https://doi.org/10.1080/10447318.2016.1239797>
- Sweetland, S. R. (1996). Human capital theory: Foundations of a field of inquiry. *Review of Educational Research*, 66(3), 341–359.
- Thern, E., de Munter, J., Hemmingsson, T., & Rasmussen, F. (2017). Long-term effects of youth unemployment on mental health: does an economic crisis make a difference? *Journal of Epidemiology and Community Health*, 71(4), 344–349. <https://doi.org/10.1136/jech-2016-208012>
- Turpin, M. (2018). Assessing South African ICT4D research outputs: A journal review. *South African Computer Journal*, 30(1), 108–127. <https://doi.org/10.18489/sacj.v30i1.541>

- Vagle, M. D. (2014). *Crafting phenomenological research*. Routledge.
- Vally, S., & Motala, E. (2014). *Education, economy and society*. Unisa Press.
- van Biljon, J. (2016). Development informatics research and the challenges in representing the voice of developing country researchers: A South African view. *The African Journal of Information and Communication*, 2016(18), 74–94.
<https://doi.org/https://doi.org/10539/21757>
- van Broekhuizen, H., van der Berg, S., & Hofmeyr, H. (2016). Higher education access and outcomes for the 2008 national matric cohort. In *Stellenbosch Economic Working Paper*. (Stellenbosch Economic Working Papers: 16/16) Bureau for Economic Research, University of Stellenbosch. <https://doi.org/10.2139/ssrn.2973723>
- van Manen, M. (1990). *Researching lived experience: Human science for an action sensitive pedagogy* (2nd ed.). Routledge.
- van Manen, M. (2014). *Phenomonology of practice: Meaning-giving methods in phenomenological research and writing*. Routledge.
- Walsham. (2017). ICT4D research: Reflections on history and future agenda. *Information Technology for Development*, 23(1), 18–41.
<https://doi.org/10.1080/02681102.2016.1246406>
- Walsham, G. (1997). Actor-Network Theory and IS Research: Current Status and Future Prospects. In Lee A.S., Liebenau J., & DeGross J.I. (Eds.), *Information Systems and Qualitative Research* (pp. 466–480). Springer, Boston, MA. https://doi.org/10.1007/978-0-387-35309-8_23
- Windsor, K., & Alcorso, C. (2008). *Skills in context: A guide to the skill ecosystem approach to workforce development*. NSW Department of Education and Training, Australia.
https://www.training.nsw.gov.au/forms_documents/industry_programs/workforce_development/skill_ecosystem/skills_in_context.pdf
- Winefield, A. H., Winefield, H. R., Tiggemann, M., & Goldney, R. D. (1991). A longitudinal study of the psychological effects of unemployment and unsatisfactory employment on young adults. *Journal of Applied Psychology*, 76(3), 424–431. <https://doi.org/10.1037/0021-9010.76.3.424>
- World Bank. (2019). *Mobile cellular subscriptions (per 100 people) - South Africa: 1960-2019*. International Telecommunication Union (ITU) World Telecommunication/ICT Indicators

- Database. <https://data.worldbank.org/indicator/IT.CEL.SETS.P2?locations=ZA>
- World Bank. (2021). *The World Bank in South Africa: Overview*.
<https://www.worldbank.org/en/country/southafrica/overview>
- Yin, R. (2009). *Case study research: Design and methods* (4th ed.). Sage.
- Yin, R. (2018). Case study methods. In G. Green, J.L., Camilli, P. B. Elmore, A. Skukauskaitė, & E. Grace (Eds.), *Handbook of complementary methods in education research* (3rd ed., pp. 111–123). Lawrence Erlbaum.
- Zheng, Y. (2009). Different spaces for e-development: What can we learn from the capability approach? *Information Technology for Development*, 15(2), 66–82.
<https://doi.org/10.1002/itdj>

Appendix 1. WhatsApp focus group visual illustration of emergent themes

MOST job websites feel the same




Young people use the internet to search for JOBS, not to read Career advice



Job websites take too much time!



Many job websites are confusing to use



The WORST thing about job websites is that you don't get feedback



Most job websites say you need experience



Appendix 2. Data collection procedure for interviews

1. Access contact data via work seeker support platform database
2. Filter database according to the variables of age, gender and education level to identify the following candidates:
 - a. One female with a matric, between 15 and 19 years old
 - b. One female with less than matric between 20 and 24 years old
 - c. Five females with matric between 20 and 24 years old
 - d. Four females with matric between 25 and 29 years old
 - e. Two males with matric between 20 and 24 years old
 - f. One male with matric between 30 and 35 years old
3. For each group of candidates, attempt to call the cell phone number provided for person until the sample number is achieved per group.
 - a. When contacting individuals, briefly explain the nature of the study and confirm willingness to participate. Communicate that all data costs for the interview will be covered.
 - b. If participant agrees, schedule interview and purchase data.
4. At the time of the interview, call the participant. Before commencing the interview, receive consent to participate in study:
 - a. Explain content of consent form
 - b. Send consent form to participant
5. Conduct interview using interview questionnaire (Appendix 3)
6. For the amount of time spent in the interview, offer work-readiness support (e.g. support completing a CV, a LinkedIn profile etc.)

Appendix 3. Interview questionnaire



MASTER OF PHILOSOPHY IN INCLUSIVE INNOVATION

Questionnaire:

Participant name:

.....

This research project seeks to understand how unemployed South African youth experience technological interventions aimed at granting them access to employment and/or further learning opportunities.

Ethical consent for the study has been approved by the UCT Commerce Faculty Ethics in Research Committee. Your participation in this research is voluntary. You can choose to withdraw from the research at any time.

The interview will take approximately 60 minutes to complete and will be audio recorded.

1. Please tell me about your living situation (where you live, who you live with, how would you describe the area in which you live?) How long have you been living there?
2. What is your home language?
3. Please tell me about your education. (What school did you go to? What is your highest level of education?)
4. How do you feel about learning?
5. What are your current commitments (at home, or work, community organisations, volunteer work etc.)?
6. How do you support yourself financially?
7. How do you access the internet?



To find out more about our world-class academic programmes, executive education short courses and customised programme offerings contact 0860 UCT GSB (028 472) | INTL +27 (0)21 4061922 | info@gsb.uct.ac.za or visit www.gsb.uct.ac.za



8. What do you use the internet for?
9. Do you have your own mobile phone? If so, what kind of phone?
10. What do you use your phone for? (Prompt: apps, photos, WhatsApp etc.)
11. I would like now to focus on your dreams and goals for your future, before we talk about the platform specifically. What do you want to achieve in life?
12. Why is this important to you?
13. What do you need to achieve these things?
14. How do you feel about the journey of looking for a job?
15. What can platforms do to help change how you feel about this process?
16. Now I have a few questions that focus on the platform specifically. Why did you register for the platform?
17. How did you hear about the platform?
18. Please think back to the first time you used the platform. Please tell me about this experience. What did you do? How did you feel when using the website?
19. Do you still use the platform? Why/ why not?
20. How often do you visit the website?
21. Please tell me about your general experience of using the platform. Talk me through how you use the platform. What sections do you visit?
22. Have you recommended the app to your friends or family? Why/ Why not?



To find out more about our world-class academic programmes, executive education short courses and customised programme offerings contact 0860 UCT GSB (828 472) | INTL +27 (0)21 4061922 | info@gsb.uct.ac.za or visit www.gsb.uct.ac.za



23. Can you tell me about a time when the platform didn't work? What happened? How did you feel?
24. Before you used the platform, what other websites or applications did you use?
25. Since using the platform, how has your attitude changed? (how do you feel about your job-search journey; how do you feel about your future?)



To find out more about our world-class academic programmes, executive education short courses and customised programme offerings contact 0860 UCT GSB (020 472) | INTL +27 (0)21 4061922 | info@gsb.uct.ac.za or visit www.gsb.uct.ac.za



Appendix 4. Website usage data for 2020

	Number	Percentage
Total users (number of unique users who visited the website)	316 069	–
Users who registered	59 500	19%
Profile completion of those who registered	4856	8%
Returning users	2878	0.91%
Average time spent on a page	33 seconds	–

Appendix 5. Consent form



MASTER OF PHILOSOPHY IN INCLUSIVE INNOVATION

INTERVIEW CONSENT FORM:

Participant name:

I volunteer to participate in a research project conducted by Simone Peinke as partial fulfilment of the requirements for the MPhil Degree at the Graduate School of Business. I understand that the research is designed to gather information about how unemployed youth use technological platforms to access jobs and that I will be one of approximately 12 of people being interviewed for this research.

Background and purpose of the research

This research project seeks to understand how most unemployed South African youth experience technological interventions aimed at granting them access to employment opportunities. By exploring the lived experience of youth engaging with these technologies, this research project hopes to provide a micro-level view on how these technological interventions are mediating the job search experience for unemployed youth. This micro-level perspective may contribute fresh insights into how such technological interventions aimed at unemployed South African youth may be adapted for improved outcomes.

Ethics approval

Ethical consent for the study has been approved by the *UCT Commerce Faculty Ethics in Research*.

Participation and confidentiality



To find out more about our world-class academic programmes, executive education short courses and customised programme offerings contact 0860 UCT GSB (828 472) | INTL +27 (0)21 4061922 | info@gsb.uct.ac.za or visit www.gsb.uct.ac.za



I understand that my participation in this research is voluntary, that I will not be compensated and that I may withdraw at any time.

The interview will take approximately 45 - 60 minutes to complete and will be audio recorded.

I understand that I will not be identified by name in any reports using information obtained from this interview and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

Should you have any questions or concerns please contact me on 083 431 4311 or email simonepeinke@gmail.com. My Supervisor is Dr Camaren Peter, and he can be contacted on 082 447 1020 or camaren.peter@gsb.uct.ac.za.

Consent

I consent to participate in this interview, based on the terms outlined above and subject to the following additional condition of my own (if any).

Signed by interviewee

Date

Signed by Student

Date



To find out more about our world-class academic programmes, executive education short courses and customised programme offerings contact 0860 UCT GSB (828 472) | INTL +27 (0)21 4061922 | info@gsb.uct.ac.za or visit www.gsb.uct.ac.za

