AN INVESTIGATION OF VOCATIONAL INTERESTS OF GRADE 9 LEARNERS AT SELECTED SECONDARY SCHOOLS IN WINDHOEK

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATIONAL PSYCHOLOGY (GUIDANCE AND COUNSELLING)

OF

THE UNIVERSITY OF NAMIBIA

BY

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APRIL 2021

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ABSTRACT

This research study was conducted to shed light on the vocational interests of Grade 9 learners in specific secondary schools in Windhoek. Vocational interests form an integral component of the educational and career decisions of adolescents. This research study employed a pragmatic methodology with a sequential transformative design. The quantitative component of this design included administering, scoring, recording and analysing data from the Namibian Vocational Interest Inventory (NAMVII) to determine the participants' fields of interest, broad areas of study and Holland codes. Differences pertaining to vocational interests between male and female participants were also investigated. The research comprised qualitative matching of the broad areas of interest to the schools' offered fields of study in order to determine whether each school offered subjects which matched the learners' vocational interests. It was found that fields of high interest among learners included biological and medical sciences, social caring, business and performing arts and music. Additionally, broad areas of study that yielded a high interest were in the science, social, creative and commercial fields. Another finding, in terms of the Holland codes, revealed a high interest in the social, enterprising and artistic categories. Additionally, it was concluded that there was a significant difference between males and females' vocational interests. Furthermore, the matching of broad areas of study with available fields of study and choice subject combinations revealed that, although many broad areas were represented by available fields of study in each school, certain fields of study were lacking. These included the social, creative and agricultural areas specifically. The research revealed important findings related to vocational interests as an important factor in career guidance in secondary school. Thus, it would be beneficial for

stakeholders to take note of these findings and apply them accordingly in their career guidance and counselling activities.

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ACKNOWLEDGEMENTS

I would like to make use of this opportunity, first and foremost, to thank God for granting me the capacity and grace to conduct this research study. It will always be a testimony of His strength when we are weak, and that His loving kindness never ends (Psalm 69:16).

I am also very grateful to my family and friends who supported and encouraged me constantly. Furthermore, I am very grateful for such supportive and dedicated fellow students who assisted and encouraged me, and who have become like family.

My most heartfelt gratitude and appreciation go to my main supervisor, Professor M. L. Mostert. Thank you so much for all the time, meetings, guidance, support and corrections that you have provided – the value of your contributions cannot be expressed in words. Additionally, I would also like to thank my co-supervisor, Professor C. J. Wilders, who provided valuable assistance, insight and guidance. Thank you also to Dr Marina Muller, for your unwavering willingness to assist me when I was battling to interpret all the collected data. I am also very grateful to Professor T. C. Smit, who assisted with the reading and editing of my research.

I have come to learn that the following proverb holds true: If you want to go fast, go alone, but if you want to go far, go together. I will forever be grateful to everyone who has helped me to come this far!

DEDICATION

Firstly, I would like to dedicate this thesis to my husband, Jacobus, and my two sons, Markus and Milán. You have supported and encouraged me in ways that few would ever know or understand. You are my tribe, and I love you dearly.

I also dedicate this thesis to my grandparents, Aldo and Laurika, who have given me a great legacy, as well as an infinite amount of love and support throughout my entire life.

Lastly, but not at all the least, this thesis is dedicated to my late mother, Kania. She was my “person”, my greatest supporter, and her love and encouragement will always live on in my heart.

DECLARATION

I, Launa Moolman, declare hereby that this study is a true reflection of my own research, and that this work or part thereof has not been submitted for a degree in any other institution of higher education.

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Date: April 2021

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CHAPTER 1

OVERVIEW OF THE STUDY

1.1 INTRODUCTION

This chapter provides the background, statement of the problem, objectives and hypotheses, as well as an explanation of the significance of this particular study. The first chapter also includes the limitations and delimitations, as well as definitions of relevant terms related to this study.

1.2 BACKGROUND OF THE STUDY

Vocational interests have been widely accredited as contributing to the understanding of individual tendencies in past, as well as current, times. As per definition, vocational interests include inherent preferences for certain activities and the contexts associated with them. These preferences ultimately guide and motivate certain behaviours and direct individuals towards specific environments (Holland, 1997; Rounds & Su, 2014). Vocational interests also form an integral part of educational and career decisions, which are complex and often stressful for adolescent learners in secondary schools (Grüttemeyer, 2017; Stoll et al., 2017). Empirical evidence suggests that the vocational interests of learners in secondary schools have received a considerable amount of attention in the field of educational research (Ion et al., 2019; Stoll et al., 2017; Vock et al., 2013; Volodina & Nagy, 2016). In the Namibian context, Mostert (2003) investigated the vocational interests of Grade 10 learners in Namibia, as well as developed a standardised vocational interest inventory (NAMVII) for Namibian learners. Since this study was conducted more than one and half decades ago, many changes in the vocational environment, with specific

reference to the Namibian context, have taken place since. For example, since 2018 students have not been making subject choices for Grade 11 in Grade 10, as was previously done, but already in Grade 9 (Republic of Namibia Ministry of Education, 2018). Many educational reforms have also taken place since Mostert's 2003 study, and technological advances have greatly influenced career guidance and choice, as well as the selection of subjects by adolescents (Shipepe & Peters, 2018).

No known revised studies have been conducted to investigate the vocational interests of Grade 9 learners in Namibia, as well as the influence of gender on areas of high interest. Even more so, no investigations have been conducted to assess whether these vocational interests match with subjects available from Grade 10 onwards.

In Namibia, career guidance is offered for Grades 8 to10 in Life Skills lessons, a non-promotional subject. During 2016, the Ministry of Education introduced an updated syllabus for Life Skills in the Junior Secondary Phase (Republic of Namibia Ministry of Education, 2015). This updated syllabus addresses fields of study as a component of career guidance and advises learners to consider career prospects when selecting subjects in a specific field of study. Per definition, the term, fields of study, refers to a fixed cluster of the options available to Grade 9 learners in Namibia to select subjects from 42 available combinations. Each field of study includes English, Mathematics, three additional and mutually supporting subjects, as well as one supplementary subject (Republic of Namibia Ministry of Education, 2018).

Consequently, subject choice can be regarded as an important component in the career guidance process, as it entails the process where secondary school learners make a decision about which subjects they study (Thomson et al., 2018). These choices are often

influenced by a variety of factors, such as what is offered by a specific school, individual aptitude and achievement, discussions with teachers, family members and friends, gender, and the like (Davies & Ercolani, 2019; Korpershoek et al., 2012; Palmer et al., 2017). Research has also established that the specific subjects selected by young adolescents have important consequences for their future academic and career outcomes (Anders et al., 2018; Ianelli & Smyth, 2017). All in all, evidence suggests that subject choice is greatly impacted by the career guidance process, and that vocational interests serve as one of the most powerful predictors of subject choice and vocational pathways (Volodina & Nagy, 2016).

Thus, in terms of educational pathways and subject selection preceding vocational employment, vocational interests have been identified as a significant indicator of vocational success (Patrick et al., 2011; Stoll et al., 2017). In a traditional sense, vocational interests have been utilised by vocational psychologists and other professionals primarily to guide individuals towards careers that correspond with their preferences (Patrick et al., 2011; Schelfhout et al., 2019; Volodina et al., 2015). Results from these studies demonstrate that vocational success has often been attained by individuals whose careers correspond with their vocational interests.

Research has found that people are happiest when their chosen careers are proportional to their vocational interests (Markman, 2017; Stoll et al., 2017; Volodina et al., 2015). Therefore, vocational interests can be regarded as an important psychological component in career guidance, as it will impact subject selection, programme implementation and promote desirable behaviour in related environments (Proyer et al., 2012). Career guidance, without doubt, serves as a developmental process aimed at the optimal

development of an individual to make comprehensive and informed educational and vocational choices (Crişan et al., 2015). Career guidance can take on different forms, such as one-on-one personal counselling, group education sessions, formal meetings and informal sessions, which can include telephonic and digital approaches to guidance, for example blogposts, email, online questionnaires, and the like (Blondeau & Awad, 2017; Buchanan et al., 2016).

According to Hughes et al. (2017), the role of career guidance in the twenty-first century is aimed at enabling individuals to become active citizens in society, with intrinsic motivation, the capacity to work in a team, as well as being adaptable and resilient in vocational environments. In a school setting, career guidance often focuses on topics, such as tertiary education or vocational training, diverse occupations and career paths (Loan & Van, 2015), and should ideally include aspects, such as vocational interest testing and subject selection (Patrick et al., 2011; Stoll et al., 2017; Volodina et al., 2015).

Another consideration pertaining to career guidance and vocational interest is related to differences between males and females. Research conducted in the field of vocational interests has generated results that indicate significant differences between males and females with regards to areas of high interest (Anders et al., 2018; Blondeau & Awad, 2017; Ion et al., 2019). A study conducted by Cheryan et al. (2017) found that significant differences in terms of gender existed, based on interests in STEM subjects (Science, Technology, Engineering and Mathematics) and related career-fields. This study revealed that males were more inclined than females to demonstrate an interest in the STEM subjects and career-fields. In a Namibian context, limited information is available to assess

whether a difference exists between males and females based on areas of high interest (Enkali, 2019; Iipinge, 2014; Mostert, 2003).

Before the information generated by vocational interest tests can be investigated or applied, relevant instruments for assessment need to be selected and administered. Experts routinely rely on the norm-referenced results from vocational interest inventories to test vocational interests (Su et al., 2019; Vock et al., 2013). Examples of well-known and widely applied vocational interest inventories in the African context include the 19 Field Interest Inventory, the South African Vocational Interest Inventory (SAVII) and the Namibian Vocational Interest Inventory (NAMVII), among others.

Given the importance of vocational interests in terms of career guidance, subject selection, and career trajectories (Stoll et al., 2017), special interest should be paid to the investigation of the vocational interests of Grade 9 learners in Namibia. Results from such an investigation could contribute to equipping learners with integral knowledge in order to make informed decisions regarding their educational and vocational pathways (Isak, 2018), as well as inform stakeholders and decision-makers concerned with the Namibian school curriculum and relevant subject choices.

1.3 STATEMENT OF THE PROBLEM

It has been recorded in the Namibia Labour Force Survey Report (Namibia Statistics Agency, 2019) that the unemployment rate of Namibians between the ages of 15 and 34 years increased from 43.4% in 2016 to 46.1% by the end of 2018. A wide array of reasons exists for this high unemployment rate among the youth in Namibia. According to Haidula (2019), the high rate of unemployment can be subscribed to a lack of post-school qualifications and specialised skills required for most job appointments. Another reason

may be that secondary school learners have not received effective career guidance (Loan & Van, 2015; Mbwale, 2004), including whether their identified vocational interests match their subject choice in such a way that it benefits optimal career development. This notion pertaining to ineffective career guidance in both a Namibian and international context is supported by empirical research (Ilongo, 2015; Stoll et al., 2017) in which a general lack of effective counselling, as well as vocational interest testing, has been addressed. As a part-time career counsellor, I experienced that many Namibian learners were unaware of their vocational interests, and had not actually been exposed to vocational interest testing in schools. Observations also revealed that this lack of knowledge left secondary school learners unable to select confidently those subjects which would correlate positively with their vocational interests. Consequently, Grade 9 learners are inhibited from making informed career-related choices, which directly impacts their future educational and vocational pathways. There is thus a need to investigate the vocational interests of Grade 9 learners in Windhoek secondary schools, and whether appropriate corresponding subjects of choice based on their vocational interests are offered from Grade 10 onwards.

1.4 OBJECTIVES OF THE STUDY

The research objectives that guided this study were:

1. To investigate the vocational interests of Grade 9 learners in Windhoek. This included identifying the fields of interest, interest in broad areas of study and Holland codes.
2. To evaluate possible differences between males and females (gender) with regards to the fields of interest, broad areas of study and Holland codes.

3. To determine the extent to which available fields of study at secondary schools matched the highest broad areas of study for learners in their respective schools.

1.5 HYPOTHESES OF THE STUDY

The null hypotheses for the study, in relation to research objective 2 (only) aimed to evaluate the possible differences between males and females with regards to the fields of interest, broad areas of study and Holland codes:

1. There is no significant difference between males and females in terms of fields of interest.
2. There is no significant difference between males and females in terms of broad areas of study.
3. There is no significant difference between males and females in terms of Holland codes.

1.6 SIGNIFICANCE OF THE STUDY

The findings of this study provide information of learners' interest in the broad areas of study, as well as the related Holland codes for Grade 9 learners in Windhoek, based on vocational interest testing. The results from the investigation also provide information with regards to the differences between males and females (gender) in terms of vocational interest, and whether any imbalances in this regard should be addressed.

Furthermore, the findings from this study indicate whether the choice subjects available at selected schools matched with the learners' interest in the highest broad areas of study. In terms of practical significance, this information may be utilised by educational stakeholders to improve curriculum development and delivery in Namibia by including

mandatory vocational interest testing. This will benefit secondary school learners, based on evidence that there exist considerable positive correlations between vocational interests and vocational success (Vock et al., 2013). Furthermore, the study may enable educational policy makers and Life Skills teachers to intervene positively and enhance career guidance in schools in terms of subject selection by Grade 9 learners.

1.7 LIMITATIONS OF THE STUDY

The participants could reflect an erroneous sample proportion of the population. Some participants were unwilling to participate, and many parents/guardians failed to provide consent for learners to participate in the study. Challenges with obtaining consent also resulted in a gender (gender) imbalance pertaining to the sample. Various answer sheets were not appropriately completed and had to be discarded. Time and financial constraints also proved to be limiting factors.

Another limiting factor included the utilisation of only the three highest broad areas of study, as well as the three highest letters from the Holland code during the process of matching choice subjects per school.

1.8 DELIMITATIONS OF THE STUDY

The researcher limited the study to selected secondary schools in Windhoek, instead of Namibia in its entirety, in order to minimise travel, time and financial expenditure.

1.9 DEFINITION OF TERMS

This section aims to provide the meaning of key terms employed in the study. The following are key terms and their definitions employed in the context of this research.

1.9.1 Vocational interests, specifically pertaining to Holland's Theory, are inherent preferences for certain activities and the contexts associated with these activities. These preferences ultimately guide and motivate certain behaviours and direct individuals towards specific environments (Rounds & Su, 2014).

1.9.2 Career guidance, especially in a school context, is a process aimed at the optimal development of an individual to make comprehensive and informed educational and vocational choices (Crişan et al., 2015).

1.9.3 Subject choice in the context of this study, refers to the process where secondary school learners (in Grade 9) make a decision about which subjects they study (Thomson et al., 2018) from Grade 10 onwards.

1.9.4 Fields of study refer to a fixed cluster of the options given to Grade 9 learners in Namibia to select subjects from 42 available combinations. Each field of study includes English, Mathematics, three additional and mutually supporting subjects, as well as one supplementary subject (Republic of Namibia Ministry of Education, 2018).

1.9.5 Life Skills is a compulsory, non-promotional subject included in the Namibian educational curriculum from Grade 4 to 12. Themes included in the subject are Career Guidance, Daily Living Skills and Personal Social Skills, which are all discussed by means of different topics (Republic of Namibia Ministry of Education, 2015).

1.9.6 NAMVII is the acronym employed for the Namibian Vocational Interest Inventory which was developed and standardised by Mostert (2003) for Namibian learners.

1.9.7 Broad areas of study refer to the 6 areas (Technical, Agriculture, Science, Maths, Language, Creative, Social and Commercial) derived from the 13 fields of interest in the NAMVII (Mostert, 2003).

1.9.8 Holland codes refer to the letter combinations generated by the Holland score in the NAMVII (Mostert, 2003), based on John Holland's Occupational Themes, RIASEC (Holland, 1997).

1.9.9 Gender, in the scientific research context of this study, refers to the classification of participants as either female or male, on the biological basis of their reproductive organs (Gender, 2003).

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 INTRODUCTION

In this chapter, academic literature relevant to vocational interests, particularly in the secondary school context, is reviewed. Firstly, theoretical frameworks for career counselling are reviewed, followed by a discussion of the theoretical framework, namely Holland's Theory of Vocational Personalities and Work Environments that underpins this study.

The chapter aims to provide comprehensive insight with regards to literature on vocational interests, career guidance and career choice, as well as subject choice. Finally, a gap in existing literature is addressed, especially in the Namibian context, and with reference to vocational interests and all other relevant components of career guidance.

2.2 THEORETICAL MODELS: CAREER GUIDANCE AND COUNSELLING

Children from as young as pre-school age are already exposed to careers in elementary discussions and role play (Ackermann, 2019). This form of career exposure serves as a playful introduction to a process which is later seen as a serious, and often daunting, life decision (Grüttemeyer, 2017). During this process of choosing a career, adequate guidance and counselling play important roles, because they contribute to individual development in terms of self-exploration, career development and career readiness (Hughes et al., 2017; Knight, 2015). Such guidance and counselling, aimed at facilitating career related choices, are based on different theoretical frameworks which serve the purpose of providing a

theoretical and empirical base, as well as guide the overall development of the discipline (Knight, 2015; Leung, 2008; Sung et al., 2016).

In terms of theoretical frameworks for career guidance and counselling in the western world, various diverse and comprehensive theories have been developed over the past century (Bogluţ et al., 2015; Haug & Plant, 2016; Leung, 2008). However, due to their complex nature, experts have stated that career guidance and counselling as a discipline requires a set of theoretical frameworks which are universally valid and applicable (Leung, 2008; Stoll et al., 2017). Experts have investigated the psychometric properties of questionnaires for vocational interests in psychology, and established that five theoretical models for career counselling (the "big five") have been formulated over time (Bogluţ et al., 2015). Consequently, the "big five" career development models have guided career guidance and counselling practice and research in the past few decades in the USA, as well as internationally, and are still considered relevant in terms of career-related processes (Bogluţ et al., 2015; Leung, 2008; Stoll et al., 2017).

The "big five" career development models are the (a) Theory of Work-Adjustment (Dawis & Lofquist, 1984), (b) the Self-concept Theory of Career Development formulated by Super (1980) and, more recently, by Savickas (2002), (c) Gottfredson's (1996) Theory of Circumscription and Compromise, (d) Social Cognitive Career Theory (Bandura, 1977), and (e) Holland's Theory of Vocational Personalities and Work Environments (1997).

With reference to the "big five" and their universal validity and application, a theoretical consideration of career guidance and counselling in a Namibian context is also of integral importance. However, in addition to research by Leung (2004), Hesketh and Rounds (1995) found that vocational and career related issues were salient across different cultures

and nationalities, which supports the application of the "big five" in a western, as well as a Namibian context. Consequently, it becomes essential to explore these five models.

2.2.1 Theory of Work Adjustment

The Theory of Work Adjustment (Dawis & Lofquist, 1984) is based on differences in terms of individual behaviour, and is also called the Person-Environment (PE) Fit Model. The model focuses on career selection and development in terms of individuals and individual accommodation, by matching a person to a work environment based on both parties' needs, expectations and vocational interests (Leung, 2003). According to Bayl-Smith and Griffin (2015), this model serves as the most frequently utilised guiding framework for programmes in vocational psychology, such as those utilised by recruitment agencies.

An example of its application in the Namibian context, is the employment of the Theory of Work Adjustment by websites, such as Namibia at Work (https://nieis.namibiaatwork.gov.na/), as well as Elite Employment (https://eliteemployment.com.na/). These websites create a platform where job applicants submit their curricula vitae and related information online. By means of algorithms, information is then matched to relevant vacancies provided by employers in order to appoint an ideal candidate. The advantages of utilising the Theory of Work Adjustment in such a manner include eliminating the time-consuming process of manually sifting through job applicants, as well as the probability that the chosen applicant will or will not be compatible with the specific job for which he or she was selected (Dawis, 2005; Zhu et al., 2016). However, the disadvantages of utilising such recruitment systems include the possible omission of suitable candidates, a void in social interaction with job applicants

(it becomes a very impersonal process), high volumes of responses, logistical problems and even technological issues, among others (Woodend, 2019; Zhu et al., 2016).

2.2.2 Self-concept Theory of Career Development

The Self-concept Theory of Career Development, as initially conceptualised by Super (1980) and more recently refined by Savickas (2002), is built on Super's notion of self-concept in a constructivist manner. Savickas (2002) postulates that the process of career construction consists of the development and implementation of vocational self-concepts in work-roles. In addition to self-concept, Super (1980) also proposes a life stage developmental framework consisting of the following stages: growth, exploration, establishment, maintenance (or management) and disengagement. In each stage, the individual must manage successfully socially-acceptable vocational developmental tasks in relation to a specific chronological age range. Consequently, the concept, career maturity, was coined to describe the extent to which a person managed to fulfil the said vocational developmental tasks as required in each developmental stage (Stead & Watson, 2017). In essence, Super (1980) argues that both career choice and development are processes of identifying a person's self-concept.

In the Namibian context, the National Curriculum of Basic Education (Republic of Namibia Ministry of Education, 2010) emphasises core skills which Namibian learners should acquire during the course of their schooling years in order to develop an individual self-concept. These core skills, together with the career-related competencies addressed in the Namibian Life Skills Teacher's Manual for Grade 8 to 10 (Republic of Namibia Ministry of Education, 2015), are similar to the vocational developmental tasks contained in the Self-concept Theory of Career Development.

Ideally, career guidance in the secondary school context could thus be based on the Self-concept Theory in order to facilitate self-knowledge and career maturity, and thus guide learners in choosing a suitable career (Abdinoor & Ibrahim, 2019; Buys, 2014). The advantages of applying the Self-concept theory in career guidance include processes leading to personal awareness and growth, as well as effective planning for a career that correlates with a person's concept of self (Buys, 2014; Coertse & Schepers, 2004; Themba, 2010).

As far as the Self-concept Theory and a standardised measure of career maturity are concerned, Crites's revised Career Maturity Inventory (CMI) (Crites & Savickas, 1996) assesses the ways in which adolescents and adults approach career development tasks. A drawback, however, when utilising the concept of career maturity at any given developmental stage is that results from the CMI cannot be considered static throughout an individual's lifetime, as the process is believed to be on-going (Buys, 2014; Coetzee & Roythorne-Jacobs, 2007).

2.2.3 Theory of Circumscription and Compromise

The Theory of Circumscription and Compromise was developed by Gottfredson (1996). The presupposition related to this model is based on Gottfredson's belief that choosing a career is a process that requires a high level of cognitive competence, enabled by the desired genetic factors. Furthermore, these genetic factors determine the formation of personal characteristics, such as interests, skills and values. These are, however, expressed and finalised based on the characteristics of the environment in which the person operates. Thus, according to Stead and Watson (2017), Gottfredson's Theory of Circumscription and Compromise can be applied in a vocational context by guiding individuals to

eliminate career choices which are in conflict with their self-concept (i.e., circumscription). Compromise as an aspect in the theory is subsequently applied by guiding individuals to recognise and accommodate the external constraints of their vocational choice, particularly during processes of personal career guidance and counselling in schools.

In Namibian schools, this theory is often applied in the process of career guidance (Mbwale, 2004; Spinas, 2005) as learners complete an array of interest and personality inventories, as well as aptitude tests, in order to eliminate certain career options, after which they are guided by Life Skills teachers to choose an appropriate career path. This application of the theory, however, is not always an informed one, because many other variables also play a role in terms of career guidance. It is thus indisputable that career guidance in the Namibian context has much room for improvement (Mbwale, 2004; Shipepe & Peters, 2018; Spinas, 2005).

2.2.4 Social Cognitive Career Theory

The Social Cognitive Career Theory, based on Bandura's (1977) theory of self-efficacy, supports a bi-directional and symbiotic relationship between the individual and the work environment (Lent et al., 2002). Bandura posits that portions of an individual's knowledge acquisition can be directly related to observing others in the context of social interactions, experiences and outside media influences. This model comprises three aspects of career development which aim to elaborate (i) the development of vocational interests, (ii) the way in which a career choice is made and (iii) stability and career performance.

Applications of the Social Cognitive Career Theory with relation to vocational contexts, include aspects, such as individual career research and exposure, job shadowing and even

in-service training (Brown & Lent, 2017). The application of the Social Cognitive Career Theory can be observed at the various vocational training centres in the Namibia context, such as the Windhoek Vocational Training Centre, the Namibian Academy for Tourism and Hospitality and the Military School at Osona base. Despite the stigma attached to enrolment at such centres, vocational education and training play an integral role in promoting the transition from school to work for young individuals (Choi et al., 2019).

The four aforementioned theories, which are included in the "big five", all have valuable and conducive qualities in terms of career guidance and counselling. In terms of vocational interests as an important factor in the process of vocational consideration, however, the fifth theory contained in the "big five", namely Holland's Theory of Vocational Personalities and Work Environments (Volodina et al., 2015), seemed the most applicable as theoretical framework for this study. Holland's theory is based on the fundamental observation of different traits, behaviours and interests of people (Stoll et al., 2017), making it relevant to this study and eligible for further review.

2.3 HOLLAND'S THEORY OF VOCATIONAL PERSONALITIES AND WORK ENVIRONMENTS

John L. Holland's Theory of Vocational Personalities and Work Environments (1997), serves as the basis for different career guidance and counselling systems worldwide. Initially, the theory was postulated as a theory of vocational choice (Holland, 1959), and has been revised numerous times after its first publication. Essentially, Holland's Theory (1997) is based on four assumptions which indicate (i) the nature of personality types (and the relationship between them), (ii) the characteristics of work environments, (iii) the way in which personality types and work environments are determined, as well as (iv) the way

in which they interact in a vocational context (Bogluţ et al., 2015; Mostert, 2003). Holland thus postulated that individuals' vocational interests are, in fact, the expression of their "work" personalities, which then transcends into relevant work environments – a notion which revolutionised the delivery of vocational assistance worldwide (Gottfredson, 1999; Stoll et al., 2017).

2.3.1 Personality types

A modern definition of "personality" Bergner (2020, p. 4) is that "an individual's personality is the enduring set of traits and styles that he or she exhibits, which characteristics represent (a) dispositions (i.e., natural tendencies or personal inclinations) of this person, and (b) ways in which this person differs from the 'standard normal person' in his or her society". Additional to the concept of personality, the term, personality types, can be described as a classification based on qualitative differences between individuals (Bernstein et al., 2008). In the field of psychology, there are numerous approaches to determining personality types, including Jung's 1921 conceptualisation of psychological types (Jung, 1971), the Myers-Briggs Type Indicator (Myers, 1962) and the DISC Assessment (Merenda & Clarke, 1965), to name a few. However, Holland's Theory of Vocational Personalities and Work Environments is most applicable to the current study, as it addresses personality types in relation to vocational interests.

According to Holland (1997), most people can be categorised as belonging to one of six personality types: Realistic, Investigative, Artistic, Social, Enterprising or Conventional (also referred to as RIASEC). These six personality types are differentiated on the basis of vocational interest, and aim to describe the different characteristics of an individual,

such as personal characteristics, preferences and tendencies (Bogluţ et al., 2015). These descriptions are briefly outlined in the next few paragraphs.

Holland (1997) describes the **Realistic** person as somebody who has a preference for activities dealing with exactness and order, and the organisational application of inanimate objects, tools and machinery, as well as animals (Holland, 1997; Mostert, 2003; Stoll et al., 2017). Consequently, these behavioural tendencies contribute to manual, mechanical, agricultural, electrical and technical abilities, with a lag in social and educational competencies. Research has found that men are often inclined to be drawn to Realistic activities (Mintram et al., 2020; Schneider, 2020).

An **Investigative** person is described as one who prefers activities that entail observing and investigating physical, biological and cultural elements in a creative manner to generate understanding and pragmatic application (Bogluţ et al. 2015; Holland, 1997; Mostert, 2003). Holland also argues that such a person will most likely dislike persuasive, social and repetitive activities, while showing a preference for scientific and mathematical tasks. Competencies will thus include scientific and mathematical activities, rather than persuasive abilities.

The **Artistic** person is described as one who has an affinity for activities that are free and unsystematic in nature (Holland, 1997; Morgan & De Bruin, 2018; Mostert, 2003). These activities also often include the manipulation of physical, verbal or human materials in order to create forms or products of art. In terms of avoidance, artistic types generally steer clear of problems that are highly structured or activities of a systematic and ordered nature. Consequently, language, art, music, drama and writing will develop as competencies in the likely absence of clerical or business skills (Bogluţ et al., 2015; Mostert, 2003). Stereotypically, it is often believed that participants in an African context

will generally display a higher interest in the artistic scale, but this notion has not been supported by research (Jones et al., 2020).

Furthermore, Holland describes the **Social** person as one who is drawn to activities which aim to inform, train, develop or cure others. They thus show an aversion to activities that are explicit, ordered or systematic, as well as those involving machines, materials or tools (Bogluţ et al. 2015; Holland, 1997; Morgan & De Bruin, 2018). The competencies of social types are articulated by Holland, and later explained by Mostert (2003), as including relational skills, such as interpersonal and educational abilities, rather than manual and technical aptitude. In an African context, it has been reported that females generally present as social (Rabie, 2017). The social scale also presented the highest mean interest in Mostert's (2003) study pertaining to vocational interests in the Namibian context.

The **Enterprising** person prefers activities involving the achievement of organisational goals or economic gain by manipulating others (Holland, 1997; Mostert, 2003; Stoll et al., 2017). These people tend to experience an aversion to long periods of effort requiring intellect in addition to observational, symbolic and systematic tasks. Behavioural tendencies of enterprising people thus enable the acquisition of verbal skills that promote entrepreneurship, leadership, personal relations and persuasion, but often result in a deficit when it comes to scientific activities (Bogluţ et al., 2015; Mostert, 2003).

Moreover, Holland argues that **Conventional** types prefer activities entailing an explicit, ordered and systematic approach to data manipulation (Bogluţ et al., 2015; Holland, 1997; Morgan & De Bruin, 2018; Mostert, 2003). Thus, these people are drawn to verbal and numerical tasks which include record-keeping, filing, reproducing material, organisation, planning, processing and operating business machines in order to reach goals of an organisational or economic nature. Avoidance activities include those that are unclear or

unsystematic. Conventional types are prone to develop competencies in the fields of clerical, computational and business activities, with deficits in terms of artistic tasks (Holland, 1997; Stoll et al, 2017).

All in all, with reference to the individual differences employed to classify the different personality types, Holland's theory provides insight into the vocational interests and activities that correlate with specific types of people. Furthermore, the six personality types postulated by Holland (1997), namely Realistic, Investigative, Artistic, Social, Enterprising and Conventional, are also interactive and there exists a certain relationship between the types.

2.3.2 Relationship between types

In addition to the descriptive qualities associated with the types described in the RIASEC model proposed by Holland (1997), his model incorporates a spatial component that is depicted via a hexagon (Figure 1). In this hexagon or circular ordering with equal intervals (also known as a circumplex), Holland explains that the relations among the types are probably inversely proportional to the distances between them (Morgan et al., 2015). This implies that the distances (as informed by calculus) between the types are related to the degree of similarity or dissimilarity between them. That is, adjacent types on the hexagon are related most and opposite types on the hexagon are related least to one another. Another postulation regarding the hexagon is that interests are believed to be bipolar. For example, if an individual has a high social score, he or she will likely score low on the realistic scale which is alternate to the social scale (Schneider, 2020).

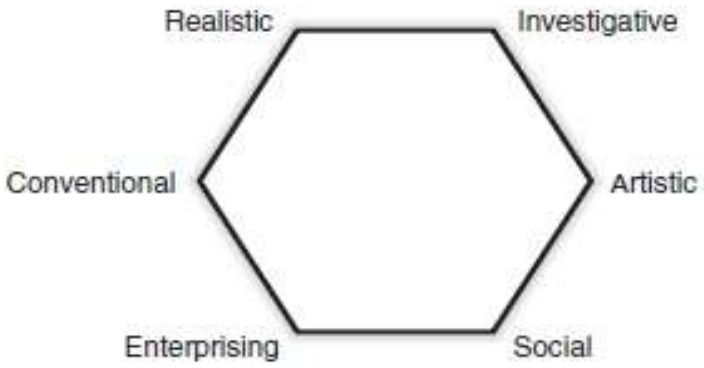

Figure 1

RIASEC model (Holland, 1997)

2.3.3 Assumptions of the theory

Holland's theory comprises four assumptions, namely consistency, congruence, differentiation and identity (McCain, 2017; Morgan et al., 2015; Morgan & De Bruin, 2018; Morgan et al., 2019). The first assumption, consistency, holds that adjacent pairs of types on the hexagon are most related, as previously stated. For example, a person who scores the highest in the Enterprising and Conventional RIASEC codes are considered to be more consistent than should he or she have tested as Enterprising and Realistic (Morgan et al., 2015; Pierce & Johnson, 2017). Thus, the implications with regards to vocational interests in terms of a person with opposite types include possible confusion when choosing a career, as well as a degree of dissatisfaction in a career contained in only one of the opposite types.

The degree of match between a person's type and the type of the work environment that he or she chooses to enter, pertains to congruency (Morgan et al., 2019; Phan & Rounds, 2018). For example, a person who tested as a Conventional type would be most congruent

in an environment that incorporates conventional activities, such as office administration and personal assistance.

A person's 'purity' of type or whether that person clearly resembles one or perhaps two types and evidently does not resemble the other types, is addressed by differentiation (McCain, 2017; Morgan et al., 2019). For example, a person is considered highly differentiated when obtaining a high score as an investigative type while, simultaneously, measuring significantly low on all the other types. This indicates a clear and differentiated interest for a specific type (Morgan & De Bruin, 2018; Pierce & Johnson, 2017).

Identity concerns a clear picture of one's typology. It entails an uncompromised understanding of one's interests, goals and abilities, together with migration towards an accurate career environment (Morgan et al., 2015; Phan & Rounds, 2018). In short, this is an indication of a firm career identity and, to this extent, degrees of identity are highly related to the concepts of consistency and differentiation.

2.3.4 Types of work environments

In addition to the proposed personality types, Holland (1997) postulates that work environments also consist of six basic types, namely realistic, investigative, artistic, social, enterprising and conventional. Mostert (2003) posits that the application of the same set of assumptions and constructs to both personality types and environments is one of the most attractive features of Holland's theory. Thus, in a similar fashion where personalities can be measured to determine typology, work environments are also constituted by a typal character. Holland (1985) argues that a work environment type is primarily determined by the constellation of personality types (i.e., people) that inhabit said environment. For example, the staff room in a secondary school will present with a much different

atmosphere than that in a medical practice because the people working in these environments act, relate and perform work in very different ways, as a result of their respective personality types.

It is, however, imperative to note that personality types are not the only defining feature of work environments (Holland, 1997; McCain, 2017; Memon et al., 2015). For instance, the tasks required by the environment in order to complete the work also have an impact on an environmental type, while work environments are not homogeneous in terms of their type (Memon et al., 2015; Milsom & Coughlin, 2017). Some organisations are very large and complex and, therefore, different units in the organisation take on their own characteristics. Additionally, power differentials, such as executive and directors in the workplace, can also influence the culture and, in so doing, influence the type of work environment (Adam Cobb, 2016; McCain, 2017). To summarise, regardless of the influencing factors pertaining to the existence of certain work environments, said environments are described by Holland (1985) as requiring specific skillsets. These skills, in essence, correspond to the different personality types, implying that the character of an environment will reflect the nature of its members (McCain, 2017; Memon et al., 2015).

2.3.5 Assessment of personality

Numerous methods exist for assessing types of people and types of work environments according to Holland's theory (Hansen, 2019; Morgan & De Bruin, 2018; Stoll et al., 2017). As far as personality types are concerned, a Holland profile can be determined in different ways (Morgan et al., 2015; Morgan & De Bruin, 2018). One solution includes employing a well-constructed quantitative measure, such as the Self-Directed Search or Vocational Preference Inventory (Holland, 1985), both of which evaluate a person's

interests, competencies and self-ratings on multiple dimensions, and assign a specific Holland code. Alternatively, a person's current or desired career or position can be evaluated, after which he or she will be assigned a similar code based on the work characteristics of the position.

The Position Classification Inventory (Gottfredson & Holland, 1991) comprises a formal questionnaire of 84 items designed to assign Holland codes to different positions based on the unique work-related activities and tasks associated with a job. Additionally, the Strong Interest Inventory also makes use of the Holland typological system. The South African Vocational Interest Inventory and the Namibian Interest Inventory (Mostert, 2003) are also employed to assess personality types according to Holland's theory. The selection of a method for measuring a person's type, however, will be determined and based on the goals of the career client, the training and ability of the career counsellor and the time and resources available to all parties (Leung, 2008; Morgan & De Bruin, 2018; Stoll et al., 2017).

2.3.6 Assessment of environment

As with the assessment of personality types, Astin and Holland (1961) developed a technique, the Environmental Assessment Technique (EAT), to measure the type of work environment. This method is based on capturing the typal profiles of the people working in the given environment and then assigning a corresponding code to determine the dominant type in that specific environment. Additionally, another resource, the Dictionary of Holland Occupational Codes, was developed by Gottfredson and Holland (1996). It categorised all the entries from the Dictionary of Occupational Titles (DOT) according to a three-letter Holland code.

2.3.7 Matching person to environment

Past studies show that congruence between employees and their occupation leads to more favourable attitudes and behaviour, as well as profitable performance (Memon et al., 2015). Consequently, at least 50 occupational systems (McDaniel & Snell, 1999) have been developed to identify occupations in certain work environments that are congruent with a person's vocational personality. These include the likes of the aforementioned Dictionary of Holland Occupational Codes and the Position Classification Inventory, among others. Mostert (2003) notes that occupational information sources, or career information delivery systems, have historically only existed in the form of books. Technological advancements, however, have since paved the way for computerised occupational information sources, such as O*NET and, more recently, CareerKey, CareerOneStop, gostudy.net and 123test.com, to replace conventional occupational systems. By matching a generated Holland code, a person is thus able to match him- or herself to specific careers and occupations in an online setting (Hansen, 2019).

2.3.8 Application and support of Holland's Theory

Holland's theory of vocational personalities and work environments is a mature and reputable theory that has been in use since its initial publication in 1959 (Morgan & De Bruin, 2018; Mostert, 2003; Volodina et al., 2015). Research conducted with regards to Holland's theory has shown that career choice, based on sound career guidance and vocational interest, leads to greater academic achievement, job satisfaction and vocational success (Milsom & Coughlin, 2017; Woods et al., 2016). Thus, evidence regarding the formulation of the Holland types and the consequent hexagon model have, in general, been supportive. However, it has been admitted by Holland himself, and concluded by

others, that the hexagon itself might be more of an "irregular polygon" (Morgan et al., 2015). Nevertheless, the RIASEC ordering does hold true, and it has delivered a model that is clear and practical, as well as user-friendly and highly amenable to vocational assessment (Gottfredson, 1999; Morgan & De Bruin, 2018; Stoll et al., 2017). According to Reardon (2016), Holland's theory seeks to address three main questions:

(i) Firstly, which characteristics of a personal and environmental nature contribute to satisfactory career development processes and outcomes, and which contribute to ineffective career decisions, involvement and achievement?

(ii) Secondly, which personal and environmental characteristics determine stability or change pertaining to the level and type of work a person executes in his or her lifetime?

(iii) Thirdly, which methods prove to be most effective when providing assistance to people facing career problems?

Reardon (2016) is of the opinion that the mentioned three questions distinguish Holland's theory from career theories. Furthermore, in terms of theory-credibility, Reardon (2016) posits that Holland's RIASEC theory has generated an enormous amount of information reported in journal articles, book chapters and professional presentations, and it has not diminished in recent years. Furthermore, Foutch et al. (2014) have identified almost 2000 citations regarding the theory and its applications, which adds to the theory's distinguished reputation among experts in the field of career development, maturity and guidance.

There seems to exist a need, however, for future development and adaptability of Holland's Theory of Vocational Personalities and Work Environments. Reardon (2016) comments that Holland's theory is not necessarily applicable to all audiences and goals,

but that future research and development based on the theory could enhance career-related knowledge and applications for years to come. Such revision and development could prove very effective, especially in terms of vocational interests as addressed in Holland's theory (Morgan et al., 2019; Stoll et al., 2017).

2.4 VOCATIONAL INTERESTS

From a very young age, all individuals become aware of, and develop, certain interests that guide and influence their decisions and actions throughout their lives. Interests can be broadly described as topics a person finds interesting and wants to learn more about, or experience to a greater extent. In terms of work-related behaviour and environments, vocational interests are representative of these differences which indicate certain individual preferences. Vocational interests are described as crucial components of someone's personality in terms of individual differences pertaining to motives, goals and personal aims, while also influencing various other life trajectories, such as educational and career pathways (Deniz et al., 2014; Holland, 1985; Stoll et al., 2017). Vocational interests are, furthermore, regarded as inherent preferences for certain activities and the contexts associated with those activities. These preferences ultimately guide and motivate certain behaviours and direct individuals towards specific environments (Rounds & Su, 2014). The three key features of vocational interests are emphasised as follows: (1) vocational interests are traits, (2) vocational interests reflect the individual's preference for certain contexts or activities, and (3) vocational interests serve as strong motivators (Ion et al., 2019; Rounds & Su, 2014). Additionally, there are important key characteristics of vocational interests which influence various other components related to career guidance and counselling, as well as career choice and all aspects thereof.

Most theories of vocational interests (Holland, 1997; Milsom & Coughlin, 2017; Volodina & Nagy, 2016) argue that individuals' likes and dislikes are important predictors of their vocational choices. This notion is largely based on the general assumption that vocational choices are motivated by individuals' desires to establish a high correspondence between what they like or dislike and the characteristics of occupational environments (Holland, 1997; Stoll et al., 2017). Individuals thus look for occupations that match their highest interests, and they avoid occupations that match activities they dislike. This reiterates the strong relation between vocational interests and vocational choice (Tracey & Hopkins, 2001; Volodina & Nagy, 2016). To this extent, research also indicates that vocational interests are not only proportional to vocational choices, but that they serve as significant indicators of vocational satisfaction and success (Patrick et al., 2011; Volodina et al., 2015; Woods et al., 2016). Moreover, vocational interests at school level have been identified as strong indicators of academic success.

Another contributing characteristic of vocational interests, specifically with regards to results generated by testing, relates to the provision of useful data for curriculum and programme design (Vock et al., 2013). Vocational interest testing can provide professionals with information in terms of individuals who display either a specific aptitude or giftedness, or present with special learning needs. Consequently, it has an implication on subject and curriculum design, as well as programme implementation in educational facilities at secondary and tertiary level.

Furthermore, vocational interests can serve an important purpose with regards to the employability of individuals (Burns, 2014; Nye et al., 2012). Although vocational interests are generally ignored in employee selection literature (Nye et al., 2012), research has

shown that vocational interest constructs are positively related to performance and endurance in work and academic contexts (Jackson & Wilton, 2017; Proyer et al., 2012). In terms of gender (sex), research has found that individual interest is a relevant concept with regards to differing career decisions and preferences for specific domains (i.e., fields of interest) between males and females (Plante et al., 2019; Durik et al., 2017; Nagy et al., 2006). Such research has shown that males are often more inclined to show interest in mathematical subjects (Frenzel et al., 2010; Plante et al., 2019), as opposed to females who are often more interested in languages, arts and social sciences (Graham et al., 2008; Mintram et al., 2020; Plante et al., 2019). Additionally, in terms of Holland's personality types, research has also established that males generally have a greater inclination towards the Realistic scale than females (Mintram et al., 2020). Research pertaining to gender stereotypes, however, has indicated that, although most STEM subjects (Science, Technology, Engineering, Mathematics) are more gender-balanced than others (Cheryan et al., 2017), many students do not explicitly endorse such stereotypes in modern times (Plante et al., 2019). Even so, certain stereotypes and gender roles seem to have an effect with regards to the interests displayed by both males and females. Consequently, it affects subject choice and vocational trajectories, and results in significant, perceived differences between gender and vocational interests (Ion et al., 2019; Plante et al., 2019). Furthermore, extensive research of vocational interests has found that different factors influenced individual interests. In addition to gender, these include, but are not limited to, age (Ion et al., 2019), religion (Warlick et al., 2017), socio-economic status and future ambitions (Kumar, 2017), as well as culture (Morgan et al., 2015; Morris, 2016), to name but a few.

2.5 VOCATIONAL INTERESTS AND ASSESSMENT

In terms of assessment, vocational interests can either be determined by means of disclosure or measured via an interest inventory. Such assessment is conducted in order to assist individuals with identifying their interests and enabling them to make optimal career decisions. Experts in the field of career guidance often rely on the norm-referenced results generated by vocational interest inventories. Consequently, it becomes possible to determine individuals' vocational interest domains and thus provide guidance for educational and professional development (Deniz et al., 2014; Silvia, 2006; Su et al., 2019). Examples of well-known and widely applied vocational interest inventories include the likes of the 19 Field Interest Inventory, the South African Vocational Interest Inventory and the Namibian Vocational Interest Inventory, among others. A reliable interest assessment is characterised by the promotion of self-understanding, as well as results which aid the career guidance process (Deniz et al., 2014). In compliance with the aforementioned, the Namibian Vocational Interests Inventory (NAMVII) is also standardised (Mostert, 2003) for Namibian secondary school learners, and was employed as the vocational interest inventory for this study.

A considerable amount of research of vocational interests, especially with regards to secondary school learners in an international context, has been conducted (Milsom & Coughlin, 2017; Morgan & De Bruin, 2018; Morgan et al., 2019; Stoll et al., 2017; Volodina & Nagy, 2016; Woods et al., 2016). In the Namibian context, Mostert (2003) investigated the vocational interests of Grade 10 learners in Namibia, as well as developed a standardised vocational interest inventory (NAMVII) for Namibian learners.

Research in the field has also found that people are happiest when their chosen careers are proportional to their vocational interests (Markman, 2017; Morgan et al., 2019). It can

thus be deduced that vocational interest is an integral component with regards to career guidance. Moreover, vocational interest is also regarded as an important consideration as far as career choice, as well as subject choice in the process of pursuing a career trajectory, is concerned.

2.6 CAREER CHOICE

The concept of careers has long been investigated in the social sciences and educational milieu. The Merriam-Webster Dictionary (2003) describes the term, career, as either "a profession for which one trains and which is undertaken as a permanent calling" or "a field for or pursuit of consecutive progressive achievement especially in public, professional, or business life". A central component in the subject matter regarding careers, is that of career development. Career development concerns a holistic and gradually unfolding process, comprising psychological, sociological, educational, physical and economic, as well as chance factors. These factors combine to influence the type and significance of a career throughout an individual's lifespan (Engels, 1994; Knight, 2015; Super, 1980; Zunker, 2006). In the process of career development, at some point a person is required to make a specific career choice, which can be a stressful and difficult process for young individuals (Grüttemeyer, 2017). Experts in the field of secondary education reiterate that the choice of a career is one of the most significant decisions any person faces (Galliot et al., 2015). Consequently, young individuals often face a variety of challenges when confronted with choosing a career. Experts describe these challenges as including the changing character of the world of work, economic and labour force conditions, knowledge of the world of work, academic achievement, significant others, gender and special groups (Levin & Gati, 2015; Mostert, 2003).

Research has also shown that secondary school learners often lack knowledge of the availability of the range of careers, as well as the requirements and duties related to certain jobs (Schmitt-Wilson & Welsh, 2012).

In addition to these challenges, the process of making a career choice is not necessarily simple in nature. According to an online website, "CareerProfiles" (2019), career choice entails a comprehensive trajectory that can be divided into different stages, namely career assessment, exploration and identification, as well as a plan of action.

Firstly, career assessment is sometimes interchangeably referred to as self-assessment, and comprises the application of different techniques to determine a person's interests, values, personality, aptitudes, skill sets, developmental needs and preferred work environments (Owens et al., 2016). However, according to Stead and Watson (2017), it is important to draw a clear distinction between career assessment and psychological testing. Psychological testing narrowly refers to the administration and scoring of psychological tests and inventories as a way of gathering information about a person or group. Assessment, in contrast, has a broader application and includes process-oriented activities which aim to gather information from an array of sources, such as psychological tests in addition to interviews, collateral sources, observations, as well as other formal and informal instruments and tools. The results generated from such assessment practices are then applied in the process of making a relevant career choice. Career assessment is thus considered a thorough approach of investigating the different aspects involved in choosing a career in order to provide individuals with comprehensive information when making informed career choices (Heppner & Jung, 2012; Stead & Watson, 2017).

Following a thorough career assessment, a person should be able to engage in a process of career exploration based on a few identified career fields that correlate with the

generated results from the self-assessment process. In this regard, career assessment procedures serve as tools to encourage simultaneous exploration prior to decision making (Knight, 2015; Owens et al., 2016; Stead & Watson, 2017). Such exploration includes talking to people in different occupations, conducting research about certain occupations, and even spending time in specific workplaces to observe the ways in which occupations are conducted.

Career assessment and in-depth career exploration are followed by the process of career identification whereby a person may be able to select a single career field and/or occupation from the many which have been considered (Knight, 2015; Stead & Watson, 2017). A few alternatives would most likely also be listed. Subsequently, thorough preparation to enter the identified occupation can start by pursuing the achievement of the requirements in the chosen career field by means of an action plan.

Finally, a plan of action can be regarded as the final component with regards to the career choice process. An individual will duly prepare to engage in the chosen career field by means of educational trajectories, acquiring experience, job search activities and training, among others (Knight, 2015; Owens et al., 2016). The complex process of making a career choice, specifically in an educational context at secondary school level, can be addressed by career guidance (Knight, 2015; Loan & Van, 2015; Mbwale, 2004).

2.7 CAREER GUIDANCE AND COUNSELLING

Career guidance and counselling entail a process aimed at the optimal development of an individual to make comprehensive and informed educational and vocational choices (Crişan et al., 2015). This type of guidance and counselling can take on different forms, such as one-on-one personal counselling, group education sessions, formal meetings and

informal sessions (Blondeau & Awad, 2017). The importance of career guidance and counselling as a process include optimal career and educational development and advancements, personal and societal economic benefits, as well as contributions to social justice, to name but a few (Hooley & Dodd, 2015; Hooley & Sultana, 2016; Stead & Watson, 2017). Thus, if properly applied, career guidance and counselling could greatly benefit any given society, including the Namibian population (Hughes et al., 2017; Knight, 2015; Mbwale, 2004).

At school level, career guidance and counselling address topics, such as career-related courses, occupations and career paths (Loan & Van, 2015), and should ideally include aspects like vocational interest testing and subject selection. To this extent, the Namibian government has responded to the need for career guidance and counselling in the complex process of making a career choice, by means of the Grade 8-10 curriculum for Life Skills, which is a non-promotional subject (Grüttemeyer, 2017). In 2016, the Ministry of Education introduced a manual for Life Skills in the Junior Secondary Phase (Republic of Namibia Ministry of Education, 2015) which addressed fields of study as a component of career guidance and advised learners to consider career prospects when choosing subjects in a specific field of study. Contextually, fields of study refer to the option given to Grade 9 learners in Namibia to choose subjects from 42 available combinations (Appendix E). Each of these available combinations includes three mutually supportive subjects, as well as one supplementary subject together with English and Mathematics as compulsory subjects for the Grade 12 examinations (Republic of Namibia Ministry of Education, 2018). Thus, subject choice seems to be regarded as an important factor associated with career guidance and counselling.

2.8 SUBJECT CHOICE

Secondary school graduates can often vaguely recall the subjects that they had completed with either fond memory or great aversion, but they do not necessarily regard these subjects as integral to their career development process (Davies & Ercolani, 2019). Research, however, has shown that subject choice, as well as combinations of subjects offered in a school, has an impact on a student's career choices and, therefore, affect his or her possible future career pathways (Anders et al., 2018; Cleaves, 2005; Davies & Ercolani, 2019; Murphy, 2017; Thomson et al., 2018). The concept of subject choice is clear in the sense that it entails choosing between various (and often specific combinations of) subjects offered in a school's curriculum. Thus, in the context of this study, subject choice refers to the process by which secondary school learners (in Grade 9) make a decision about the subjects they will study from Grade 10 onwards.

Subject choice has formed the basis of many research papers, as experts reiterate the importance attached to informed subject choice in secondary school (Davies et al., 2004; Davies & Ercolani, 2019). Firstly, research has shown that educational choices related to specific subjects affect learner motivation and achievement at secondary school level (Cleaves, 2005; Guo et al., 2015), which can resultantly impact tertiary and vocational pathways. Subject choice has also been found to have a positive correlation with regards to overall enjoyment of the schooling process, as well as a positive attitude to school in general (Anders et al., 2018; Palmer et al., 2017). This indicates that relevant and applicable subject choices influence learners' secondary school experiences to a great extent.

Secondly, there is a significant correlation between subject choice and successful graduate employment (Iannelli & Smyth, 2017; Pigden & Moore, 2017). With regards to subject

choice and employment opportunities, research also yielded results that show that relevant subject choices enable graduates to access higher status job positions (Iannelli & Smyth, 2017). However, the aforementioned research also found that achievement in specific subjects was of greater importance in relation to employability than just subject choice as a stand-alone component. Making informed subject choices has also been found to contribute to career success, as well as extend into areas beyond educational and vocational contexts (Anders et al., 2018; Davies & Ercolani, 2019). These areas include, for example, effective social contributions, as well as a sound balance of knowledge and skills required for the development of the economy in a country.

A variety of influencing factors are attached to subject choice, with the most commonly cited being student engagement and achievement, perceptions of usefulness, socio-economic factors, gender preferences and even the relative popularity of a given subject (Cleaves, 2005; Palmer et al., 2017). Individual personality, which includes vocational interests, was also found to be an influencing factor with regards to the subjects learners selected in secondary schools (Anders et al., 2018; Davies & Ercolani, 2019; Korpershoek et al., 2012). The specific school a learner attends is seen as another contributing factor in relation to subject choice (Anders et al., 2018; Davies & Ercolani, 2019), and it was found that both opportunities and limitations in specific schools affected the process of subject selection.

Another influencing factor in terms of subject choice is that of individual uncertainty where an individual has little or no preference for the subjects offered at a given school (Davies & Ercolani, 2019). Moreover, in terms of the vocational interests of secondary school learners, there exists the possibility that the school, at which a specific learner is enrolled, does not offer a subject or a subject choice combination that matches with the

learner's vocational interest (Palmer et al., 2017). This can sometimes be attributed to curriculum management (which includes content and implementation) as an influencing factor regarding subject choice (Anders et al., 2018; Cleaves, 2005; Palmer et al., 2017). Furthermore, current literature citations related to the topic of subject choice seem to gravitate towards the notion that traditional curricula have become dispensable, and that schools around the world should consider offering subjects which are updated and relevant in the modern era of technology (Buchanan et al., 2016; Shipepe & Peters, 2018).

Mohammed (2018) posits that American graduates have learnt to memorise facts across disciplines, but lack basic life skills. This apparent lack, however, exists not only in the United States of America, but has been addressed, among others, by a popular educational website, The Quad (2019). In posting a review, "15 Subjects that Should Be Mandatory (But Aren't)", the unlisted author compiled a list of updated subjects for curriculum consideration, including the likes of nutrition, automobile maintenance, taxes, personal budgets, credit, first aid, etiquette, household repairs, insurance, local government, among others.

Thus, given the importance and apparent uncertainty of subject choice, there appears to exist a need for intervention in that regard. Uncertainty in terms of subject choice processes can, for example, be addressed by means of policy reform, where all students are required to study a broader range of subjects throughout their school careers. Such intervention, however, could potentially cause average grades to fall, as well as sacrifice the quality of subject knowledge for the quantity of subject exposure (Davies et al., 2009; Davies & Ercolani, 2019). Another intervention with regards to individual uncertainty about subject choice is to establish the vocational interests of learners (Ho & So, 2017) during the career guidance process in schools.

In summary, an apparent gap in literature – especially in the Namibian context – indicates that subject choice and many of the categories, such as rationale, barriers, intervention and even the modernisation of traditional curricula, are areas of research which have as yet not been exhausted, despite these categories being strong indicators of career success.

2.9 THE NAMIBIAN CONTEXT

Various different reasons could exist for Namibia's high unemployment rate of 46.1% at the end of 2018 (Namibia Statistics Agency, 2019), which is a great cause for concern. Haidula (2019) argues that a lack of post-school qualifications and specialised skills required for most job appointments is a causal factor. The lack of effective career guidance for, and counselling of, secondary school learners (Ilongo, 2015; Mbwale, 2004, Mbongo, 2013) could also be a possible cause of the high rate of unemployment. International research has established a correlation between ineffective career guidance, a lack of vocational interest testing, irrelevant subject selection and faulty career decisions in relation to unemployment among young individuals (Loan & Van, 2015; Stoll et al., 2017). In the Namibian context, the aforementioned also rings true, even though there appears to be a gap in specific research of this area.

Although specific literature that addresses vocational interests as a component of career guidance and counselling is limited, especially in the Namibian context, some interesting studies conducted by Namibian researchers with regards to career guidance have seen the light of day. It has been established that career counselling is one of the most crucial issues in the Namibia educational context (Ilongo, 2015; Mbwale, 2004; Shipepe & Peters, 2018). A specific concern that some Namibian youth are not exposed to career guidance in any form at their specific schools has been raised (Shipepe & Peters, 2018). Apart from

this general lack of career guidance and counselling, another concern in terms of career guidance in Namibian schools is that learners are not given wide exposure to information about alternative careers and educational opportunities at tertiary level. Shipepe and Peters (2018), therefore, conceptualised a "gamified career counselling system" specifically for mobile devices (smart mobile phones) in order to complement existing Namibian career counselling systems in a cost-effective manner. Different stakeholders, including university and high school students, together with career counsellors, contributed to the development of this gamified system, called "The Hard Struggle". Contributions in this regard included participatory design workshops where participants actively applied themselves in the process. The prototype that emerged as a result of this study will be tested during an upcoming game-a-thon in the near future, with anticipated ground-breaking results for career guidance and counselling in the Namibian context.

More research regarding career choice in a Namibian context was conducted by Grüttemeyer (2017) who explored the relationship between career aspirations and academic achievement with reference to the career choices of Namibian learners. Results yielded from this study reveal a low positive correlation between career aspirations and academic achievement. However, it was also revealed that most learners were unable to match successfully their individual academic achievements and the minimum entry requirements in terms of their desired future careers. These results underscore the importance of comprehensive career guidance in the Namibian school system.

In the Namibian context, and as previously discussed, career guidance in the school system falls under the curriculum content of Life Skills as a subject from Grades 4 to 12. The importance of this compulsory subject, albeit non-promotional, is emphasised by

Hako and Mbango (2018) in “The Importance of Life Skills Education and Counselling Programmes in the Namibian Schools Setting”. The authors argue that Life Skills is a crucial subject, and should be aimed at assisting learners in making choices relevant to their future career pathways.

The role of a Life Skills teacher or school counsellor is of integral value in the process of career counselling. After investigating learners’ general opinion of the role of school counselling, Ilongo (2015) explains that learners, in the exciting and frustrating times experienced in high school, are assisted by school counsellors in the decision-making process regarding their futures by providing them with support, encouragement and applicable career guidance. In light of the important role that Life Skills teachers play within an educational context, recommendations from recent studies (Hako & Mbango, 2018) include adequate training of Life Skills teachers. Further important considerations in this regard pertain to clear job requirements and the competent implementation of the life skills education and counselling programme within Namibia.

In the Namibian context, investigations with regards to the perceptions of the subject, Life Skills, have produced different findings (Ilongo, 2015; Ngatjiisiue, 2008; Spinas, 2005). Research shows that Namibian learners understood that adequate career guidance enabled them to make independent, wise and appropriate career choices (Ilongo, 2015; Ngatjiisiue, 2008). However, findings also showed that a concerning number of learners were uncertain whether or not they had received adequate career guidance (Ngatjiisiue, 2008; Spinas, 2005). It was also found that Life Skills teachers often felt unprepared to guide learners toward making informed career choices (Ngatjiisiue, 2008). Consequently, recommendations were made to incorporate career guidance as an integral and ongoing

process throughout secondary school (Ilongo, 2015; Republic of Namibia Ministry of Labour, 2018; Spinas, 2005). It was also recommended that more workshops with the aim of equipping Life Skills teachers in Namibia to present learners with adequate career guidance needed to be conducted (Ngatjiisiue, 2008; Republic of Namibia Ministry of Labour, 2018).

In Namibia, the concept of gender in relation to interests and subject choice, has previously been researched. Iipinge (2014) found that gender stereotyping contributed to low participation by girls with regards to Science and mathematical subjects. Furthermore, Enkali (2019) found that male participation with regards to Home Economics was significantly lower than that of females, due to a variety of contributing socio-cultural factors. There does, however, exist a gap in the research conducted in Namibia in terms of the differences between males and females with regards to fields of interest in a vocational context.

Furthermore, as far as subject choice and the importance of career guidance as a component of Life Skills in the Namibian context are concerned, consideration should be given to the updated syllabus for Life Skills in the Junior Secondary Phase (Republic of Namibia Ministry of Education, 2015). The different fields of study should be addressed as components of career guidance. The term, fields of study, refers to a fixed cluster of the options available to Grade 9 learners in Namibia to select subjects from 42 available combinations (Republic of Namibia Ministry of Education, 2018). Each field of study includes English, Mathematics, three additional and mutually supporting subjects, as well as one supplementary subject (Appendix E). The fields of study combinations are given specific alphabetical and numerical codes for easy identification in the educational system.

For example, the Natural Sciences field of study is labelled as NS1, and includes Biology and Chemistry as additional subjects of choice. The Technology field of study labelled as T4, for example, consists of Fashion, Fabrics and Hospitality. Consequently, learners from Grade 10 onwards will study six promotional subjects, in addition to Life Skills, Arts, Information and Communication, Physical Education and Reading Period as supporting subjects. Apart from English and Mathematics, which are compulsory, a learner should also take an additional language as a first, second or foreign language. Should a learner wish or need to follow a single language curriculum (English only), special permission has to be obtained from the Directorate of Education (Republic of Namibia Ministry of Education, 2018). Apart from Mathematics, English and another language, three additional and mutually supporting subjects are then selected from the 42 available fields of study. For example, a learner will select Natural Sciences (NS1), which includes Biology and Chemistry, as well as an additional subject, such as Geography, offered by the school as a field of study. The offering of these fields of study and supplementary subjects, however, are determined by different factors, such as the availability of teachers (Republic of Namibia Ministry of Education, 2018), as well as curriculum content, implementation and management (Anders et al., 2018; Cleaves, 2005; Palmer et al., 2017). Furthermore, there exists a gap within Namibian literature pertaining to the link between fields of study and possible future unemployment in terms of economically viable jobs that can be pursued after high school.

In the Namibian context, aspects related to the national curriculum appear to have an effect on the availability of subject choice (Mbwale, 2004) and, consequently, also on the different “fields of study” from the available 42 fields offered by each secondary school

in Namibia (Republic of Namibia Ministry of Education, 2018). According to The National Curriculum for Basic Education (Republic of Namibia Ministry of Education, 2016), curriculum management, which includes subject choices in relation to "fields of study", is influenced by different factors. Primarily, these factors include the quality and availability of applicable resources, such as school placement availability, school buildings, classrooms, specialised workshops, textbooks, specific tools, raw materials and additional funding, among others. Additionally, the availability, training and commitment of teachers qualified to present specific subjects are also considered an influencing factor in relation to curriculum management. Teachers should also be able to structure lessons effectively and adhere to time management procedures for the effective implementation of curricula, while often engaging in multi-Grade teaching and co- or extra-curricular activities. Other factors with regards to successful curriculum management include components at school management level, such as timetabling and community relations. Furthermore, students' literacy levels and the need for inclusive education also influence curriculum management and, therefore, have an effect on the availability of a subject choice at any given school.

The need for an updated and modern curriculum, which includes novel and updated subject matter, can also not be ignored in the Namibian context (Buchanan et al., 2016; Shipepe & Peters, 2018). An updated curriculum could include topics such as robotics, nutrition, personal finances, general first aid, household management and political science, just to list a few examples. Although some of these concepts are addressed in the Namibian Life Skills syllabi, there appears to be a need for the presentation of in-depth subject matter. It also seems that technical and vocational training is lacking in the

Namibian educational system. A local newspaper, “Demystifying” (2020) posits that much remains to be done in order to offer technical subjects at an acceptable standard in schools.

In short, career guidance in the Namibian context, especially with regards to vocational interests and subject choice, remains a matter that requires extensive research and consideration.

2.10 CONCLUSION

A large number of theories for career guidance and counselling have been developed. However, Holland’s theory (1997) is applicable as the theoretical framework for this study. Holland postulates that individuals’ vocational interests are, in fact, the expression of their “work” personalities, which then transcends into relevant work environments. Despite Holland’s western context, this postulation complements and supports the research objectives of this study in which vocational interests in the Namibian context were central to the investigation.

This chapter reviewed theoretical models often employed for career guidance and counselling, as well as discussed Holland’s theory as the selected theoretical framework with regards to vocational interests. Furthermore, vocational interests in terms of definition, application and assessment were expanded. Career choice, as well as its processes and challenges, was subsequently defined and discussed in terms of career development. A description of career guidance and counselling, as well as a review of their importance, especially in the Namibian school context as part of the Life Skills curriculum, were discussed next. This was followed by unpacking important terminology

related to subject choice and reviewing influencing factors and gaps in the current literature, with specific relevance to the Namibian context. In conclusion, the overall Namibian context with regards to vocational interests, career choice, career guidance and counselling, Life Skills as a subject and subject choices, was discussed. This discussion contributes to a holistic picture of the vocational interests of Namibian Grade 9 learners.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter provides an overview of the research design, population, sample and research instrument employed in this study. It also describes the procedures employed to collect data in order to address the specific research objectives of the study. Furthermore, a detailed discussion of the data analysis and the ethical considerations relevant to this study is presented.

3.2 RESEARCH DESIGN

The study employed a pragmatic methodology with a sequential transformative, or mixed methods, design (Mertens, 2015). A pragmatic methodology involves the utilisation of a qualitative research approach in combination with another research approach, usually the quantitative approach, and is regarded as a sensible practical approach to answer research questions or facilitate development and reform (Clarke & Visser, 2019; Mertens, 2015; Robson, 2011). In terms of the research objectives of this study, such development and reform in an educational context could prove beneficial. As far as mixed methods are concerned, a sequential transformative design serves the purpose of applying any method most suited to a theoretical perspective (Biddix, n.d.). In this type of design, either quantitative or qualitative data can be collected first, and all applicable results are consolidated during the interpretation process.

In this study, quantitative data were collected first. This process included administering, scoring, recording and analysing data from the Namibian Vocational Interest Inventory

(NAMVII). The qualitative aspect of the design comprised matching the highest broad areas of interest to the offered fields of study in the selected schools. This type of qualitative research adheres to a phenomenological approach where individuals' personal experiences are considered in their specific context (Neubauer et al., 2019). By applying a phenomenological approach, the researcher can thus aim to satisfy the research objectives by examining the uniqueness of an individual's subjective reality. In this study, the researcher investigated whether participants' vocational interests were catered for by the fields of study available at each school. Such a sequential transformative research design offers opportunities that give researchers a deeper understanding of complex educational issues (Halcomb & Hickman, 2015).

Conversely, as with any approach to research, there are many strengths and weaknesses in a mixed method research design (Clarke & Visser, 2019; Mertens, 2015). The strengths related to this design include the exploration of a phenomenon in an educational context in order to facilitate development (Neubauer et al., 2019). Additionally, the mixed methods approach aims to overcome weaknesses of applying only a single design (Mertens, 2015; Robson, 2011). Furthermore, Mertens (2015) argues that the quantitative component of a mixed methods approach to research enables the generalisation, albeit only to a certain degree, of the qualitative data. One of the weaknesses of this design, according to Neubauer et al. (2019), is that it is often very complex in nature. Moreover, a greater number of resources and much time are needed as opposed to when employing only a single method (Clarke & Visser, 2019; Halcomb & Hickman, 2015; Mertens, 2015). Consequently, the researcher should plan the research from all perspectives strategically to ensure logical flow and congruence in the study.

3.3 POPULATION

The term, population, refers to the larger group of prospective participants with specific characteristics from which an eventual sample will be selected (Gay et al., 2009). The population of this specific study comprised 7191 Grade 9 learners, with a typical age range of 15 to 17 years at secondary schools in Windhoek, Namibia (Republic of Namibia Ministry of Education, 2019). At the time of the research, these Grade 9 learners were required to select subjects from the 42 available fields of study for Grade 10 (see Appendix E).

3.4 SAMPLE

The sample consisted of a total of 241 Grade 9 learners from six secondary schools in Windhoek in the Khomas region. The researcher employed purposeful, criterion sampling, which entailed setting up specific inclusive criteria to identify and select information-rich participants (Mertens, 2015) by establishing the inclusive criterion as Grade 9 learners enrolled at accessible secondary schools in the Windhoek District. A total of six accessible secondary schools offering both Grade 9 and an array of subject choices were then selected as part of the sample. Of these six schools, one was a private school and the other five were government schools.

From each of the six selected secondary schools, 50 learners were randomly selected from Grade 9 classes by the Life Skills teachers, in order to request parental consent and minor assent. However, due to challenges to consent, the sample did not consist of an equal distribution of learners from each of the six secondary schools. This could also, in part, have contributed to the imbalance with regards to gender equality in the sample. This imbalance could also be attributed to the distribution of males and females in the

population. In 2019, it was recorded that the Khomas region (which includes the Windhoek district), had 3162 male versus 4029 female enrollments for Grade 9 (Republic of Namibia Ministry of Education, 2019). Consequently, the consenting sample consisted of 87 males and 154 females.

3.5 RESEARCH INSTRUMENT

The Namibian Vocational Interest Inventory (NAMVII), standardised for Namibian Senior Secondary school learners, was employed to investigate the sampled learners' vocational interests quantitatively. This is a validated instrument which had been applied in a previous study of the vocational interests of Grade 10 learners in Namibia (Mostert, 2003). The NAMVII, in essence, is designed to determine vocational interest by establishing 13 fields of interest and then converting them into the six Holland Personality Types. Additionally, the NAMVII generates high interest broad areas of study from the identified interests in the 13 fields.

A questionnaire, as well as an answer sheet, was provided to the participants and they had to follow standard instructions by the administrator. They had to indicate whether they liked, disliked or felt indifferent about engaging in 156 specified occupational activities. There was no time limit to complete this inventory, and all materials were collected by the administrator once a participant had completed the answer sheet. In terms of validity and reliability, the NAMVII presented with valid and mostly independent fields of interest, as well as a high reliability for all scales (Mostert, 2003).

3.6 PROCEDURE

Ethical clearance was obtained from the University of Namibia (Appendix A) and permission to conduct the research was given by the Namibian Permanent Secretary of

Education (Appendix B). The Regional Director also granted permission for the research to be conducted in the government schools (see Appendix C). School-specific permission was obtained from the different school principals.

The researcher explained the research to the different role players and respondents. Furthermore, the process and nature of the study were explained to the Life Skills teachers, as well as to the randomly selected learners from each school. Parental consent and minor assent were obtained from the participants by means of a participant information leaflet and consent form (Appendix D).

The NAMVII was administered in groups of not more than 30 respondents. The NAMVII answer sheets (Appendix F) were collected by the researcher immediately after completion. Each Life Skills teacher provided the researcher with a copy of the document which outlined the fields of study offered by their respective schools. This included the subjects that Grade 9 learners could select for study from for Grade 10 onwards.

The researcher scored the answer sheets in accordance with the instructions in the NAMVII manual to determine the vocational interests (highest broad areas of study and Holland codes) of the respondents. All data were subsequently quantified manually for analysis, and recorded in Microsoft Excel documents.

In line with the sequential transformative approach, the researcher proceeded to collect the qualitative data by means of studying the available fields of study offered by each school. The results generated in the quantitative constituent of the study were considered in terms of the highest broad areas of study for each school. These three identified highest broad areas of study were then matched manually to the fields of study available at each of the schools by means of colour coding in a Microsoft Excel document.

3.7 DATA ANALYSIS

The data analysis was aligned to address the research objectives with reference to the vocational interests, differences between males and females, as well as the ways in which available fields of study matched the highest broad areas of study.

The quantitative analysis was conducted as prescribed in the NAMVII manual (Mostert, 2003). Firstly, information regarding the 13 fields of interest, namely Technical, Agriculture, Physical sciences, Computational sciences, Food-and-Fashion sciences, Language, Fine Art, Performing Arts and Music, Biological-and-Medical sciences, Social Caring, Social Sciences, Business and Clerical was gathered. Each of the 13 interest categories can be scored numerically from 0 (indicative of no interest) to 12 (indicative of a very high interest). Based on instructions in the manual, these 13 fields of interest were converted into six Holland-related scales (Realistic, Investigative, Artistic, Social, Enterprising and Conventional), as well as into eight broad areas of study. These broad areas of study were Technical, Agriculture, Science, Maths, Language, Creative, Social and Commercial.

The raw data were subsequently quantified in Tables by employing both Microsoft Excel and SPSS (Statistical Package for Social Sciences, Version 25). The researcher created four score categories to simplify the interpretation of results for the 13 fields of interest, the six Holland-related scales and the eight broad areas of study into “no interest” (0), “low interest” (1 to 4), “average interest” (5 to 8) and “high interest” (9 to 12). The mean scores for each category were also considered. Descriptive statistics were employed to describe the data quantitatively by means of frequency analysis. The frequency analysis measured central tendency, dispersion and percentile distributions. Summary Tables were

thus generated to represent participants' scores in relation to the broad areas of study, as well as Holland codes.

For comparison between males and females with regards to vocational interests, the results generated by the NAMVII were utilised by conversion and tabled accordingly (recorded in Tables 4, 5, and 6 respectively). Levene's Test for Equality of Variances, as well as a two-tailed t-test for equality of means, was applied to establish statistical significance. The 2-tailed t-test score was employed to either reject or accept the null hypothesis. For the purposes of comparing the gender differences in vocational interests, the mean (rounded off to one decimal place) was considered for comparison.

Following this, the researcher proceeded to analyse the qualitative data. The researcher utilised the quantified results in terms of the highest broad areas of study from the SPSS data, as well as the Microsoft Excel documents. These quantitative data were integrated with the qualitative data as per a sequential transformative approach (Biddix, n.d.). To this extent, the researcher matched the highest broad areas of study for each school manually with the offered fields of study and supplementary subjects. Consequently, this matching assisted the researcher in determining both the provision and lack of fields of study offered by each sampled school.

3.8 RESEARCH ETHICS

Before the commencement of this research, ethical clearance was sought from the University of Namibia. This study included a sample which comprised only minors, thus making it a matter of utmost importance to ensure their well-being throughout the research process. Consequently, anonymity was strictly observed, while ensuring that no harm and/or discomfort was experienced by any of the participants.

Permission to conduct the research was sought from the individual schools and Ministry of Education, Arts and Culture. Informed consent was, furthermore, obtained from the parents/guardians of every participant. Additionally, minor assent was obtained from every participant prior to the administration of the NAMVII. The researcher informed all the participants of the purpose of the research and reiterated their right to withdraw at any time without any consequences of prejudice. The researcher also emphasised the prospective benefits of the research study for all educational stakeholders in terms of career guidance.

Confidentiality was ensured as all participants were assigned participant numbers (1 to 241) and the schools were labelled from 1 to 6. No names of participants or schools were revealed at any stage during the research; however, the researcher had to record all names in order to match learners to schools, as well as group individual schools with the fields of study offered. All data were securely stored on a password-locked computer until the examination and publication processes were completed, after which all data were permanently deleted.

CHAPTER 4

RESULTS

4.1 INTRODUCTION

In this chapter, the results collected during the investigation are presented. The resultant data are discussed and presented in percentage Tables, as well as in descriptive form, according to themes generated by the research objectives:

1. To investigate the vocational interests of Grade 9 learners in Windhoek. This included identifying the fields of interest, interest in broad areas of study and Holland codes.
2. To evaluate possible differences between males and females (gender) with regards to the fields of interest, broad areas of study and Holland codes.
3. To determine the extent to which available fields of study at secondary schools matched the highest broad areas of study for learners in their respective schools.

Firstly, the biographical information of the learners is offered. Secondly, results based on the quantitative data are discussed. This discussion includes the investigation of the vocational interests of Grade 9 learners, which comprised 13 fields of interest, eight broad areas of study and six Holland-related scale categories.

Subsequently, the gender differences between males and females in relation to vocational interests are presented. This is followed by an analysis of the results based on the generated qualitative data, which involved the matching of broad areas of study to the available subject choices at the respective schools.

4.2 BIOGRAPHICAL INFORMATION

Of the 241 Grade 9 learners sampled from a total of six secondary schools in Windhoek, 198 (82.2%) were from government schools and 43 (17.8%) from a private school. The total sample included 87 (36.1%) male and 154 (63.9%) female respondents.

Enrolment by age for Grade 9 learners in Namibia varies between 14 and 20 years, with a mean of 16.9 years and a mode of 15 years (Republic of Namibia Ministry of Education, 2019). For this study, the mean recorded age for participants was 14.9 years (14 years and 11 months).

4.3 RESULTS BASED ON THE QUANTITATIVE DATA

Mostert's (2003) Namibian Vocational Interest Inventory (NAMVII) was employed as the quantitative research instrument for this study. It generated results for all participants with regards to the 13 different categories of vocational interest.

4.3.1 The 13 Fields of Interest

Table 1 contains scores for each of the 13 fields of interest. In the case of decimals, scores were rounded to one decimal place. Each Field of Interest contains an expression of percentages from the total sample (N=241) in relation to the specific score generated by the NAMVII, and as processed by employing the SPSS (Statistical Package for Social Sciences – Version 25).

Table 1

Distribution and means based on 13 fields of interests

Field of Interest	No Interest %	Low Interest %	Average Interest %	High Interest %	Mean Interest
Technical (TEC)	45.2	30.3	14.5	10.0	2.6
Agricultural (AGR)	32.4	39.8	14.2	13.6	3.1
Physical Sciences (PHY)	32.4	24.1	22.3	21.2	4.3
Computational (COM)	26.6	42.2	22.1	9.1	3.3
Food & Fashion (FF)	18.5	34.5	29.5	17.5	4.5
Language (LA)	28.6	41.5	24.5	5.4	3.0
Fine Art (FA)	22.4	43.5	20.7	13.4	3.8
Perf-Art & Music (PA)	18.7	35.7	25.7	19.9	4.5
Biological & Medical (BIO)	7.9	28.6	29.9	33.6	6.3
Social Caring (SCA)	12.0	29.5	23.2	35.3	6.1
Social Sciences (SSC)	12.9	39.8	36.9	10.4	4.4
Business (BUS)	18.3	34.4	25.3	22.0	4.7
Clerical (CLE)	27.4	48.6	19.5	4.5	2.7

From the results yielded by the study, the general pattern that emerged shows that high numbers of learners indicated “no interest” and “low interest” in most of the interest fields.

The Technical field of interest (TEC) generally comprises technical and mechanical activities (Mostert, 2003; Shatunova & Sterz, 2018). Results show that more than 75% of the respondents indicated either low (30.3%) or no interest (45.2%) in the Technical field of interest. An average (14.5%) to high interest (10%) accounted for 24.5% of the respondents. The mean score for the technical interest field was 2.6 (Maximum NAMVII score = 12), which was also the lowest for all the fields of interest for this population.

In the Agricultural field (AGR), activities are related to livestock and plant cultivation and production (Hegerfeld-Baker et al., 2015; Mostert, 2003). In this field, 72.2% of the

participants indicated either low (39.8%) or no interest (32.4%). An average interest was reflected by 14.2% of respondents, while 13.6% indicated a high interest. These two categories together accounted for 27.8% of the sample. The mean for this interest field was 3.1, which was considered a low score.

As an interest field, Physical Sciences (PHY), entails activities concerned with the study of Physics, Chemistry, Astronomy and other related inanimate, natural objects (Eccles & Wang, 2016; Mostert, 2003). Results indicate that 32.4% of the participants had no interest in the Physical Sciences field, while 24.1% showed little interest. A total of 43.5% of the respondents indicated either average (22.3%) or high interest (21.2%) in this field. The mean for this interest field was 4.3, which was regarded as low.

The Computational field (COM) of interest holds reference to mathematical and computer technology as a basis for activities (Eccles & Wang, 2016; Mostert, 2003). For this field, 68.8% of the sample cited no interest (26.6%) or displayed little interest (42.2%). Furthermore, 22.1% showed average interest, while only 9.1% of participants indicated high interest. The mean for the computational field was 3.3, and can be regarded as low.

Food and Fashion (FF), as a field of interest, includes activities related to the home, food and fashion industries. This, especially, entails processes of planning, execution and presentation of products in said industries (Clarke & Basilio, 2018; Mostert, 2003). Scores for this field indicated that 53% of the participants had either no interest (18.5%) or displayed only a low interest (34.5%). Moreover, 29.5% of the participants indicated an average interest. The high interest category yielded a response of 17.5%. The mean score for this interest field was 4.5, and was considered to be low.

In the Language field (LA), activities of interest include all aspects of lingual acquisition and development (Li, 2016; Mostert, 2003). Results indicate that 70.1% of participants showed either no interest (28.6%) or only a little interest (41.5%) for this field. The average (24.5%) to high interest (5.4%), when combined, accounted for 29.9% of the sample. This field had a low mean score of 3.0.

Fine Arts (FA), in the context of a field of interest, consists of activities related to producing, evaluating and appreciating especially visual art pieces (Clarke & Basilio, 2018; Mostert, 2003). The results show that 22.4% of participants had no interest in this field, while 43.5% displayed little interest. From the sample, 34.1% of the participants cited an average (20.7%) or high interest (13.4%) for this field of interest. The mean score was 3.8, which was a low score.

Performing Arts and Music (PA), as a field of interest, encompasses activities such as music, drama and dance as a form of entertainment (Clarke & Basilio, 2018; Mostert, 2003). Results indicate that 54.4% of the respondents had either no interest (18.7%) or demonstrated little interest (35.7%) for this field. A total of 45.6% of respondents showed an average (25.7%) or high interest (19.9%) for Performing Arts and Music. The mean was recorded as 4.5, which was considered low.

The interest field of Biological and Medical Sciences (BIO) includes activities related to health systems in a physical, biological or physiological manner (Eccles & Wang, 2016; Mostert, 2003). A total of 7.9% of the participants had no interest in the field, while 28.6% showed little interest. Additionally, 63.5% of respondents indicated average (29.9%) or high interest (33.6%). The mean score was 6.3, which was considered average, although it was the highest mean score for this sample population.

The Social Caring field of interest (SCA) includes activities aimed at caring for others or providing a service for others (Boloña & Ceballos, 2016; Mostert, 2003). The results indicate that 41.5% of the participants fell into the no interest (12%) or little interest (29.5%) score categories for this field and 23.2% of the participants showed an average interest in this field. The high interest score category yielded a total of 35.3%. The mean score was 6.1, which was regarded as average.

Social Sciences (SSC) include activities related to human society and social relations, such as education, law, religion, history, culture, and the like (Boloña & Ceballos, 2016; Mostert, 2003). In terms of no interest, the score for this field was 12.9%, while 39.8% indicated only a little interest. Combined results showed that 47.3% of the respondents had either an average (36.9%) or high interest (10.4%) for the field of social sciences. The mean score for this field was recorded as a low 4.4.

The Business (BUS) field of interest includes activities related to business and general management (Ezenwafor & Amobi, 2016; Mostert, 2003). For this field, 52.7% of the participants demonstrated either no (18.3%) or little interest (34.4%) whereas 47.3% indicated either an average (25.3%) or high interest (22%). The mean score for this interest field was 4.7, which was considered low.

Lastly, the Clerical (CLE) field of interest encompasses activities that require order and systematism in a routine environment (Ezenwafor & Amobi, 2016; Mostert, 2003). Results show that 27.4% of the participants had no interest in this field. In relation to little interest, a score of 48.6% was recorded, while 19.5% of participants had an average interest in this field. The high interest score category yielded a total of 4.5%. The mean of this field was 2.7, which was regarded as low.

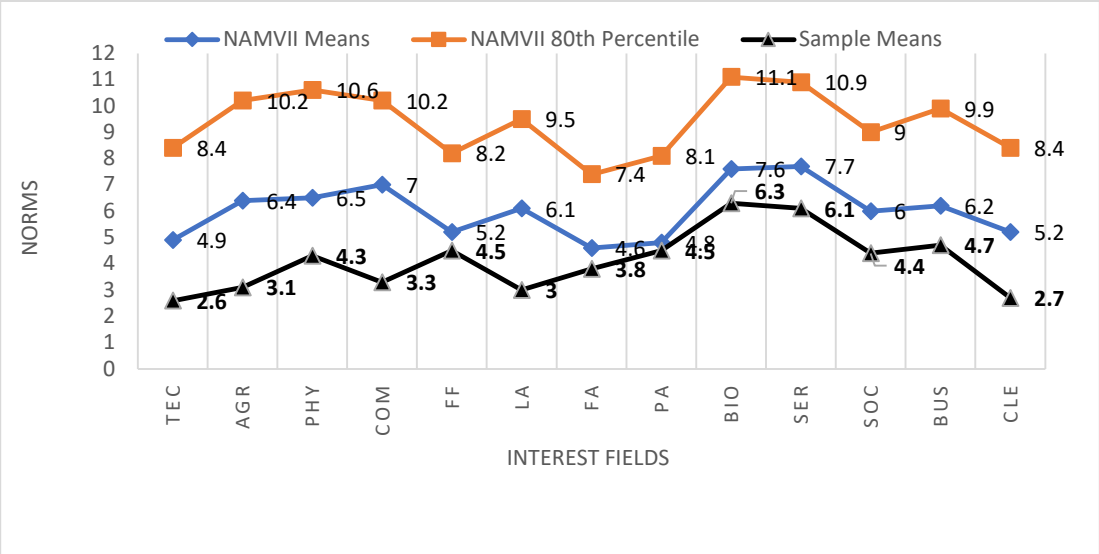

Figure 2

Sample means compared to NAMVII norms

Figure 2 shows that the mean scores for this study's sampled group were lower than the set norm averages as indicted by the research instrument (NAMVII) norms (Mostert, 2003). The pattern of the present study, however, seemed to have been similar, with a few exceptions, to that of the set population. For example, the Technical field recorded low average interests for both sample groups (4.9 and 2.6); however, Fine Arts represented the lowest mean, while Technical the lowest mean for this sample population. Furthermore, it is evident that Biological and Medical Science (6.3 and 7.6) and Social Caring (7.7 and

6.1) reflect the highest averages in both groups. There was deviation from the specific tendency for the means of the groups with regards to Computational (7.0 and 3.3) and Language (6.1 and 3.0), where the mean norm was substantially higher than the respondents' mean score. The present study population showed a slight increased mean score or Food and Fashion (5.2 and 4.5) when compared to that of the NAMVII norms.

In conclusion, as far as the first research objective of the study was concerned, the vocational interests of Grade 9 learners in Windhoek (N=241) were investigated based on the mean interest column (as generated by data from the research). The rankings for the fields that yielded the highest mean interests among learners included, in hierarchical order from the highest to fourth highest as follows: Biological and Medical Sciences (6.3), Social Caring (6.1), Business (4.0) and Performing Arts and Music (4.5). On the other side, the four lowest rankings for the interest fields were the Technical (2.6), Clerical (2.7), Language (3.0) and Computational (3.3) fields of interest.

4.3.2 The eight broad areas of study

Table 2 presents the scores for each of the broad areas of study. In the case of decimals, scores were rounded to one decimal place. Each broad area of study indicates percentages calculated from the total sample (N=241) in relation to the specific score generated by the NAMVII.

Table 2

Distribution and means based on the eight broad areas of study

Broad Area of Study	No Interest %	Low Interest %	Average Interest %	High Interest %	Mean Interest
Technical	45.2	29.8	14.6	10.4	2.7
Agriculture	32.4	39.8	14.1	13.7	3.1
Science	5.4	40.3	27.8	26.5	5.3
Maths	26.6	42.4	22.1	8.9	3.3
Language	28.6	41.5	24.5	5.4	3.0
Creative	10.4	45.2	34.8	9.6	4.3
Social	5.8	36.1	38.1	20.0	5.3
Commercial	12.9	46.5	29.8	10.8	3.7

Most of the broad areas of study were found to be of low or no interest by the respondents; however, the Social (54.3%) and Science (58.1%) areas were found to be of high interest in terms of average and high interest percentages. The overall mean interest for all areas was recorded as very low.

The Technical Area of study relates to individuals who would like to gain knowledge in the technical and mechanical fields of study (Mostert, 2003; Shatunova & Sterz, 2018). Results yielded show that 75% of participants indicated either no interest (45.2%) or low interest (29.8%) in this area of study. A further 14.6% represents a score for average interest. Only 10.4% of the sample showed high interest in this area of study. The mean score of 2.7 was also low (maximum score = 12).

As a broad area of study, Agriculture, caters for people who would like to engage in activities that include working with animals, plants and the soil (Hegerfeld-Baker et al., 2015; Mostert, 2003). The no interest category was selected by 32.4% of the participants

while 39.8% indicated a low interest in this area and a total of 27.8% indicated either an average (14.1%) or high interest (13.7%). A low mean score of 3.1 was recorded.

Individuals interested in the field of Science are attracted to physical, biological, physiological and health activities (Eccles & Wang, 2016; Mostert, 2003). The data reflected that 45.7% of the respondents showed either low (5.4%) or no interest (45.7%), while, in the average interest category, 27.8% indicated some interest and 26.5% a high interest. A mean of 5.3 was scored, and was considered average.

Maths, as a broad area of study, is also referred to as Computational Sciences. Interest with regards to this area is thus indicative of an affinity for Mathematics, computer technology and all related activities (Eccles & Wang, 2016; Mostert, 2003). The results indicate that 69% of the respondents showed either no interest (26.6%) or merely low interest (42.4%) and a total of 31% of the participants indicated either an average (22.1%) or high interest (8.9%) in this area. The mean was 3.3, which was a low score.

Individuals attracted to the area of Language demonstrate a natural inclination for activities related to languages (Li, 2016; Mostert, 2003). Results tabled from the study indicate that 28.6% of respondents demonstrated no interest and a further 66% either a low (41.5%) or average interest (24.5%) for this area. The high interest scores reveal that 5.4% of the respondents were interested in this field. The mean was recorded as a low 3.0.

The broad area of study titled “Creative”, caters for persons with an inclination to activities that include fine and performing arts and music, as well as food and fashion (Clarke & Basilio, 2018; Mostert, 2003;). Tabled results show that 55.6% of the sample had either low (45.2%) or no interest (10.4%) while of 44.4% of participants showed an average

(34.8%) or high interest (9.6%). This area scored a mean of 4.3, which can be considered as low.

An interest in activities, such as care, service to others, cultural components, law, education, religion, history, and so forth (Boloña & Ceballos, 2016; Mostert, 2003) is descriptive of individuals categorised under the social category. In the social area, 5.8% of respondents communicated no interest, while 36.1% yielded a low interest score. Results show that, when the two categories were combined, 58.1% of the participants indicated an average (38.1%) or high interest (20%) in the social area. A mean of 5.3 was recorded for this area, which was considered average.

Lastly, the commercial area comprises people gravitating to activities that include business and management, as well as activities that are ordered, systematic and routine by nature (Ezenwafor & Amobi, 2016; Mostert, 2003). In this broad area of study, results show that 59.4% of the sample had low (46.5%) to no interest (12.9%) while 29.8% indicated an average and 10.8% a high interest. The mean score was 3.7, which was regarded as low.

In terms of mean interest, rankings from highest to lowest could be generated for the broad areas of study from this sample. In order from highest to lowest, the broad areas of study can thus be arranged as follows: Science, Social, Creative, Commercial, Maths, Agriculture, Language and Technical.

4.3.3 Holland-related scales

In addition to the eight broad areas of study, the Namibian Vocational Interest Inventory (NAMVII) also conveys results in relation to six Holland-related scales (RIASEC), including the specific order "three-letter-code" for each individual.

Table 3

Distribution and means based on the six (6) Holland-related scales

Holland-related Scale	No Interest %	Low Interest %	Average Interest %	High Interest %	Mean Interest
Realistic (R)	21.6	52.7	18.2	7.5	2.8
Investigative (I)	17.4	41.5	29.8	11.3	3.8
Artistic (A)	9.1	49.0	33.6	8.3	4.0
Social (S)	2.9	33.6	43.9	19.6	5.6
Enterprising (E)	18.3	34.4	25.3	22.0	4.7
Conventional (C)	27.4	48.6	19.5	4.5	2.7

Similar to the broad areas of study, scores based on the Holland-related scales have also been derived from the 13 fields of interest. Holland codes enable the classification of jobs into career categories and clusters of interest, as well as work personalities and environments. An individual is thus able to match a potential career with its specific Holland code. The results of the study as far as the Holland-related scales show that high numbers of learners indicated low to no interest in most of the categories; however, the social category for the Holland-related scales indicated a combined score of 63.5% for the average and high interest score categories.

Firstly, the Realistic category describes people with a preference for activities dealing with the exact and ordered, as well as organisational applications for inanimate objects, tools and machinery (Holland, 1997; Mostert, 2003; Shatunova & Sterz, 2018). Results show

that a total of 74.3% of the sample indicated either low (52.7%) or no interest (21.6%) in the Realistic category. The average interest score attracted a total of 18.2%, while the high interest score had a percentage of 7.5%. A low mean of 2.9 was recorded for this category.

People who prefer activities that entail observing and investigating physical, biological and cultural elements in a creative manner to generate understanding and pragmatic application (Holland, 1997; Mostert, 2003; Stoll et al., 2017) fall in the Investigative category of the Holland-related scales. Results show that the Investigative category yielded a no interest score of 17.4% of respondents, as well as a low interest score for another 41.5%. A total of 41.1% of the sample indicated either an average (29.8%) or high interest (11.3%) in this category. The mean score was 3.8, which was regarded as low.

Experts (Clarke & Basilio, 2018; Holland, 1997; Mostert, 2003) put people with an affinity for activities that are free and unsystematic in nature into the Artistic category. The results for the Artistic category indicate that 58.1% of the respondents showed either no (9.1%) or low interest (49%) and 41.9% average (33.6%) or high interest (8.3%). The mean for this category was recorded as a low 4.0.

A person in the Social category is described as being drawn to activities which aim to inform, train, develop or cure other persons (Holland, 1997; Boloña & Ceballos, 2016; Mostert, 2003). In the Social category, results indicate a total of 2.9% with no interest, while the low interest score revealed a total of 33.6%. A further 63.5% of the respondents displayed an average (43.9%) or high interest (19.6%) for activities in this category. An average score of 5.6 was recorded and was the highest mean score in the Holland-related scales.

Enterprising, as a category, includes people who prefer activities involving achieving organisational goals or economic gain by manipulating others (Holland, 1997; Ezenwafor & Amobi, 2016; Mostert, 2003). The results indicate that 52.7% of the respondents indicated low (34.4%) or no interest (18.3%) while 25.3% showed an average and 22% high interest for this category. The mean of 4.7 was considered to be low.

Lastly, people classified in the Conventional category prefer activities entailing an explicit, ordered and systematic approach to data manipulation (Holland, 1997; Mostert, 2003; Stoll et al., 2017). Results show that 76% of the sample had either low (48.6%) or no interest (27.4%) in the Conventional category. The average interest score yielded 19.5% while 4.5% indicated a high interest. This category concluded with a low mean of 2.7, which was the lowest mean score for the Holland-related scales.

To summarise, in terms of the first research objective of the study, the vocational interests of Grade 9 learners in Windhoek (N=241) were analysed by comparing the mean interests with regards to the categories contained in the Holland-related scale. These 6 categories were thus ranked, from highest to lowest, Social, Enterprising, Artistic, Investigative, Realistic and Conventional.

4.3.4 Gender differences in vocational interests

In this particular study, in line with the second research objective, the researcher aimed to establish whether possible differences existed between males and females as far as the fields of interest, broad areas of study and Holland codes were concerned. The mean difference values were analysed descriptively in terms of the differences between males and females in this sample. A t-test, a parametric test, was employed to determine

inferentially whether the findings could be reliably generalised to the population of this study.

Table 4

Gender differences for the fields of interest

					t-test for equality of means	
Field of Interest	Gender	N	Mean	Mean Difference	t	Significance (2-tailed)
TECHNICAL	Male	87	5.3	4.3	9.776	0.000*
	Female	154	1.0			
AGRICULTURAL	Male	87	4.0	1.4	2.566	0.011*
	Female	154	2.6			
PHYSICAL SCIENCE	Male	87	5.3	1.6	2.957	0.003*
	Female	154	3.7			
COMPUTATIONAL	Male	87	4.7	2.3	5.087	0.000*
	Female	154	2.5			
FOOD & FASHION	Male	87	3.0	-2.4	-5.606	0.000*
	Female	154	5.3			
LANGUAGE	Male	87	2.6	-0.6	-1.529	0.128
	Female	154	3.2			
FINE ART	Male	87	3.3	-0.7	-1.584	0.114
	Female	154	4.1			
PERFORMING ART & MUSIC	Male	87	3.6	-2.0	-3.169	0.002*
	Female	154	5.1			
BIOLOGICAL & MEDICAL	Male	87	5.5	-1.3	-2.349	0.020*
	Female	154	6.7			
SOCIAL - CARING	Male	87	4.4	-2.6	-4.976	0.000*
	Female	154	7.0			
SOCIAL - SCIENCES	Male	87	4.2	-0.3	-0.683	0.495
	Female	154	4.5			
BUSINESS	Male	87	5.8	1.6	3.157	0.002*
	Female	154	4.2			
CLERICAL	Male	87	3.1	0.6	1.615	0.108
	Female	154	2.4			

* $p < 0.05$

The general pattern that emerged from the results indicate that male participants displayed a greater interest for some fields, while female participants displayed a greater interest for other fields of interest. In a few fields, the interest was almost similar for the two genders and thus considered negligible. Regarding the mean difference and t-values, it is important to note that positive integers indicated that males displayed a higher interest in a certain field. Consequently, a negative value indicates greater female interest.

The biggest mean difference (4.3) was found in the Technical field, where male participants yielded a mean of 5.3 while the mean for the female participants was 1.0. The males thus displayed a much greater interest in the Technical field ($t=9.776$; $p<0.05$). These findings can be generalised to the population of this study, which are Grade 9 learners from selected Windhoek schools in Namibia.

As far as the Agricultural field was concerned, the results show that males scored 4.0, while females scored 2.6, with a mean difference of 1.3 ($p<0.05$) and a t-value of 2.566. This shows that a difference between genders existed beyond the sample, and can be generalised to the study's population.

With regards to the field of Physical Sciences, a mean difference of 1.6 was established. Male participants yielded a mean of 5.3 while the female mean interest was 3.7 ($t=2.957$; $p<0.05$). It can thus be inferred that a difference also existed between males and females in this field for the population of this study.

In the Computational field, the male participants indicated a mean interest of 4.7 while the mean for the female participants was 2.5. A mean difference of 2.3 ($t=5.087$; $p<0.05$) was thus recorded for this field, and it was observed that males had a higher interest than

females in this field. Beyond the sample for this study, it can be inferred that differences of interest for field exist between males and females in the population.

In the interest field of Food and Fashion, it was observed that female participants (mean = 5.3) showed a higher interest than male participants (mean = 3.0), with a mean difference of 2.4 ($p<0.05$) and a t-value of 5.606. This implies that the findings can be generalised to the population of this study.

The mean interest for female participants in the field of Performing Arts and Music was 5.1 and 3.6 for male participants. The female participants thus showed higher interest in this field, with a mean difference of 1.5 ($p<0.05$). The t-value was 3.169. The results, therefore, indicate differences with regards to this field between genders beyond the sample.

Female participants scored a mean interest of 6.7, which was higher than the male participants (mean = 5.5) in the field of Biological and Medical Sciences. The mean difference was thus recorded as 1.3 ($p<0.05$), with a t-value of 2.349. It can thus be inferred that this difference also exists in the study population.

In the Social Caring field, females (mean = 7.0) had a higher interest than males (mean = 4.4), with a mean difference of 2.6 ($t=4.976$; $p<0.05$). These findings can consequently be reliably generalised to the population of this study.

In the Business field, male participants (mean = 5.8) had a higher interest than female participants (mean = 4.1). The mean difference for this field was recorded as 1.6 ($t=3.157$; $p<0.05$); therefore, the differences between genders will also exist in the population beyond the sample of this study.

In terms of mean difference and statistical significance, the results for the fields of Language (mean difference = 0.6), Fine Arts (mean difference = 0.7) and Social Sciences (mean difference = 0.3) indicate a slightly higher mean interest for the female participants. However, these differences are small and the results are deemed negligible, as well as not statistically significant ($p>0.05$). Similarly, the yielded results for the Clerical field show that male participants had a higher interest in this field (mean difference = 0.6); however, the difference was also considered small and negligible, and not statistically significant.

For each of the aforementioned fields of interest, the t-values indicate that the difference in interests between males and females were not reliably significant. Consequently, inferences cannot be made about populations beyond this study data.

In summary, statistically significant results show that females' interest was higher ($p<0.05$) than that of the males for Food and Fashion, Performing Arts and Music, Biological and Medical Sciences, and Social Caring. Male participants demonstrated a higher interest than the females for the Technical, Agricultural and Physical Sciences, Computational and Business fields of interest.

Regarding this study's first hypothesis, it was established that no statistically significant difference between males and females in terms of fields of interest existed. The following was observed: statistics for nine out of the 13 fields of interest rejected the null hypothesis, due to evidence that there was in fact a statistically significant difference between males and females in those fields. The null hypothesis can, therefore, partially be rejected and one can say that in most of the fields of interest there was a difference between males and females.

Table 5

Gender differences for the broad areas of study

					t-test for equality of means	
Broad Area of Study	Gender	N	Mean	Mean Difference	t	Significance (2-tailed)
TECHNICAL	Male	87	5.6	4.6	8.549	0.000*
	Female	154	1.0			
AGRICULTURE	Male	87	4.0	1.3	2.566	0.011*
	Female	154	2.6			
SCIENCE	Male	87	5.7	0.2	0.485	0.628
	Female	154	5.4			
MATHS	Male	87	4.7	2.3	5.087	0.000*
	Female	154	2.5			
LANGUAGE	Male	87	2.6	-0.6	-1.529	0.128
	Female	154	3.2			
CREATIVE	Male	87	3.3	-1.6	-4.031	0.000*
	Female	154	4.9			
SOCIAL	Male	87	4.6	-1.5	-3.429	0.001*
	Female	154	6.0			
COMMERCIAL	Male	87	4.7	1.1	2.695	0.008*
	Female	154	3.5			

* $p < 0.05$

The general pattern that emerged from the results as shown in the Table above indicates that the male participants showed a higher mean interest in five of the eight broad areas of study. However, a few areas were almost similar in terms of interest between the two genders, and thus considered negligible. It should be noted, as with the fields of interest (see Table 4), that a positive mean and positive t-values indicate that males showed a higher interest in an area, while a negative value indicated higher female interest.

In the Technical area, males showed higher interest (5.6) than females (1.0). The mean difference was 4.6 ($p<0.05$), with a t-value of 8.549. Thus, the difference between interest for males and females in this area can realiably be generalised to the population of this study (Grade 9 learners from selected Windhoek schools in Namibia).

In the Agriculture area, male participants recorded a mean interest of 4.0 while the mean for females' interest was 2.6. The males thus showed a higher interest in the Agriculture area, with a mean difference of 1.3 ($p<0.05$; $t=2.566$). This finding can thus be generalised to the population of the study.

In the Maths area, male participants showed higher interest with a mean of 4.7. The female participants recorded a mean of 2.5, and thus the mean difference was 2.3, ($p<0.05$), with a t-value of 5.087. Consequently, it can be inferred that there was also a difference between male and female interest in this area for this study population.

In the Creative area, the females showed greater interest (mean = 4.9) than the males (3.3), with a mean difference of 1.6 ($p<0.05$). Together with a t-value of 4.031, the findings pertaining to the creative area can be generalised to the population of this study.

In the Social area, female participants showed a higher interest, with a mean of 6.0. The male participants had a mean interest of 4.6, and the mean difference was 1.5 ($t=3.429$; $p<0.05$). It can be inferred that differences in interest between males and females in this area also exist beyond the sample in this study.

For the Commercial area, the males had a higher interest (mean = 4.7) than the females (mean = 3.5), with a mean difference of 1.1 ($p<0.05$), and a t-value of 2.695. This implies that the results can reliably be generalised to the population of this study.

Results for the Science area were not considered statistically significant. Although male participants showed a slighlty higher interests than females with a mean difference of 0.2 ($t=0.485$; $p>0.05$), the difference is considered small and negligible. The same holds true for the Language area, where female participants displayed slighltly more interest than males with a mean difference of 0.6 ($t=1.529$; $p>0.05$). This difference is also considered small and deemed negligible. These findings thus show that differences between male and female interests in these areas were not reliably significant and could not be generalised to the population of this study.

In conclusion, the male participants had higher interests for the broad areas of study pertaining to Technical, Agricultural, Maths and Commercial. Consequently, the areas of Creative and Social yielded higher mean interest values by female participants. Considering that the aforementioned areas presented with differences that are statistically significant, one can assume that these differences would also be present for the total population of this study. However, for the areas of Science and Language, the mean differences were considered negligible and were also not deemed statistically significant.

Table 6

Gender differences for the Holland-related scales

					t-test for equality of means	
Holland-related Scale	Gender	N	Mean	Mean Difference	t	Significance (2-tailed)
REALISTIC	Male	87	4.9	2.9	7.057	0.000*
	Female	154	2.0			
INVESTIGATIVE	Male	87	5.3	2.0	4.761	0.000*
	Female	154	3.3			
ARTISTIC	Male	87	3.3	-1.3	-3.533	0.000*
	Female	154	4.6			
SOCIAL	Male	87	4.8	-1.3	-3.293	0.001*
	Female	154	6.1			
ENTERPRISING	Male	87	5.8	1.6	3.157	0.002*
	Female	154	4.2			
CONVENTIONAL	Male	87	3.1	0.6	1.615	0.108
	Female	154	2.4			

* $p < 0.05$

The results regarding gender differences (see Table 6) reveal a general pattern of higher male interest on four of the six Holland-related scales. As in the previous Tables, a positive mean and positive t-value show a higher male interest for a specific Holland-related scale, while a negative value indicates that females showed a higher interest in a specific category.

For the Realistic scale, male interest (4.9) was higher than that of females (2.0), with a mean difference of 2.9 ($p<0.05$) and a t-value of 7.057. This implies that the findings for

this scale can be reliably generalised to the population of this study (Grade 9 learners from selected Windhoek schools in Namibia).

With regards to the Investigative scale, males showed a higher interest (mean = 5.3) than the female participants (mean = 3.3). The mean difference was recorded as 2.0 ($t=4.761$; $p<0.05$) which implies that differences between the genders on the Investigative scale can be generalised to this study population.

On the Artistic scale, female participants showed higher interest than males, with a mean of 4.6. The mean interest for males was 3.3, and the mean difference was recorded as 1.3 ($p<0.05$), with a t-value of 3.533. Inferentially, it was thus found that these differences between male and female interest in the Artistic scale can be generalised to the population of this study.

Female participants showed higher interest (mean = 6.1) than males (mean = 4.8) on the Social scale, with a mean difference of 1.3 ($t=3.293$; $p<0.05$). Consequently, these findings in the Social scale can be generalised beyond the sample to the study population.

With regards to the Enterprising scale, the males recorded a higher interest (mean = 5.8) than that of the females (mean = 4.2) in this scale. The mean difference was thus recorded as 1.6 ($t=3.157$; $p<0.05$). This means that the results for this scale can be generalised to the population of this study.

For the Conventional scale, however, only a small difference (mean difference = 0.6) between male and female participants was observed. Thus, although male participants recorded a slightly higher mean interest, the difference is negligible and not statistically significant ($t=1.615$; $p>0.05$). This indicates that differences between male and female

interest for this scale were not reliably significant, and cannot be generalised to the broader population.

To summarise, results from the investigation regarding differences between males and females in terms of the Holland-related scales show that males indicated higher interest on the Realistic, Investigative and Enterprising scales. The female participants displayed a higher interest on the Artistic and Social scales. Consequently, the third null hypothesis for the study was rejected.

All in all, in terms of the hypotheses of this study, all three null hypotheses were rejected. Results indicate that there was a statistically significant difference between male and female interests in the 13 fields of interest, the eight broad areas of study and on the six Holland-related scales for this study.

4.4 RESULTS BASED ON QUALITATIVE DATA

4.4.1 Matching broad areas of study to available fields of study per school

This part of the study was guided by the third research objective which aimed to determine the extent to which available fields of study at secondary schools matched the highest broad areas of study for learners in their respective schools. Fields of study refers to the option given to Grade 9 learners in Namibia to select subjects from 42 available combinations. This selection includes three mutually supportive subjects, as well as one supplementary subject together with English and Mathematics as compulsory subjects for the Grade 12 examinations (Republic of Namibia Ministry of Education, 2018).

It is important to consider, however, that secondary schools in Namibia (both government and private) avail different fields of study from which learners can select subjects,

dependent on variables, such as facilities, resources, teacher availability and teacher training. Results from the study were converted to obtain rankings for the three highest broad areas of study in terms of interest for each school. These broad areas of study were then matched to the available fields of study for each respective school.

4.4.2 Rankings

The broad area of study for each of the sampled schools was determined and ranked from highest to lowest. Subsequently, the three broad areas of study that recorded the most (1), second most (2) and third most (3) were identified, based on the sampled learners per school. The rankings per school are presented in Table 7.

Table 7

Rankings for the broad areas of study

School	Rank		
	1	2	3
1	Science	Social	Creative
2	Social	Creative/Commercial	Agriculture
3	Science	Social	Commercial
4	Science	Social	Technical
5	Social	Science	Creative
6	Social	Creative	Science

In the six selected secondary schools, the Science and Social areas ranked as the top areas of high interest for the participants. Other areas appearing in the high rankings included Creative, Commercial, Agriculture and Technical. The areas not presented in the highest-ranking broad areas of interest comprised Mathematics and Languages, both of which relate to the two compulsory subjects to be taken by learners from Grade 10 onwards.

The rankings for the highest broad areas of study were matched manually against the specific subjects offered in fields of study at each respective school by means of colour-coding these broad areas of study to corresponding school subjects. The coding is presented in Tables 8 to 13.

4.4.3 School 1

Table 8

Matching broad areas of study to fields of study for School 1

Broad Area of Study (Rank)	Fields of Study		
	A. Compulsory Subjects	B. One Field of Study	C. One Elective Subject
1. Science	English 2nd Language	C1: Accounting; Business Studies	Computer Studies
2. Social	Afrikaans 1 or 2/ Oshindonga 1 or 2	SS1: History; Geography	Developmental Studies
3. Creative	Mathematics (Ordinary/Advanced)	NS5: Chemistry; Biology	Economics
			German Foreign Language
			Office Practice
			Home Economics
			Accounting
			Business Studies
			Physics

The order of highest broad areas of study in School 1 were Science, Social and Creative. In the Science area, learners could select NS5 (Chemistry and Biology) as a field of study, and add Physics as an elective subject. In the Social area, SS1 (History and Geography) matched as an offered field of study, while Developmental Studies was available as an elective subject. For the Creative area, however, no field of study or elective subject was offered to match, although it was the third highest ranking broad area of study, with 10% of the school's respondents indicating high interest in this area.

4.3.4 School 2

Table 9

Matching broad areas of study to fields of study for School 2

Broad Area of Study (Rank)	Fields of Study		
	A. Compulsory Subjects	B. One Field of Study	C. One Elective Subject
1. Social	English 1 or 2	C1:	Computer Studies
2. Creative/	Afrikaans 1 or 2/	Accounting; Business Studies	Developmental Studies
2. Commercial	German Foreign/	SS1:	Economics
3. Agriculture	Sign Language	History; Geography	Office Practice
	Mathematics (Ordinary/Advanced)	NS1:	Home Economics
		Biology; Physics	Accounting
		NS2:	Business Studies
		Physics; Chemistry	Visual Art
		T1:	Design & Technology
		Home Economics;	
		Biology	Fashion & Fabrics
			Biology
			Physics

The data for School 2 indicate that the Social, Creative and Commercial (tied in 2nd) and Agriculture areas ranked highest in terms of interest. In the Social area, learners could select SS1 (History and Geography) as a field of study, and supplement that choice with Developmental Studies. In the Creative area no corresponding field of study was offered by the school, but Visual Arts or Fashion and Fabrics could be selected as supplementary, elective subjects. In the Commercial area, learners could select C1 (Accounting and Business Studies) as a field of study, and choose as an elective either Economics, Office Practice, Home Economics, Accounting or Business Studies. No corresponding subjects

were offered by the school to match Agriculture, even though it was the third highest ranking broad area of study, and 31.6% of the school's participants indicated a "high interest" score for this area.

4.3.5 School 3

Table 10

Matching broad areas of study to fields of study for School 3

Broad Area of Study (Rank)	Fields of Study		
	A. Compulsory Subjects	B. One Field of Study	C. One Elective Subject
1. Science	English 1 or 2	C1: Accounting; Business Studies	Accounting
2. Social	German 1 or Foreign	NS1: Biology; Physics	Art & Design
3. Commercial	Mathematics (Ordinary/Advanced)	NS2: Physics; Chemistry	Biology
		NS4: Biology; Geography	Business Studies
		NS5: Biology; Chemistry	Computer Studies
			Design & Technology
			History

The results generated by School 3 show that the Science, Social and Commercial areas ranked as highest broad areas of interest respectively. For the Science area, NS1 (Biology and Physics), NS2 (Physics and Chemistry), NS4 (Biology and Geography) or NS5 (Biology and Chemistry) were offered as matching fields of study, with Biology as an elective subject for NS2 or any other field of study from which it was excluded. The Social area was not matched by a field of study, and only History was offered as a corresponding elective subject. Learners interested in the Commercial area could select C1 (Accounting

and Business Studies) as a field of study or supplement any other field with Accounting or Business Studies as elective subjects.

4.3.6 School 4

Table 11

Matching broad areas of study to fields of study for School 4

Broad Area of Study (Rank)	Fields of Study		
	A. Compulsory Subjects	B. One Field of Study	C. One Elective Subject
1. Science	English 1 or 2	C1: Accounting; Business Studies	Accounting
2. Social	Afrikaans 1 or 2	C4: Business Studies; Economics	Art & Design: Visual
3. Technical	Oshiwambo 1	SS1: Geography; History	Art & Design: Photography
	Otjiherero 1	NS1: Biology; Physics	Biology
	Mathematics (Ordinary/Advanced)	NS2: Physics; Chemistry	Business Studies
		T3: Home Economics; Hospitality	Computer Studies
		T8: Design & Technology; Physics	Design & Technology
			Economics
			Geography
			German Foreign Language
			History
			Home Economics
			Office Practice
			Entrepreneurship

School 4 had Science, Social and Technical areas of broad study as its highest rankings. In the Science area, NS1 (Biology and Physics) or NS2 (Physics and Chemistry) could be selected as a specific field of study while Biology could be taken as an elective subject. The Social area matched with SS1 (Geography and History) or either Geography or

History as electives with any other field of study. The Technical area was catered for by T3 (Home Economics and Hospitality), as well as T8 (Design, Technology and Physics) as fields of study, with Design and Technology as an elective subject.

4.3.7 School 5

Table 12

Matching broad areas of study to fields of study for School 5

Broad Area of Study (Rank)	Fields of Study		
	A. Compulsory Subjects	B. One Field of Study	C. One Elective Subject
1. Social	English 1 or 2 Afrikaans 1 or 2 Mathematics (Ordinary/Advanced)	NS1: Biology; Physics NS2: Physics; Chemistry T13: Metalwork & Welding; Physics T21: Motor Mechanics; Physics	Chemistry Biology Geography Entrepreneurship Computer Studies Design & Technology
2. Science			
3. Creative			

The highest rankings of broad areas of study for School 5 included Social, Science and Creative areas. In the Social area, no corresponding field of study was offered, with only Geography as an elective subject. In the Science area, learners could select either NS1 (Biology and Physics) or NS2 (Physics and Chemistry) as a field of study. Either Chemistry or Biology could also be selected as an elective subject to match the Science field. For the Creative area, however, neither a matching field of study nor an elective to match was offered.

4.3.8 School 6

Table 13

Matching broad areas of study to fields of study for School 6

Broad Area of Study (Rank)	Fields of Study	
	A. Compulsory Subjects (4)	B. Choose 3 of the Following
1. Social	English 1	Physics
2. Creative	Afrikaans 2/	Chemistry
3. Science	French Foreign/	History
	German Foreign/	Geography
	Portuguese Foreign	Accounting
	Mathematics	Economics
	(Ordinary/Advanced)	Art
	Biology	

School 6 encompassed the areas of Social, Creative and Science as its highest ranked broad areas of interest. In this school, no specific fields of study were available, as all learners took two languages, Mathematics and Biology as compulsory subjects, as well as selected three additional subjects to supplement a total of seven subjects. Biology, together with Physics and Chemistry from the available choice subjects, thus matched with the Science area. In the Creative area, learners could select Art as a subject of choice. In the Social area, History and Geography were offered as electives to match the highest-ranking area at available for learners available for learners this school.

CHAPTER 5

DISCUSSION

5.1 INTRODUCTION

This final chapter interprets the results presented in Chapter 4. The discussion of the findings is guided by the objectives of the study.

Firstly, the researcher investigated the vocational interests of Grade 9 learners in Windhoek. The research included fields of interest, interest in broad areas of study and Holland codes. Secondly, the researcher evaluated possible differences between male and female participants regarding fields of interest, broad areas of study and Holland codes. The three null hypotheses related to the second research objective were also discussed in terms of statistical significance. Finally, the third objective of the study, namely the extent to which available fields of study at selected secondary schools matched the highest broad areas of study for the learners at the respective schools, is addressed. This chapter concludes with recommendations for future research studies.

5.2 VOCATIONAL INTERESTS OF GRADE 9 LEARNERS IN WINDHOEK

The interpretation of the three components with regards to the vocational interests of Grade 9 learners in Windhoek includes the 13 fields of interest, the eight broad areas of study and the six Holland-related scales. These will be discussed below.

5.2.1 The 13 Fields of Interest

The results from the study with regards to the 13 fields of interest indicate that high numbers of learners marked the categories, “no interest” and “low interest” in most of the interest fields. This tendency may be a result of the participating adolescents’ exposure to

vocational choices or the lack thereof, as well as their career maturity and idealisation, occupational stereotypes and even general uncertainty about vocational interests (Buys, 2014; Rabie, 2017). In certain interest fields, such as Technical, Agriculture and Computational, very low interest scores were recorded. It can likely be attributed to the high number of female participants in the sample. Research has indicated that females are often more interested in languages and social sciences (Graham et al., 2008; Plante et al., 2019) than in STEM-related subjects (Science, Technology, Engineering, Mathematics). As a field of interest, however, Language was also found to be of low interest, similarly to the Clerical and Computational fields of interest. Different reasons for the low interest in these fields can be offered. These include low levels of literacy, stereotypical thinking in terms of prestigious jobs, lack of understanding the subject content or personal aversions (Burns, 2014; Nye et al., 2012).

Interest fields that yielded the highest interest among the sampled learners included (in order from highest to fourth highest), Biological and Medical Sciences, Social Caring, Business and Performing Arts and Music. Considering that this study's sample included fewer males than females, it was interesting that Biological and Medical Sciences recorded high interest. To a certain extent, this finding refutes previous findings which indicate that STEM subjects are preferred mostly by males (Cheryan et al., 2017). This high interest in Biological and Medical Sciences can be attributed to a number of possible explanations, including the need for better healthcare services in Namibia. According to Shapwanale (2018), another explanation could possibly entail the perceived prestige attached to medical occupations. With reference to the high interest in the Social Caring field, it can be argued that Namibians circumscribe to the African culture which

emphasises societal care, such as Ubuntu (Mupedziswa et al., 2019). However, this notion only serves as a possible explanation of the high interest generated in the Social Caring field in this study, and further investigation in this regard is required.

Furthermore, the high interest in the Business field can be partly explained by the current unemployment problem in the Namibian context. According to Ganamotse et al. (2017), the Namibian Government considers novel entrepreneurship as a possible remedy for unemployment in the country. This notion could thus have possibly been assimilated by the youth and, consequently, contributed to the elevated interest in the Business field, as was found in this study.

In terms of Performing Arts and Music as a field of high interest, a possible explanation could be the strong inclination towards traditional performing in an African cultural context. Should this be proven to be the case, such findings would support literature which correlates vocational interest with cultural aspects (Morgan et al., 2015; Morris, 2016). Another reason for such a high interest in the field could be related to technological advancement in terms of social media. Applications, such as YouTube, Instagram and TikTok, encourage adolescents to upload and share video material of themselves in a performing context. This, however, is another aspect that can be investigated in future research studies.

In terms of educational implications, results from the 13 fields of interest can be applied in secondary schools by considering the fields of high interest among Grade 9 learners. Consequently, these fields of high interest can be explored during career guidance discussions aimed at assisting learners making sound vocational choices. The relevance of considering high interest fields is supported by literature which argues that individuals'

likes and dislikes are important predictors of their vocational choices (Holland, 1997; Milsom & Coughlin, 2017; Volodina & Nagy, 2016). Thus, stakeholders in the process of guiding adolescents in making a career choice, should consider the integral role of vocational interests in this regard. Fields that generated a high interest among learners could be further investigated in terms of educational pathways and specific job possibilities in a Namibian vocational context.

5.2.2 The eight broad areas of study

Results relating to the eight broad areas of study also show that high numbers of learners indicated "no interest" and "low interest" in most of the areas. Consequently, the same reasons related to adolescents' exposure to vocational choices or lack thereof, career maturity and career idealisation, as well as occupational stereotypes and even general uncertainty about vocational interests (Buys, 2014; Rabie, 2017), can be applied in this context. Furthermore, the Science, Social, Creative and Commercial areas ranked as areas of highest interest (in order from highest to fourth highest). As previously discussed, a high interest in the Science area could be attributed to adolescents' altruistic objectives to improve healthcare in Namibia. Furthermore, the prestige associated with medically-related careers, as well as preconceived ideas reinforced by the media (such as medical television shows), could also be considered as factors that influence interest in this field. Additionally, the high interest in the Social and Creative areas could again be ascribed as a result of African tradition and culture, as well as international modern technological advancements (social media participation, for example).

In terms of the Commercial area, a high interest among the participants could be explained by exposure to government opinion that entrepreneurship offers a remedy for high

unemployment rates (Ganamotse et al., 2017). Furthermore, a desire for financial success and independence could also be a contributing factor with regards to interest in the Commercial area. Such a case would support Kumar (2017) who postulates that individuals are often attracted to vocational areas offering a high socio-economic status and a sound financial future. Furthermore, and pertaining to areas of low interest, the Maths, Agriculture, Language and Technical areas were ranked from fourth lowest to lowest. Again, as with the discussion of the results for the 13 fields of interest, the low interest the Maths, Agriculture and Technical areas can be attributed to the gender imbalance between males and females in the sample.

The results of this study have, to a certain extent, refuted past research pertaining to Language interests, given that the literature indicates that females are often more interested in language arts and social sciences (Graham et al., 2008; Plante et al., 2019). Considering the larger female sample, it was interesting to find that Language was ranked as the second lowest broad area of study. A possible explanation for these findings in terms of Language, could be related to literacy barriers (Henok, 2014). In the Namibian context, for example, English is the medium of instruction, yet it is the home language of only 1.0% of secondary school learners (Republic of Namibia, 2019). Pedagogically, language teachers could also influence learner interest in the subject which could also be a contributing factor to low interest in the Language area.

The smaller number of males in the sample could partly be the cause of low interest in the Technical field, as was established in this study, as females are stereotypically not inclined to show interest in this field (Graham et al., 2008; Plante et al., 2019). In contrast to this notion, however, a low interest in the Technical field could also be related to a lack of

exposure and preconceived ideas pertaining to the lack of prestige in the field. The same could hold true for the low interest in the Maths area. Additionally, factors such as learners' low performance, lack of understanding the content and even fear of the subject itself, could be attributed to the low interest in the Maths area (Volodina & Nagy, 2016). However, this assumption should be investigated in future research studies.

The educational implications related to the findings for the broad areas of study, include an array of contributions in the secondary school context. Educational stakeholders could integrate findings related to areas of low interest (Maths, Agriculture, Language and Technical) when considering what subjects should be compulsory for learners. Educational management members, teachers and tertiary students could also aim to investigate why there is little interest in these areas, and what can be done to improve interest in terms of pedagogical approaches. Additionally, the high interest in the identified areas (Science, Social, Creative and Commercial) should be considered as motivation to develop and implement more subjects related to these areas of study.

5.2.3 Holland-related scales

The results with regards to the Holland-related scales have generated rankings for the six codes in the following order (from highest to lowest): Social, Enterprising, Artistic, Investigative, Conventional and Realistic. The scales of highest interest for the sampled population, namely Social, Enterprising and Artistic, can thus be considered an expression of the highest mean interest pertaining to the sample's "work" personalities, which then transcends into relevant work environments (Gottfredson, 1999; Holland, 1997; Stoll et al., 2017). These findings partially support the previous research conducted by Mostert (2003) that reported that the highest and third highest mean interest was reflected in the

Social and Enterprising scales. However, Mostert's study revealed that the Investigative scale was the second highest in terms of mean interest, which differs from this study's findings. Furthermore, the Artistic scale, which was found to be the third highest scale of interest in this study, was ranked last (together with the Conventional scale) in Mostert's research. As previously stated, the high interest in the Social and Artistic scales can be attributed to the high number of female participants in relation to males for this study (Graham et al., 2008; Plante et al., 2019).

Moreover, research in the South African context has found that females generally score higher on the Social scale (Mintram et al., 2020), which is supported by the results from this research. Consequently, the low interest in the Realistic scale further supports research which postulates that the Holland-related scales are bipolar, and thus a high score in the Social scale would often be paired with a low score in the Realistic or Investigative scale (Schneider, 2020). Other possible explanations for high interest in the Social scale relates to the African culture which emphasises societal care (Ganamotse et al., 2017), and thus supports past research findings that, in general, especially females in African cultures have a high Social score (Mupedziswa et al., 2019; Rabie, 2017).

Furthermore, a high interest with regards to the Enterprising scale could be related to the notion that entrepreneurship offers a solution for Namibia's unemployment problem (Ganamotse et al., 2017), a notion that is supported by the results of this study. Another consideration pertaining to the high interest in this scale, could be that adolescents are constantly exposed (via social media for instance) to different small businesses with unique products and services as a means of extra income and brand establishment. Additionally, this exposure could also be argued as being a contributing factor in relation

to the high interest on the Artistic scale. Another possible explanation with regards to such high interest on the Artistic scale could also include African culture and tradition rooted in crafts and performing. The results from this study could thus refute findings from previous research (Jones et al., 2020) that the Artistic scale is not generally of high interest in African contexts.

In terms of scales that generated low interest in the study, the Investigative scale could be affected by factors contributing to aversion for mathematical activities. These include, as previously mentioned, low performance (Jackson & Wilton, 2017; Proyer et al., 2012), lack of understanding the content and possibly even subject-related fears. Another reason could be related to the high interest in the Social scale, which is in direct contrast to the description for the Investigative scale, where individuals prefer to work with ideas as opposed to with people (Bogluţ et al., 2015; Mostert, 2003; Stoll et al., 2017).

Another scale that was found to be of low interests among learners is the Realistic scale. Apart from the high number of females in the sample, possible explanations could include a lack of exposure to Realistic activities and environments. It could also be argued that adolescents are concerned with prestige and high socio-economic status and are thus misinformed about the aspects represented in the Realistic scale and relevant vocational pathways.

The Conventional scale was also found to be among the low interest scales, which supports similar findings by Mostert (2003). This could potentially be because adolescents regard activities and environments related to data, numeracy and clerical ability as dull and unglamorous when compared to other more glamorous situations conveyed via social

media. There thus appears to be a need to investigate the low interest in terms of the Conventional scale in the Namibian context.

The educational implications with regards to the findings related to the Holland-related scales could be beneficial in different contexts. If learners, for example, are aware of their personal and specific Holland code, it could enable them to investigate possible career pathways which are relevant to such a code. The same holds true for Life Skills teachers who would be able to assist learners in this regard. Policy-makers and stakeholders in curriculum design processes would be able to guide, update and implement fields of study, subjects and relevant subject content constructively, based on the findings related to the high interest scales (Vock et al., 2013).

5.3 GENDER DIFFERENCES IN VOCATIONAL INTERESTS

Results from the research, in line with the second objective of the study, were interpreted in order to evaluate possible differences between males and females (gender) with regards to the fields of interest, broad areas of study and Holland codes.

5.3.1 The 13 Fields of Interest

Results show that the female participants were more interested in the Food and Fashion, Performing Arts and Music, Biological and Medical Sciences and Social Caring fields of interest than the male participants. Males demonstrated a higher interest than females for Technical, Agricultural, Physical Sciences, Computational and Business fields of interest. The fields of interest that yielded the largest mean difference between male and female participants included Technical (mean difference = 4.3), Social Caring (mean difference = 2.6), Food and Fashion (mean difference = 2.4) and Computational (mean difference = 2.3). With reference to the Technical field of interest, the results support literature stating

that males are often more inclined towards Technical activities (Mintram et al., 2020). Past research indicating that females are often more interested than males in Social and Artistic activities (Graham et al., 2008; Mintram et al., 2020; Plante et al., 2019) is also supported by the results of this study. The Computational field of interest can be regarded as part of STEM activities, in which case the results of this study further support literature which argues that males display a higher interest in mathematical activities than females (Frenzel et al., 2010; Plante et al., 2019).

These results could also partially support evidence in past Namibian research which indicates the existence of gender stereotypes concerning vocational interests and subject choices between males and females (Enkali, 2019; Iipinge, 2014). The possibility of gender stereotyping and application in this context can be considered an educational implication, and should be investigated by stakeholders. It can also be discussed whether single gender schools should be considered for the Namibian population. It might then become possible to offer fields of study and supplementary subjects in such schools that cater specifically for the different high interest fields of males or females.

As far as the first hypothesis formulated for this study is concerned, there was no statistically significant difference between males and females in terms of fields of interest. Statistics for nine out of the 13 fields of interest rejected the null hypothesis, due to evidence that there was in fact a statistically significant difference between males and females in those fields. Thus, these results support literature with regards to gender and vocational interests which has shown that there is often a significant difference between the interests of males and females (Cheryan et al., 2017; Ion et al., 2019; Yang & Barth, 2015).

5.3.2 The eight broad areas of study

The findings of the study indicate that the male participants had a higher interest ($p < 0.05$) for four of the eight broad areas of study, namely the Technical, Agricultural, Maths and Commercial areas. These results support previous findings that males are often more inclined to show an interest in STEM-related subjects (Cheryan et al., 2017). It was consequently assumed that the female participants showed a higher interest in the Creative and Social areas. These findings support previous research findings that females are often more interested in language arts and social sciences (Graham et al., 2008; Plante et al., 2019). Furthermore, results with regards to gender differences in the broad areas of study indicate that statistically significant differences in terms of interest exist, despite a negligible mean difference for the Language and Science areas. Thus, the second null hypothesis for this study was rejected in support of literature stating that there exists a statistical difference for gender and vocational interests. This is similar to findings by other researchers (Cheryan et al., 2017; Ion et al., 2019; Yang & Barth, 2015).

5.3.3 Holland-related scales

Male participants showed a higher interest in three out of the six Holland-related scales, namely the Realistic, Investigative and Enterprising scales. Conversely, the female participants displayed a higher interest in terms of the scales pertaining to Artistic and Social. The mean difference for the Conventional scale, however, was not considered statistically significant in terms of gender differences. To this extent, the third null hypothesis for this study was rejected as there was a statistically significant difference between male and female participants for five of the six Holland codes. Additionally, these findings support literature regarding higher male interest in the Realistic and Investigative

codes (Mintram et al., 2020), as well as higher female interest with regards to Artistic and Social codes (Frenzel et al., 2010; Plante et al., 2019). However, it would be interesting to investigate male participants' high interest in the Enterprising and Clerical codes for this particular study further.

Educational implications with regards to the results for vocational interest and gender differences can add significant value to the education system in the Namibian context. By considering fields of high interest for males and females, stakeholders will be able to determine whether both genders' interests are catered for. Additionally, the male and female scores for the broad areas of interest can assist stakeholders with the implementation of relevant subjects for males and females respectively. This consideration could also potentially guide the establishment of gender-specific schools with specialised curricula and subjects.

In terms of Holland-related scales and gender differences, results from this study can add value to specific career guidance for both males and females. Another educational implication pertaining to vocational interests and gender differences includes the consideration and inspection of gender stereotypes. Educational stakeholders should aim to investigate why there is a difference between males and females in terms of certain interest fields, broad areas and Holland-related scales. If such differences are rooted in gender stereotypes, it ought to be addressed at a national level in order to facilitate equal access opportunities for both males and females in any and all career fields.

5.4 MATCHING BROAD AREAS OF STUDY TO AVAILABLE FIELDS OF STUDY PER SCHOOL

Findings concluded that Science and Social areas ranked as the top areas of high interest for the participants. From the available eight broad areas of study, the Creative, Commercial, Agriculture and Technical areas were also found to be ranked as high interest areas by the participants.

Based on ministerial documents, there are 42 available fields of study, as well as various supplementary subjects in the Namibian educational context (Republic of Namibia Ministry of Education, 2018). Consequently, when the rankings generated for the broad areas of study were compared to the 42 available fields of study, it was noted that there were six fields of study each for the Science (NS1 – NS6) and Social (SS1 – SS6) areas. In terms of the Technical area, there were 24 corresponding fields of study available in the curriculum (T1 – T24). Six fields of study for the Commercial area were available in the curriculum. Additionally, learners were able to select subjects from a list of supplementary subjects which would correspond positively to their interests. However, as was found, many of the available fields of study, and/or supplementary subjects which matched respondents' areas of high interest, were not offered by these schools. Reasons for this could include a lack of qualified teachers, limited facilities and resources, amongst others (Cleaves, 2005; Palmer et al., 2017). Consequently, these findings support previous research that subjects which correspond with learner interest are often not offered, due to various different factors (Davies & Ercolani, 2019).

5.4.1 School 1

The highest areas of interest for School 1 included, in order of highest to third highest, Science, Social and Creative. Qualitative matching of these areas of high interest against offered fields of study showed that NS5 (Chemistry and Biology) was available as a corresponding choice for the Science area, with Physics as a supplementary subject. Additionally, SS1 (History and Geography) corresponded with the Social area, and Developmental Studies was offered as a supplementary subject. However, no field of study or elective subject was offered as a match in the Creative area, despite 10% of the school's respondents indicating a "high interest" for this area.

5.4.2 School 2

Areas of Broad Study which ranked the highest for School 2 were the Social, Creative, Commercial (tied in 2nd) and Agriculture areas. Results indicate that most of these areas were matched with corresponding fields of study and/or supplementary subjects offered by the school. These included SS1 (History and Geography), as well as Developmental Studies, for the Social area. Visual Art and Fashion and Fabrics were available as supplementary subjects in the Creative area. Learners with a high interest in terms of the Commercial area, could select C1 (Accounting and Business Studies) as a field of study, and choose as elective either Economics, Office Practice, Home Economics, Accounting or Business Studies. Agriculture, however, did not have any corresponding subjects offered by the school, despite it being the third highest ranking broad area of study. This indicates that previous findings (Palmer et al., 2017) pertaining to a lack of subjects on offer by schools in relation to learner interest are supported by data from this research.

5.4.3 School 3

Although School 3 offered subjects that corresponded to the areas of learners' high interest, selection options were fairly limited. The areas of high interest for School 3 were ranked in order (from highest to third highest) as Science, Social and Commercial. In the Science area, a wide array of fields of study were available, namely NS1 (Biology and Physics), NS2 (Physics and Chemistry), NS4 (Biology and Geography) or NS5 (Biology and Chemistry). Biology was also listed as an elective subject for NS2 or any other field of study it was excluded from.

The Social area, however, was not matched by a field of study, and only History was offered as a corresponding elective subject. This speaks to previous findings that subject choice is often limited in specific schools (Davies & Ercolani, 2019; Palmer et al., 2017). Additionally, learners interested in the Commercial area could select C1 (Accounting and Business Studies) as a field of study or supplement any other field with Accounting or Business Studies as an elective subject.

5.4.4 School 4

Results indicate that the highest interest areas for School 4 included the Science, Social and Technical areas. In the Science area, NS1 (Biology and Physics) or NS2 (Physics and Chemistry) could be selected as a specific field of study with Biology as an elective subject. The Social area matched with SS1 (Geography and History) or was offered with any other field of study as an elective subject. The Technical area was provided for by T3 (Home Economics and Hospitality), as well as T8 (Design & Technology and Physics) as fields of study, with Design and Technology as an elective subject. The high interest in the field of Science and Technical at School 4 refutes previous findings that males are

often inclined to prefer STEM subjects (Cheryan et al., 2017) since only 38% of the sample from School 4 was male. Consequently, these findings support previous research which state that many students nowadays do not explicitly endorse gender stereotypes (Plante et al., 2019) with regards to vocational interests and subject choice.

5.4.5 School 5

Findings concluded that the highest rankings of broad areas of study for School 5 included the Social, Science and Creative areas. The school offered no corresponding field of study for those learners whose preferred area of interest was Social as only Geography could be selected as a supplementary subject. Furthermore, learners with a high interest in the Science area could select either NS1 (Biology and Physics) or NS2 (Physics and Chemistry) as a field of study. Chemistry or Biology could also be selected as an elective subject to match the Science field. In the Creative area, however, neither a matching field of study nor an elective to match was offered. The results are similar to those at all the other schools where the Creative area yielded a high interest, as either no matching field of study was on offer or only a limited selection of supplementary subjects was offered.

5.4.6 School 6

The results show that the areas of Social, Creative and Science were the highest ranked broad areas of interest at School 6. However, no specific fields of study were available, as all learners took two languages and Mathematics and Biology as compulsory subjects. The learners were then able to select three additional subjects to supplement a total of seven subjects. Consequently, from the available choice subjects Biology, together with Physics and Chemistry, matched the Science area. In the Creative area, learners could

select Art as a subject of choice. In the Social area, History and Geography were offered as electives to match the highest-ranking area for this school.

Results of this study, therefore, show the Social area emerging as an area of high interest at all the sampled schools. With this in mind, it was interesting to note that, apart from limited fields of study and supplementary subjects offered by schools that match this area, the six fields of study available for the Social area (SS1 – SS6) were limited in subject nature. The subjects included in these areas were Geography, History, Economics (Economics, however, regarded as a Commercial area subject in this study) and Developmental Studies. There thus appears to be a need to revise the nature of subjects and their content in a modernised curriculum, as was elaborated in previous studies (Buchanan et al., 2016; Shipepe & Peters, 2018).

In conclusion, and with reference to findings from all six schools, a few observations should be noted. Firstly, it was found that there were limited offerings in terms of Creative subjects (related to Food and Fashion, Fine Arts and Performing Arts and Music). Some schools were found to offer Fine Arts or Visual Art as a subject; however, given that the Creative area was a high interest area in four of the six schools, the subject offerings seemed sparse.

Secondly, it was observed that Technical fields of study, as well as related supplementary subjects, were also limited. Given that the Technical area was not found to be among the top rankings in any of the schools, this finding can largely be disregarded. However, regarding the high interest (mean = 5.7) of male participants in the Technical area, it could be a possible future consideration to avail more Technical fields of study and/or supplementary subjects in designated schools.

Thirdly, it was also found that all of the sampled schools offered extensive Commercial fields of study, as well as supplementary subjects, even though only two of the six schools presented with a high interest ranking in this area. Additionally, it was observed that all schools offered many Language subject options; it was also compulsory to select two languages. This could also be considered for revision in the future, due to findings which indicate that Language yielded an overall low interest from participants in this study (mean = 3.0).

Furthermore, it was noted that no fields of study or supplementary subjects relating to the Agriculture area were offered by any of the sampled schools. Although Agriculture did not yield a high interest by the sample of learners (mean = 3.0), the male participants displayed an average mean interest (4.0). It can also be argued that a lack of exposure to Agricultural subjects affected learner interest in the area (Cleaves, 2005; Palmer et al., 2017). The possible future implementation of Agricultural fields of study, as well as supplementary subjects, can add potential value in terms of knowledge and skills in the Agricultural sector of the Namibian economy (Anders et al., 2018; Davies & Ercolani, 2019), and should be duly considered.

5.5 RECOMMENDATIONS

Based on the findings of this study, the researcher would like to make the following recommendations:

- Although individual participating learners presented with unique preferences for the 13 fields of interest, considerations should be made surrounding Biological and Medical Sciences, Social Caring, Business and Performing Arts and Music as fields of high interest for learners in the Namibian context. Such considerations

should be included, particularly, in career guidance in Life Skills classes. Life Skills teachers should aim to provide learners with extensive information and assistance regarding career fields associated with these particular fields of interest, as well as with learners' individual fields of high interest. Life skills teachers should thus be adequately trained and supervised within their specific roles at schools, and frequently collaborate with key role players (such as parents and institutions of higher education) to successfully facilitate the career guidance process.

- The sampled learners' high interest in the specific broad areas of study (Science, Social, Creative and Commercial) should be duly considered. Stakeholders should discuss the availability of facilities, resources and teacher training, in order to avail additional subjects and possibly update subject content for these areas of high interest in applicable schools. Employability within the Namibian context in terms of these broad areas of study, however, should also be investigated and considered.
- Broad areas of study which ranked as high interest (Science, Social and Creative) should be considered in official curriculum design and the implementation of syllabi. Consequently, fields of study, supplementary subjects and subject content that match these areas of high interest should be implemented accordingly in schools.
- Learners' specifically identified broad areas of study as, well as supplementary subjects, should be applied as a guiding principle in the selection of a field of study.

- The learners' low interest in the area of Language should be investigated as a possible future study pertaining to interest and achievement. Research has shown, for example, that an interest in literacy and language is positively associated with literacy attainment and performance (Carroll et al., 2019). This finding should also guide an investigation of the need for learners to select two language subjects in most schools, as opposed to possibly only one or selecting a first/home language.
- The development and implementation of the Technical and Agricultural fields of study, as well as supplementary subjects, should be considered for specifically designated schools. This could benefit the acquisition of knowledge and skills in these areas, which could potentially add value to Namibia in a vocational and economic context.
- Gender stereotypes as an influencing factor regarding the differences between males and females' vocational interests in the Namibian context should be investigated as a possible future project.
- Additionally, there might be a need to assemble a task force in order to design and implement modern curricula for Namibian schools which match identified high interest broad areas of study. Such curricula could include revised subjects and subject content relevant to modern times. This could include, for example, dance, drama and music subjects which correlate with the Creative area.

5.6 CONCLUSION

The results of this research study have revealed some interesting findings based on the vocational interests of Grade 9 learners in Windhoek. The study emphasised the importance of matching broad areas of study with available and applicable fields of study

in Secondary School. Consequently, Holland's (1997) theory still proves to be relevant, as evidence continuously showed that an individual's vocational interests are an expression of his or her work personality, as well as work environment.

Conversely, the research findings also provide strong support for the need to revise certain aspects of the Namibian educational curriculum, individual subjects, subject content and fields of study in order to match areas of high interest. It, however, presupposes the commitment and assistance from the government and all its stakeholders.

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Appendix A

Ethical Clearance Certificate from The University of Namibia

UNAM
UNIVERSITY OF NAMIBIA

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: FOE /472/2019 Date: 24 June, 2019

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's Research Ethics Policy and Guidelines. Ethical approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: The Vocational Interests Of Grade 9 Learners At Selected Secondary Schools In Windhoek

Researcher: LAUNA MOOLMAN

Student Number: 201212370

Supervisor(s): *Prof M. L. Mostert (Main) Prof C Wilders (Co)*

Take note of the following:

(a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
(b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
(c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
(d) The UREC retains the right to:
(i) Withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
(ii) Request for an ethical compliance report at any point during the course of the research.

UREC wishes you the best in your research.

Dr. E. de Villiers: HREC Chairperson

Ms. P. Claassen: HREC Secretary

Appendix B

Permission Letter from the Permanent Secretary

REPUBLIC OF NAMIBIA

MINISTRY OF EDUCATION, ARTS AND CULTURE

Tel: *+264 61 -2933202*
Fax: *+264 61- 2933922*
Enquiries: G. Munene
Email: *Gibson.munene@moe.gov.na*

Luther Street, Govt. Office Park
Private Bag 13186
Windhoek
Namibia

File no: 11/1/1

Ms Launa Moolman
P. O. Box 3375
Windhoek
Email: launavlok@gmail.com
Cell: 081 239 7514

Dear Ms Moolman,

SUBJECT: PERMISSION TO CONDUCT RESEARCH IN KHOMAS REGION

Kindly be informed that permission to conduct an academic research for your Master's Degree in Educational Psychology (Guidance and Counselling) on *"An Investigation on the vocational Interests of Grade 9 Learners at selected Secondary Schools in Windhoek, Khomas region in Namibia"*, is here with granted. You are requested to present the letter of approval to the Regional Director to ensure that research ethics are adhered to and disruption of curriculum delivery is avoided.

Furthermore, we humbly request you to share your research findings with the Ministry. You may contact Mr G. Munene at the Directorate: Programmes and Quality Assurance (PQA) for submission of a summary of your research findings.

I wish you the best in conducting your research and I look forward to hearing from you upon completion of your study.

Sincerely yours

Ministry of Education, Arts and Culture Office of the Executive Director 2019/11/13

SANET L. STEENKAMP
EXECUTIVE DIRECTOR

All official correspondences must be addressed to the Executive Director.

Appendix C

Permission Letter from the Khomas Regional Council

REPUBLIC OF NAMIBIA
KHOMAS REGIONAL COUNCIL
DIRECTORATE OF EDUCATION, ARTS AND CULTURE

Tel.: (+264) 61 2934221
Fax: (+264) 61 219156
Enquiries: Valerie Tjirimuje

Private Bag 13236
Windhoek
Namibia

Ms. Launa Moolman
P.O. Box 3375
Windhoek
Email: launavlok@gmail.com

Dear Ms. Moolman,

SUBJECT: PERMISSION TO CONDUCT RESEARCH IN KHOMAS REGION

Reference is made to your email request dated 11 July 2019, requesting for permission to conduct a study on *"An Investigation on the Vocational Interest of Grade 9 Learners at selected Secondary Schools in Windhoek, Khomas region in Namibia."*

We have reviewed your request and permission is granted under the following conditions:

1.1. It is imperative that this letter be taken to the schools in question and consultation must take place with the respective School Management Committee.
1.2. That informed consent is granted from all sampled schools and teachers and research ethics strictly adhered to.
1.3. It is also crucial that the research process does not disrupt teaching and learning.

We wish you all the best and kindly request you to please share your research findings with the Directorate in order for us to utilise the data for the improvement of our schools. Please do not hesitate to contact Valerie Tjirimuje (Regional School Counsellor) should there be any queries or clarifications.

Yours sincerely,

12/07/2019.

Gerard Navries
DIRECTOR OF EDUCATION, ARTS AND CULTURE

MINISTRY OF EDUCATION
ARTS AND CULTURE
PRIVATE BAG 13236 WINDHOEK
- 2019
DIRECTOR
KHOMAS REGION

Appendix D

Participant Information Leaflet and Consent Form

PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM
ANNEX 5

TITLE OF THE RESEARCH PROJECT: AN INVESTIGATION ON THE VOCATIONAL INTERESTS OF GRADE 9 LEARNERS AT SELECTED SECONDARY SCHOOLS IN WINDHOEK

REFERENCE NUMBER: FOE/472/2019

PRINCIPAL INVESTIGATOR: Launa Moolman

ADDRESS: Arendal Complex 24, Hebenstreit Street, Ludwigsdorf, Windhoek

CONTACT NUMBER: 0812397514

Dear Parent

With your consent, your child is invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff or doctor any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how your child could be involved. Also, your child's participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. Your child is also free to withdraw from the study at any point, even if you do agree to take part now

This study has been approved by the Research Ethics Committee at The University of Namibia and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and Namibian National Research Ethics Guidelines.

1. **What is this research study all about?**

   a) *The study will be conducted at your child's school in Windhoek. There are 5 other schools also participating, with a total of 50 learners from your school and 300 learners overall.*

   b) *This study aims to investigate the vocational interests of grade 9 learners in Windhoek. Additionally, the study will aim to investigate the extent to which available fields of study at secondary schools match the broad areas of interest for learners in their respective schools. This research is being conducted to aid the career guidance process, by shedding light on the areas of broad interests for Grade 9 learners, whilst also determining the offered fields of study, which may be used to improve curriculum development and delivery.*

   c) *The researcher will personally administer the NAMVII within the selected schools. The researcher will follow the instructions given within the NAMVII manual for administration and scoring to determine the sample of learners' vocational interests and highest broad area of interest for each learner. The researcher will then proceed to identify the available fields of study for each school by means of document reviews. Following this, the researcher will match the derived percentages for each broad area of interest with the available fields of study for each school.*

   d) *6 Secondary Schools will be selected by means of purposeful criterion sampling, with 50 Grade 9 learners from each school being selected by random sampling.*

   e) *No medication will be used during the investigation.*

2. **Why have you been invited to participate?**

   a) *As a grade 9 learner, your child needs to choose a field of study for next year (grade 10). By means of random sampling, his or her name has been identified as a participant for the investigation of vocational interests of grade 9 learners, together with matching fields of study.*

3. **What will your child's responsibilities be?**

   a) *To answer the questions from the NAMVII on the provided answer sheet as accurately as possible within the given time.*
   b) *For a period of 1 hour during testing (NAMVII).*

4. **Will your child benefit from taking part in this research?**

   a) *Benefits include vocational interest results pertaining to broad areas of interest, which can aid learners in choosing fields of study, and ultimately within the career guidance process.*

5. **Are there in risks involved in your child taking part in this research?**

   a) *There are no risks involved in participating in this research.*

6. **If you do not agree to take part, what alternatives do you have?**

   a) *There are no consequences for not participating in the research.*

7. **Who will have access to your records?**

   a) *Only the researcher, supervisor and statistician may have access to the provided data.*

8. **What will happen in the unlikely event of some form injury occurring as a direct result of your taking part in this research study?**

   a) *Insurance pertaining to adverse-related research events is covered by the University of Namibia. However, there is no foreseeable risks involved in this study.*

9. **Will your child be paid to take part in this study and are there any costs involved?**

   a) *No payment will be received by participants and there are no monetary costs involved.*

10. **Is there anything else that you should know or do?**

    a) *You can contact Professor M. L. Mostert at **+264 61 206 3346** if you have any further queries or encounter any problems.*

    b) *You can contact the Centre for Research and Publications at **+264 61 2063061**; **pclaassen@unam.na** if you have any concerns or complaints that have not been adequately addressed by the investigator.*

    c) *You will receive a copy of this information and consent form for your own records.*

11. Declaration by participant's parent/ legal guardian (CONSENT)

By signing below, I ....., the parent/ legal guardian of ..... (name of learner), declare that I understand what the research entails and hereby give consent for my child to take part in a research study entitled *"AN INVESTIGATION ON THE VOCATIONAL INTERESTS OF GRADE 9 LEARNERS AT SELECTED SECONDARY SCHOOLS IN WINDHOEK"*.

I declare that:

a) I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.

b) I have had a chance to ask questions and all my questions have been adequately answered.

c) I understand that taking part in this study is **voluntary** and I have not been pressurized for my child to take part.

d) My child may choose to leave the study at any time and will not be penalized or prejudiced in any way.

e) My child may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my child's best interests, or if my child does not follow the study plan, as agreed to.

Signed at (*place*) ..... on (*date*) ..... 2019.

....

Signature of parent/ legal guardian Signature of witness

12. Declaration by investigator

I, *Launa Moolman,* declare that:

- I explained the information in this document to .....(name of participant);
- I encouraged him/her to ask questions and took adequate time to answer them;
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above;
- I did/did not use an interpreter. (*If an interpreter is used then the interpreter must sign the declaration below.)*

Signed at (*place*) ..... on (*date*) ..... 2019.

....

Signature of investigator Signature of witness

13. Declaration by interpreter

I, ... (name), declare that:

a) I assisted the investigator *Launa Moolman* to explain the information in this document to (*name of participant*) ..... using the language medium of ..... (Oshiwambo, Oshiherero, Afrikaans, etc.)

Declaration by participant (ASSENT FROM MINOR)
(LEARNER TO SIGN THIS ON THE DAY OF TESTING)

By signing below, I ..... agree to take part in a research study entitled *"AN INVESTIGATION ON THE VOCATIONAL INTERESTS OF GRADE 9 LEARNERS AT SELECTED SECONDARY SCHOOLS IN WINDHOEK"*.

I declare that:

a) I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.

b) I have had a chance to ask questions and all my questions have been adequately answered.

c) I understand that taking part in this study is **voluntary** and I have not been pressurized to take part.

d) I may choose to leave the study at any time and will not be penalized or prejudiced in any way.

e) I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) ..... on (*date*) ..... 2019.

....

Signature of participant Signature of witness

Appendix E

Fields of Study from Circular 3-2018

Annexe 1: Fields of Study

Subject area	Code	Subjects
Natural sciences	NS1	Biology; Physics
	NS2	Physics; Chemistry
	NS3	Biology; Agricultural Science
	NS4	Biology; Geography
	NS5	Chemistry; Biology
	NS6	Physics; Computer Studies*/Computer Science
Social sciences	SS1	Geography; History
	SS2	Economics; Geography
	SS3	Economics; History
	SS4	Development Studies*; Geography
	SS5	Development Studies*; History
	SS6	Economics; Development Studies*
Technology (For Fields of Study T8-T23, a one-language curriculum may be considered to allow learners a choice of more supplementary subjects)	T1	Home Economics*; Biology
	T2	Home Economics*; Fashion and Fabrics*
	T3	Home Economics*; Hospitality*
	T4	Fashion and Fabrics*; Hospitality*
	T5	Health and Social Care*; Biology
	T6	Computer Studies*/Computer Science; Geography
	T7	Computer Studies*/Computer Science; Design and Technology
	T8	Design and Technology; Physics
	T9	Woodwork*; Physics
	T10	Woodwork*; Entrepreneurship
	T11	Woodwork*; Computer Studies*/Computer Science
	T12	Woodwork*; Agricultural Science
	T13	Metalwork and Welding*; Physics
	T14	Metalwork and Welding*; Entrepreneurship
	T15	Metalwork and Welding*; Computer Studies*/ Computer Science
	T16	Metalwork and Welding*; Agricultural Science
	T17	Building Studies*; Physics
	T18	Building Studies*; Entrepreneurship

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	T19	Building Studies*; Computer Studies*/Computer Science
	T20	Building Studies*; Agricultural Science
	T21	Motor Mechanics*; Physics
	T22	Motor Mechanics*; Entrepreneurship
	T23	Motor Mechanics*; Computer Studies*/Computer Science
	T24	Motor Mechanics* Agricultural Science
Commerce	C1	Accounting; Business Studies
	C2	Accounting; Computer Studies*/Computer Science
	C3	Accounting; Economics
	C4	Business Studies; Economics
	C5	Accounting; Entrepreneurship
	C6	Business Studies; Entrepreneurship

Note: subjects marked with an * are only available on Ordinary Level, not on Advanced Subsidiary (AS) Level which will replace the Higher Level qualification.

Supplementary subjects

The following subjects can be combined with a Field of Study. Learners take any one supplementary subject.

Any language available (first, second or foreign)

Accounting
Agricultural Science
Art and Design
Integrated Performing Arts*
Biology
Business Studies
Chemistry
Computer Studies*/Computer Science
Design and Technology
Development Studies*
Economics
Entrepreneurship
Health and Social Care*
Fashion and Fabrics*
Geography
History
Home Economics*
Physics
Office Practice*
Hospitality*

Note: Subjects marked with an * are only available on Ordinary Level

The subject choice for Senior Secondary in the curriculum can be organised in the following way:

NSSCO

English + Mathematics + Another language	+	Two subjects from Fields of Study	+	One subject from supplementary subjects

Note that a one-language curriculum is offered in cases where permission has been obtained.

The following support subjects are offered in Grade 10-11: Arts, Life Skills, Physical Education, Information and Communication and Reading Period.

Appendix F

Example of the Namibian Vocational Interest Inventory (NAMVII) Scoring Sheet

Side A

VOCATIONAL INTEREST QUESTIONNAIRE

ANSWER SHEET FOR SCORING BY HAND
(CONFIDENTIAL)

Surname				**Initials**		**Age**	
Sex		**Grade**		**Candidate number (grade 10 or 12)**	(Gr.9)		
Region		**School**			**Urban /Rural**		

Mark your answers to the questions as follows:

Like the activity (L) I D Feel Indifferent(are unsure) L (I) D Dislike the activity L I (D)

Examples

i.	ii.	iii.
L I D	L I D	L I D

Now start here

1 L I D	2 L I D	3 L I D	4 L I D	5 L I D	6 L I D	7 L I D	8 L I D	9 L I D	10 L I D	11 L I D	12 L I D	13 L I D
14 L I D	15 L I D	16 L I D	17 L I D	18 L I D	19 L I D	20 L I D	21 L I D	22 L I D	23 L I D	24 L I D	25 L I D	26 L I D
27 L I D	28 L I D	29 L I D	30 L I D	31 L I D	32 L I D	33 L I D	34 L I D	35 L I D	36 L I D	37 L I D	38 L I D	39 L I D
40 L I D	41 L I D	42 L I D	43 L I D	44 L I D	45 L I D	46 L I D	47 L I D	48 L I D	49 L I D	50 L I D	51 L I D	52 L I D
53 L I D	54 L I D	55 L I D	56 L I D	57 L I D	58 L I D	59 L I D	60 L I D	61 L I D	62 L I D	63 L I D	64 L I D	65 L I D
66 L I D	67 L I D	68 L I D	69 L I D	70 L I D	71 L I D	72 L I D	73 L I D	74 L I D	75 L I D	76 L I D	77 L I D	78 L I D
79 L I D	80 L I D	81 L I D	82 L I D	83 L I D	84 L I D	85 L I D	86 L I D	87 L I D	88 L I D	89 L I D	90 L I D	91 L I D
92 L I D	93 L I D	94 L I D	95 L I D	96 L I D	97 L I D	98 L I D	99 L I D	100 L I D	101 L I D	102 L I D	103 L I D	104 L I D
105 L I D	106 L I D	107 L I D	108 L I D	109 L I D	110 L I D	111 L I D	112 L I D	113 L I D	114 L I D	115 L I D	116 L I D	117 L I D
118 L I D	119 L I D	120 L I D	121 L I D	122 L I D	123 L I D	124 L I D	125 L I D	126 L I D	127 L I D	128 L I D	129 L I D	130 L I D
131 L I D	132 L I D	133 L I D	134 L I D	135 L I D	136 L I D	137 L I D	138 L I D	139 L I D	140 L I D	141 L I D	142 L I D	143 L I D
144 L I D	145 L I D	146 L I D	147 L I D	148 L I D	149 L I D	150 L I D	151 L I D	152 L I D	153 L I D	154 L I D	155 L I D	156 L I D

Fold here..... **The part underneath is for marking purposes only** *.....fold here*

TEC 1	AGR 2	PHY 3	COM 4	FF 5	LA 6	FA 7	PA 8	BIO 9	SCA 10	SSC 11	BUS 12	CLE 13

ISBN: 99916-67-51-2