TEACHERS' PREPAREDNESS ON THE IMPLEMENTATION OF THE NEW GRADE 8 LIFE SCIENCE CURRICULUM IN OSHIGAMBO CIRCUIT, OSHIKOTO REGION, NAMIBIA

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APPROVAL PAGE

This research has been examined and is approved as meeting the required standards for partial fulfilment of the requirements of the degree of Master of Education (Curriculum, Instruction and Assessment Studies)

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DECLARATION

I Rahab Ndemupa Ombili Namolo, hereby declare that the work that I submitted for thesis is my own work and that it has not been previously submitted for degree at any University.

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ABSTRACT

It is a normal practice for every country to reform its educational curricula from primary school to high school grades. Reforms are driven by the ever-changing world economy and contemporary social issues which affect the education system as well as the curricula of the country. Life Science teachers might not be well prepared to implement such reforms, and this could affect their perceptions on the curriculum. The purpose of this study was to investigate the teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum in Oshigambo circuit of Oshikoto Region in Namibia. The study adopted qualitative narrative case design. Participants of the study were six Grade 8 Life Science teachers. One on one semi-structured interviews were conducted with the teachers and heads of department for Science Grade 8 Life Science in three schools. In addition, document analysis and non-participants observation were also used with the purpose of triangulating the data. The data were analysed using inductive content analysis and the following three themes that emerged: a) teachers' perceptions on curriculum change and implementation; b) the fundamental difference between the new and old curriculum; c) Teachers' preparations on implementing the new curriculum.

The study found out that factors such as negative perceptions towards the new curriculum, lack of textbooks, laboratory equipment, lack of preparation, lack of support, inadequate content knowledge, lack of teacher involvement in the development of curriculum reforms, changes in the passing requirements and learners' background affect teachers' perceptions towards the implementation of the new curriculum. This in turn influences the implementation of the new curriculum. The study concluded that Life Science teachers demonstrated a positive perception toward the implementation of the new curriculum. The study further concluded that the Life Science teachers for Grade 8 were insufficiently prepared to implement the new Life Science curriculum. The study recommends that teachers should be provided with appropriate textbooks for both learners and teachers. Teachers

should be trained and prepared through workshops, group discussions and be engaged in debates regarding the implementation of the new curriculum. Teachers should be consulted and involved during the planning and development of the new curriculum.

Keywords: Curriculum reform, implementation, positive perceptions, curriculum for Life Science Grade 8, NIED.

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DEDICATION

This study is dedicated to my family especially my husband Mr Enchius Asenane Ernstjost Nangolo, my children Albertina Nangolo, Rahab Nangolo (junior), Enchius Asenane Nangolo (junior) and my aunt Ms Martha Haikali. My husband has been supportive, encouraging, motivating and taking care of our children in my absence. To my aunt, who despite her poor background of education has been encouraging and persuaded me to further my studies. My big brother Mr George Namoloh, thank you very much for the advice and motivation.

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LIST OF ABBREVIATIONS AND /ACRRONYM

BETD Basic Education Teacher Diploma

CAPS Curriculum Assessment Policy Statement

ETSIP Education and Training Sector Improvement Programme

JSC Junior Secondary Certificate

ICT Information Management System

MEAC Ministry of Education Arts and Culture

MoE Ministry of Education

NCS 2005 National Curriculum Statement for 2005

NIED National Institute for Educational Development

NSF National Science Foundation

NSW New South Wales

NSSCO Namibia Senior Secondary Certificate for Ordinary Level

NSSCH Namibia Senior Secondary Certificate for Higher Level

VTCs Vocational Training Centres

UNICF United National Children Funds

WACE Western Australian Certificate Education

CHAPTER 1

INTRODUCTION

1.1 Introduction

Curriculum reform is a crucial aspect for every education system since we are living in a dynamic world. Skidmore and Carmichael (2013) states that if countries are not reforming their education system, they will be letting down the future generation of learners who will be competing in this dynamic world. Since 1990, both South Africa and Namibia took initiatives to reform part of their curriculum to produce learners who should be able to compete within the changing world (Emmanuel and Nondwe, 2014). It is important to note that teachers are central to any curriculum reform as they possess the knowledge, experience and competence from their everyday teaching (Alsubie, 2016). Thus, curriculum reform implementation cannot be completed without teachers' involvement. This is because teachers are responsible for implementing the content in the classroom (Nnabuike, Aneke and Otegbulu, 2016). Tomáš and Pešková (2017) postulates that teachers' perceptions and attitudes play a significant role in the implementation of the new curriculum reform. For effective implementation of curriculum reform, teachers should be provided with adequate educational and professional training (Boudersa, 2016). This will help improve teachers' knowledge and skills through professional development as well as preparing them for reform. Snyder (2017) cautioned leaders that if the introduction of the new curriculum is not done very well, teachers might resist changes, and this might lead to the slow implementation of curriculum reforms. In this study, the researcher investigated teachers' preparedness regarding the implementation of the new Grade 8 Life Science curriculum in Namibia.

1.2 Background of the study

There have been numerous initiatives to reform pedagogical practices in sub-Saharan Africa in the last two decades to improve education quality (Altinyelken, 2010). Such initiatives have been challenged by the impact of colonial and post-colonial endeavour characterised by growing poverty and political instability, and Namibia is not an exception (Chisholm and Leyendecker, 2007). Before independence, Namibia's education system was designed to reinforce the apartheid system rather than provide the necessary human resource base to promote equitable social and economic development (Katjavivi, 2016). When Namibia gained independence in 1990, the government chose to reform the education system to suit its needs, goals and to transform and reconstruct the country's fragmented education system (Iipinge and Kasanda, 2013). Education reforms were necessary to align the new curriculum goals to those of the new government and international standards (Iipinge and Hako, 2017). According to the Ministry of Education, (MoE, 2014), the 3rd Cabinet meeting approved the curriculum reforms for Basic Education and the implementation of the new curriculum as from 2015. This study focused on the new curriculum, which was implemented in 2017, at a Junior Secondary phase.

When the new curriculum was introduced, it was received with mixed feelings by various teachers and principals. Some principals welcomed the new curriculum while others felt that teachers and pupils, especially at the Grade 8 level might struggle to achieve new standards (Shapwanale, 2017). Globally, it has also been observed that teachers face problems when implementing a new curriculum, specifically in terms of support and training (Haruthaithanasan, 2017; Park & Sung, 2011). As reported by Tjazapi (2015), teachers are very important in any process of educational reform and the government should properly train them in order to implement the new curriculum. Carl (2009, p. 134) also adds that "successful implementation of reform depends on the extent to which all consumers

are informed and have been prepared for envisaged change and whether they are also prepared to associate themselves with it''.

Boles and Davenport cited in Carl (2009, p. 116) summarise various reasons as to why teachers might resist change as: a) fear of the unknown and security in the existing curriculum; b) lack of self-knowledge with regard to own abilities; c) lack of motivation; d) fear of criticism and; e) insufficient support by educational leaders. All these changes in Namibia have not had extensive scholarly research on the preparedness of teachers to implement them. Furthermore, teachers have not been extensively included in these curriculum reforms even though their intensive and direct experience in the class is critical to successful curriculum reform. In addition, their beliefs and perceptions regarding curriculum reform have not been given significant attention. This research therefore addresses this gap by contributing to the body of knowledge on teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum in Namibia.

1.3 Statement of the problem

The new Namibian curriculum for Grade 8 Life Science was recently adopted and some principals expressed the view that teachers appeared to be insufficiently prepared for its implementation (Shapwanale, 2017). This situation might lead to frustration and could stress teachers, as they would often struggle to present lessons effectively (Iipinge and Hako, 2017). In many countries that have reformed their curricula, for example in Thailand, teachers were not properly prepared and supported by the Ministry of Education. This had led to poor implementation of curriculum reforms (Haruthaithanasan, 2017). Park and Sung (2011) also state that teachers in Korea were insufficiently provided with professional development programmes that support new curriculum implementations. In the neighbouring country Zimbabwe, it was found that teachers generally harbour negative and unconstructive feelings about the new curriculum (Zindi, 2018). These feelings negatively impacted

their involvement in and commitment to implement reform (Zindi, 2018). This situation is likely to manifest itself in Namibia if teachers are not adequately prepared and equipped with the necessary skills in curriculum implementation. The expected changes and objectives are also unlikely to materialise. This lack of support would ultimately have a negative impact on learners' performance. This background prompted this study to investigate teachers' preparedness when implementing the new Grade 8 Life Science curriculum.

1.4 Research questions

The purpose of this study was to investigate teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum. The specific research questions were:

(1) What are the teachers' perceptions on the implementation of the new Namibian Grade 8 Life Science curriculum?

(2) What are the fundamental differences between the old and new curricula in terms of the content, learning objectives and assessment criteria that impede teacher preparedness in implementing the new curriculum?

(3) How is the level of the teacher's preparedness in the implementation of the new Grade 8 Life Science curriculum?

1.5 Significance of the study

It is hoped that this study would contribute to the effective implementation of the new Grade 8 Life Science curriculum. The results from this study would be useful to the Oshigambo Circuit Life Science teachers, school principals and the advisory teachers (educational officers) as they would devise probable solutions in dealing with the challenges that teachers face in the implementation of the curriculum. The results could also inform the Ministry of Basic Education, Art and Culture and

other stakeholders in the education sector such as curriculum developers at National Institute for Education and Development (NIED) about the challenges thereby find ways in which teachers might be assisted. With better understanding of teachers' views on the new Life Science curriculum, new implementation strategies could be formulated, which the Ministry of Education could use to adjust the existing policies and regulations. Thus, leading to effective implementation of the new curriculum. The Ministry of Basic Education, Art and Culture as well as teachers could also use the research findings to evaluate and assess themselves, by identifying areas of strength and weakness and use it as a framework for improvement. Furthermore, the research contributes to the body of knowledge on curriculum implementation for Life Science in Namibia, which the study found to be limited.

1.6 Limitation of the study

This study is a case study which is not necessarily a representative of the regional or national character of all Namibian teachers' preparedness in the implementation of the new Grade 8 Life Science curriculum, hence the researcher suggests the study to be conducted at large scale level in the future. Another limitation was that this study was limited to three rural area schools in Oshigambo Circuit in Oshikoto Region, in the future the study should be conducted in the urban area schools, to obtain different views of participants from different areas. The results therefore should not be generalised to other regions. A sample of six teachers who were interviewed is a small number that is not statistically representative of all Life Science teachers in Namibia.

1.7 Delimitations of the study

The study specifically focuses on Grade 8 Life Science teachers at three public schools in the Oshikoto Region, and Heads of the Sciences Departments from the three selected schools. It is a

qualitative narrative case study that focuses on the data from these samples and does not include other science subject teachers and principals.

1.8 Definition of significant terms

Table 1 shows definitions of terms critical to this study.

Curriculum	Curriculum refers to the knowledge and skills learners are expected to learn, which includes the learning standards or learning objectives they are expected to meet; the units and lessons that teachers teach; the assignment and projects given to students; the books, materials, videos, presentations, and reading used in a course, the tests, assessments and other methods used to evaluate learner's learning (Vander Ark, 2017).
Curriculum change	"Curriculum change means embracing the concepts of innovation, development, renewal and improvements of curriculum (University of Zimbabwe", 1995, p.58).
Curriculum implementation	Curriculum implementation refers to the act of working out the plans and suggestions that have been made by curriculum specialists and subject experts in a classroom or school setting, (Makewa and Nguusa, 2015).
Perception	Perception is defined as a process by which individuals organise and interpret their sensory impressions in order to give meaning to their environment Mohanta (2015).

1.9 Conclusion

Chapter 1 introduced the study and provided the background information, statement of the problem and the research questions. The chapter also presented the significance of the study, limitations and

delimitation of the study and defined key terms pertinent to the study. The next chapter present the review of related literature and the theoretical framework.

CHAPTER 2

THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1 Introduction

In the previous chapter, the researcher presented the background of the study, statement of the problem, research questions, limitation of the study, delimitations of the study and definition of significant terms. The aim of literature review is giving the researcher an opportunity to find out what other researchers have studied about the problem under investigation. The present chapter presents the literature review and the theoretical framework where the study was based on. The chapter additionally discusses literature that focuses on major curriculum reforms in Namibia. The literature further illuminates the research questions pertaining teachers' preparedness in implementing the new Grade 8 Life Science curriculum. The chapter therefore looks at literature on teachers' perceptions to curriculum reform and the best strategies for curriculum reform suitable for the Namibian context and the revised curriculum for Life Science 2017

2.2 Theoretical framework.

The study was informed by Hilda Taba's Model of curriculum development and implementation (Taba, 1962). Taba's model advocates for a grass root approach to curriculum implementation. This means that teachers should participate in developing a curriculum rather than the higher authorities alienated from the classroom and its peculiarities (Taba, 1962). Taba believes that if teachers participate in curriculum development, it would be easier for them to understand it, and they would be ready and more prepared to transmit essential knowledge to the learners. Taba's argument is in line with Tomáš and Pešková's (2017) findings that, for effective implementation of curriculum reforms, teachers should be involved in curriculum planning and development so that they can align content of the curriculum to the learners' needs in the classroom. However, Huizinga, Handelzalts

and Nieveen (2014) argued that even though teacher's involvement in curriculum design fosters implementation, teachers lack knowledge and skills to design the curriculum. Taba's model further stipulates that it is a waste of resources to develop curriculum material if adequate training is not provided to the facilitator (teacher).

The study used this model to understand teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum. Following the concept of Taba's model as explained in figure 1 that, the Life Science teachers should be involved in the development of the revised curriculum from steps 1 to 6. The model rejected the idea that curriculum could be developed top-down by indicating that the Life Science teacher should start the process of curriculum development by diagnosing the needs of learners and should do this by firstly identifying their learners 'needs. Kanu (2011) concurs with Taba's model and adds that teachers are the people who are mandated to implement the curriculum in the classroom. Hence, their voices matter in the process of curriculum development. According to this model, the Life Science teacher should therefore make sure that the objectives are well formulated and that the objectives selected match the selected content. With this, the teacher should not just select the content, but should make sure that it is organised in a meaningful sequence, taking into consideration the maturity of learners, their academic achievement, and their interests. In the same line Bediako (2019) described the teacher and learner as an important tool in the process of curriculum implementation. He further stipulated that the teacher has to make effort to know and understand the content of the new curriculum and align it with the learner's needs in the classroom. On the other hand, learners influence teachers in their selection of the learning content.

The Life Science teacher's voice is heard by selecting instructional methods that would involve the learner with the content. The sequencing of the learning activities is determined by the content. The teacher should take into consideration the learners that he or she would be teaching. The model

required the curriculum planners to determine which objectives have been accomplished and for the evaluation procedures to be considered by students and teachers. The seven steps of the model as summarised by Taba are explained as follows and further illustrated in Figure 1:

1.) *Diagnosis of needs*: the teacher who is a curriculum designer, must start the process by identifying the needs of students, for which the curriculum is going to be designed.

2.) *Formulation of the objectives*: once the teacher has identified the needs, it is imperative that the teacher specifies the objectives to be attained.

3.) *Selection of the content*: based on the selected objectives, the subject content of the curriculum is then created and it is very important for the objective and content to match.

4.) *Organisation of the content*: it is very important to note that during this process, the teacher should not just select the content, but also make sure that it is organised in a certain order, take in consideration learners' maturity, learners' academic achievement as well as their interests.

5.) *Selection of learning experience*: this step requires teachers to engage learners in the selection of the content by presenting it to them. It also requires teachers to choose methods allowing them to engage students during instructional time.

6.) *Organisation of learning experiences*: the teacher must organise, sequence the content as well as the learning activities.

7.) *Evaluation and means of evaluation*: the curriculum planner should then determine what objectives have been accomplished, and in this case evaluation proceedings must be carried out by teachers and students.

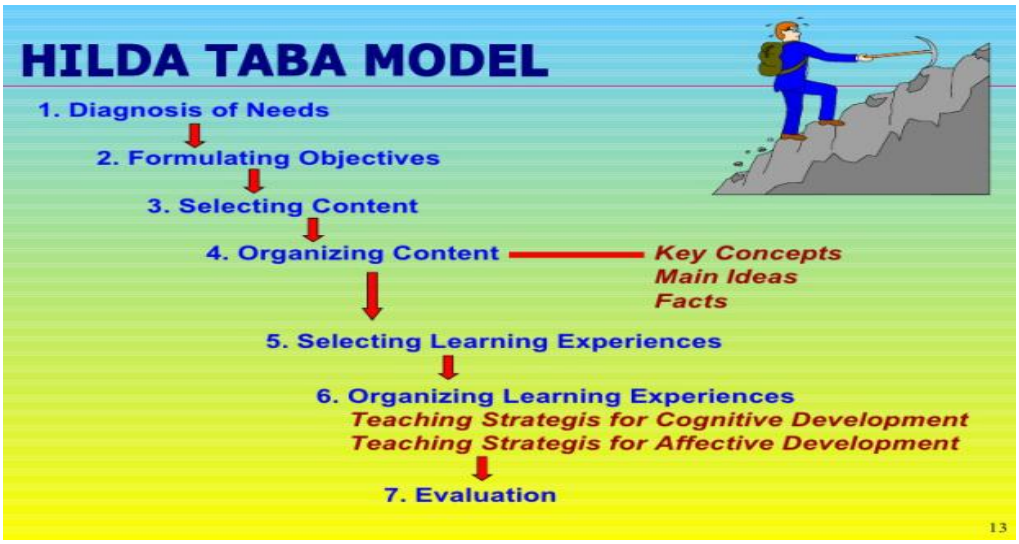

Figure 1: Hilda Taba Model

Source: (Taba, 1962) seven steps in implementing curriculum

2.2.1 Major curriculum reforms in Namibia after independence

Iipinge and Hako (2017) outline three major categories in curriculum reform in Namibia namely: a) total transformation from the year 1990 to 1996; b) curriculum improvement and localisation from the year 1997 to 2010 and; c) building curriculum and providing alternative curriculum from the year 2010 to 2016. According to Iipinge and Hako (2017), in total transformation, the government combined the various colonial education administrations into one unified Ministry of Education. The development of new curricula, materials and the Namibian Secondary Education curriculum replaced the South African draconian segregationist education curricular. The language policy, ICT policy and the learner-centred policies were also introduced during this period (MEAC, 2016a). It was also during this period that the four major goals of education were introduced which are: access, equity, quality and democracy (MoE, 1993). Namibia localised its curriculum, which was implemented in 2007 that is, Namibia Senior Secondary Certificate Ordinary (NSSCO) and Namibia Senior Secondary Certificate Higher (NSSCH). Entrepreneurship was introduced into the curriculum.

During this period, the Presidential Commission on Education was established to review the performance of all aspects of education, culture and training. Several education policies including the Education and Training Sector Improvement Programme (ETSIP) were also developed (Iipinge and Hako, 2017).

In building curriculum consensus and providing alternative curriculum, major reforms happened which continued to be re-aligned to the realisation of Vision 2030. The structure of basic education was changed and the Junior Secondary Certificate (JSC) moved from being attained after completing Grade 10 and shifted to Grade 11. Learners performing well in (NSSCO) would be allowed to take subjects on higher level in Grade 12. These learners would qualify to enter local universities and VTCS or search for employment. These reforms included making education free at government primary and secondary schools in Namibia in 2013 and 2016 respectively. The national conference on education was held in 2011 to identify problems in education. Actions to help improve the results were documented (Iipinge and Hako, 2017). Table 2 indicates the transformations in the structure of basic education. These changes encapsulate curriculum changes, the biasness being on the Grade 8 Life Science curriculum changes.

Table 2: Structure of Basic Education (MEAC, 2016a)

Before 2015	**2015 onwards**
Lower Primary Phase: Pre-Primary-Grade 4	Junior Primary Phase: Pre-Primary –Grade 3
Upper Primary Phase: Grade 5-7	Senior Primary Phase: Grade 4-7
Junior Secondary Phase: Grade 8-10	Junior Secondary Phase: Grade 8-9
Senior Secondary Phase: Grade 11-12	Senior Secondary Phase: Grade 10-12

Considering this background, there are two existing National Curricula for Basic Education namely: the old curriculum which has been in operation since 2007 and the new curriculum which was implemented in 2017.

One noticeable difference between the old and new curricula in the Life Science subject is the learning content and grade descriptors. The first topic in the old curriculum defines Life Science whereas, in the new curriculum, it discusses the scientific processes. Topic two in the old curriculum focuses on general health education while in the new curriculum, topic two focuses on sexual education and diseases. In the old curriculum, topic four is on plants and their abiotic environment, whereas, in the new curriculum, the same topic is on plants as living organisms. Topic five of the old curriculum focuses on plant reproduction, while in the new curriculum the focus is on human biology (Ministry of Education, 2010). This is summarised in table 3.

Table 3: Summary of the difference between the old and the revised curriculum (MoE, 2010)

Topic	**Old curriculum**	**Revised curriculum**
Topic 1	What is Life Science	Scientific processes
Topic 2	Health education	Taught, but specified as Sexual health and diseases
Topic 4	Plants and their abiotic environment	Passage of substance
Topic 5	Plant reproduction	Plant as living organisms
Topic 6	School garden	Human Biology
Topic 7	Ecosystem	Ecosystem

In the old curriculum, grades are from A-G, with A (80 %+) being the highest and G (20-29%) the lowest (MoE, 2010). In the new curriculum however, grades are from A-E, with A (80 %+) being the

highest and E (40-49%) the lowest (MEAC, 2016b). Of great significance is that there was hardly much involvement of the Science teachers in the designing of the new curriculum as advocated by Taba (1962). Seemingly, Angula (2015) shared a similar segment that Science teachers especially for Mathematics in Namibia were not involved in the design of the compulsory mathematics curriculum. On the other hand, the Scottish teachers who were involved in the drafting of curriculum material through piloting, were found to be committed towards the implementation of the new curriculum and its pedagogy than those who were only consulted (Hulme, Livingstone and Menter, 2010). This is significant because it indicates that teachers are likely to have challenges in conceptualising and implementing the new Grade 8 Life Science curriculum.

The reviewed literature was found to be significant to the study because it informed the study about the previous and current Grade 8 Life Science curriculum. This understanding and subsequent reviewed literature then helped the researcher to investigate teacher's preparedness for the implementation of new Life Science curriculum.

2.2.2 Teachers' perceptions towards curriculum reforms

The teaching of Life Science could be influenced by many factors such as the perceptions and attitudes of teachers towards curriculum reform (Ukachukwu, 2016). Studies show that teacher's beliefs and perceptions are very important because they shape and strengthen the curriculum development of a country (Tarman, 2012). Bantwini (2010) also argues that the meaning that a teacher attaches to curriculum reforms acts as his or her map on the curriculum implementation journey. This determines the success of educational reforms. Teachers' perceptions and beliefs play a pivotal role in the implementations of curriculum reforms (Vanderlinde and Van Brack, 2011).

Gu (2015) also concurs with others that teachers' perceptions are very important because they mediate and shape their attitudes and emotions towards curriculum reform of the country. Terhart (2013, p.1)

further states that: “you cannot accomplish school reform against the will of the teachers, but only with the teachers”. Teachers only partake in changes that they support. Alsubaie (2016) adds that curriculum reform can only be successful if teachers feel that their knowledge and experiences are included in the development of the new curriculum. This literature is important to the present study because through listening to teachers’ views; it enables leaders to succeed in preparing teachers for reforms.

On the other hand, Kelly (2010, p. 133) further indicated that if changes are imposed on teachers then it will promote opposition and hostility on them, then supporting the changes. Furthermore, he added that they will not only be opposed to the changes but will also try to sabotage the efforts of other teachers who are willing to support the indented changes. Davis (2009, p.16) is of the view that “the way teachers perceive curriculum change especially for Life Science may be the reason curriculum change impacts negatively or positively on the teaching and learning of the new curriculum especially that of Life Science” and this is of importance to this research. It was important to establish the perceptions of teachers in order to investigate their preparedness to implement the new curriculum.

Teachers generally harbour negative and unconstructive feelings about curriculum reform (Park & Sung, 2011). These feelings negatively impact on their involvement and commitment to implement reform and this could hinder the implementation of the new curriculum. Some teachers view curriculum reform as a burden, citing too much administrative work, since they are already struggling to cope with the teacher- learner ratio Bantwini (2010). Additionally, the teachers said that they did not understand the content of the new curriculum which was aggravated by lack of ongoing professional development. Similarly, a study done by Sengai and Mokhele (2020), revealed the new syllabus called 2166 for History in Zimbabwe was found to be too long to be taught, difficult, demanding and teachers lacked skills to implement. Contrary to that, teachers who teach Biology,

Life and Environmental Science, in South Africa were found to be more responsive to the new curriculum and they supported it as it helped them to understand science better (Witz and Lee, 2009).

Similar to that, a research done by Stroud (2017) in Kentucky in the United States proved that some teachers are more supportive of reform than what others think because they believe that reform has helped them to change their practice so that their learners could learn better. Moreover, they have indicated that they like the change, because it is trying to make their classes more learner-driven. This contributes to better performance of learners in new programmes. In same line the Australian teachers were also positive and excited to implement the New South Wales (NSW) curriculum, they further identified the similarity between the old and current state syllabus and indicated that the new curriculum has a potential to change practice in Australian curriculum (Lorenza, 2018). This research was of importance as it helped in the formulation of questions for the interviews and focus group discussions aimed at understanding teacher perceptions on curriculum change in Grade 8 Life Science.

A research conducted by Ngibe and Adu (2014) on curriculum reforms in South Africa, indicated that teachers were not actually against reforms, but they were offended by the way they were presented to them and felt that it was imposed on them. In her study, she discovered that some teachers were hesitant to see changes come as many lacked skills and knowledge to carry out the innovation. In the same line a study conducted by Yunhuo and Zhu (2014) also revealed that teachers especially those from small towns and rural areas in China experienced difficulties when implementing curriculum which was reformed in the 1999 due to insufficient content knowledge. This sentiment was also shared by the South African teachers who expressed uncertainty on their pedagogical knowledge of the new topic which was introduced in the revised Physical Science Secondary School. (Ramnarain and Fortus, 2013). Nanayakkara, Margerisom and Worsley (2018) in the study carried out in Australia also revealed that majority of teachers were appreciative of the concept of the new

curriculum whereby food literacy and nutrition was included in the curriculum. However, some doubted their readiness to implement it, citing that they needed more support, training and resources to implement the new curriculum. Contrary to that study done by Kruger, Won and Treagust (2013) revealed that the Australian teachers welcomed the implementation of new Western Australian Certificate of Education (WACE) curriculum citing that such a topic give students an opportunity to learn about how Biology they are studying at school applies to their daily lives. A study carried out by lshammari (2013) in Kuwait also revealed that teachers were, not happy when the Science curriculum for Grade 6 and 7 was reformed because they were not involved in the development of the new curriculum and their opinions were not considered.

The Kuwait teachers experienced the following challenges: a) the content of the new curriculum was difficult to teach and for the learners' age group, as some lesson had been taught in Grade 9 and 10 and were shifted to this lower Grades; b) the content of the new curriculum was not linked to Kuwait's culture but to that of United States; c) new curriculum contain a lot of information and the lesson time allocated was short; d) lack of resources and support from the Ministry of Education. As a result, teachers were stressed and frustrated during the implementation of the new curriculum for Science (Alshammari, 2013). In another study, Suyanto (2017) revealed that schools in Indonesia were not ready to implement the new curriculum due to minimum availability of textbooks for both teachers and learners. In Tanzania, teachers' in a Community Secondary school in Murogono Municipal in Dar es Salaam encountered difficulties in the teaching of Science in the absence of a well-equipped laboratory (Nyanda, 2011). Aloovi (2016) revealed that Namibian Biology teachers expressed that the implementation of NSSC Biology which was then IGCSE in Namibia was hindered by the lack of textbooks and laboratory equipment. Such challenges could negatively affect the implementation as well as the performance of learners during reform. The same view agrees with Tshiredo (2013) that the learner's performance in Maths and Science declined during the implementation of the

Curriculum and Assessment Policy Statement (CAPS) in 2005, the decline in the poor performance was attributed to factors such as inadequate in teaching and learning resources, well-equipped laboratory, workload and time.

The challenges faced by teachers from other countries during the implementation of curriculum reform could be of significance to this study as it helped the researcher to understand the experiences of the Life Science teachers for Grade 8 during the implementation of the new curriculum.

One similar study conducted by Arikan (2017) in Turkey when the school reformed the English language at grade four primary school level, indicated that teachers had mixed feelings about it, some had positive views citing that the new curriculum is applicable to the needs of their learners and it supported the age group of their learners. However, some complained that the course book provided for the new curriculum was inappropriate because it still followed the competence of the old curriculum but not the new curriculum. They were also faced with challenges of teaching aids (Arikan, 2017).

In Namibia, a study conducted by Angula, (2015) also revealed that teachers had mixed feeling during the implementation of the compulsory Mathematics curriculum. Some teachers felt that Mathematics is a very important subject for all learners whilst others felt that it is a difficult subject and not all learners need to study it at senior secondary level. The teachers' concerns were that, they were not consulted about the compulsory Mathematics curriculum, they were also not supported by the relevant leaders and there is a lack of teaching aids and resources to implement the curriculum (Angula, 2015). This study was of importance to the present study because the researcher was interested in finding out from the respondents if they had the knowledge and skills to implement the new curriculum, especially the new topics (see table 3).

Others scholars like Carl (2017) pointed out that the effectiveness of curriculum implementation can be impacted negatively if the teachers are only involved during the implementation stage. Wiles and Bondi (2011, p. 302) also added that "teachers cannot find personal satisfaction in the classroom if they are not made partners in the creation of the curriculum and are not given the flexibility to make learning come to life for their learners". A study conducted by Nghihalwa (2018), on the Namibian Basic Education indicated that some teachers felt that involving or not involving teachers during curriculum design does not really matter because people who formulate curriculum have the knowledge and see no need to get teachers from school to be involved. The aforementioned study bowered from this literature how to effectively prepare teachers for reform, which can contribute massively to the preparedness of teachers for implementing the new Life Science curriculum for Grade 8. Hoadley and Jansen (2009, p. 223), state that during the curriculum reform for 2000 in South Africa, teachers' views on the curriculum reform were: a) teachers felt that they were trained, but the training only gave them some information about the new curriculum and tips on how to implement it. They failed to explain what it meant for their teaching; b) some felt that the training they have received emphasised more on the policy document, instead of warning them on the difficulties, they have to face during implementation; c) even though the number of teachers indicated that they have received training, some complained that the training received was given in a short period of time describing it as "a one short training".

In the same line Ramparsad (2001) stated that teachers especially for Grade 1 were not happy during the implementation of the curriculum for 2005 in South Africa, as the implementation phase was rushed and the facilitator had inadequate time to train teachers adequately to meet the given national deadline. Omara (2014) mentioned that in-service training is important as teachers acquire knowledge to face new challenges and changes in the education world. In line with that, the Serbian authority in 2018 had offered a massive training and support programme for its primary school gymnasiums and

secondary vocational teachers to implement new curriculum which was scheduled to be implemented in 2018 (United Nations Children's Fund, 2019). This study was interested in finding out if the workshops that had been done on curriculum change managed to demystify the new changes and adequately prepare teachers to implement the new syllabus.

Teachers need continuous in-service training for implementation of new curriculum. In addition, training is very important because through training; teachers acquire adequate skills and knowledge that innovation requires and hence develops insight into the wider issues of education and deep understanding, which is vital for any kind of adequate planning, research and development, (Kelly, 2010). A study conducted in Portugal by Flores (2011) proved that teachers were not supported and trained hence, they were stressed and frustrated during the implementation of the curriculum reforms. They further indicated that they were faced with issues of bureaucracy-imposed collaboration. However, a study that was conducted by Sengai and Mokhele (2020) indicated that the History teachers in Zimbabwe had a very supportive History Education Officer (EO) who used to organise History seminars, subject panel meetings and clusters. Research shows that it is crucial to support, involve and listen to teachers' opinions in the process of curriculum development because they link the curriculum to their learners' needs (Alshammari, 2013).

Ukachukwu (2016) states that science teachers in South Africa have negative perceptions towards teaching specific topics introduced by the National curriculum Statements (NCS) 2005 in 2008 like the evolutionary theory. This theory is accepted by some scientists as fact yet others reject it. This has led to mixed feelings among teachers, (Sanders and Ngxola, 2009). The evolutionary theory is regarded by some as a unifying framework of Life Science that describes the origin of life and the changes that occurred in organisms (Sanders and Ngxola, 2009). A study conducted by Bounders (2016) in Algeria advocates for teachers to be provided with adequate educational and professional

training through workshops and in-service training, in order to increase their knowledge in science subjects like Life Science. In another instance, Josua (2015) argued that the assessment of learners is important in the process of implementation of curriculum reform and therefore teachers require knowledge and skills to be able to conduct assessment. In the same line, Veloo, Krishnasamy and Md-Ali (2015) study revealed that the Malaysian teachers were knowledgeable in conducting School-Based Assessment for their learners in Malaysian Secondary School in 2012.

This means looking at controversial or new topics that might create negative perceptions like the evolutionary theory. The present study borrowed from the aforementioned literature and sought to understand if there are any controversies or negative perceptions by teachers on any of the new topics that have been introduced in the new Grade 8 syllabus on Life Sciences.

Contrary to that, a study conducted by Davis (2009) has indicated that, teachers in Montana, like some teachers in South Africa, when curriculum was reformed, also supported it and saw it as an on-going process to improve their curriculum as they believed that it would enhance students' learning. However, they added that they needed support from the community, administrators, colleagues, and outside agencies for the process of curriculum change to be successful. Davis (2009) also stipulated that teachers needed time and space for collaboration, planning, curriculum development and knowledge building. They also needed time to adapt to curriculum material to their own teaching styles and to the district curriculum guidelines. Curriculum developers and planners need to bear in mind the teachers' and learners' interests, when developing curriculum materials and professional development because it was found that teachers and students are motivated by what interest them (Davis, 2009). In a study carried out in India, Patankar and Jadha (2013) call for teachers to be mediators between curriculum and learners because teachers know the needs of learners, educational institutions, industries, and parents. Hence, they could incorporate these needs into curriculum

materials, should they be given a chance. The significance of this is that it highlights the fact that curriculum change could create structural challenges in the classroom that could impede teacher preparedness in adopting the new curriculum.

Seemingly, like what happened in other countries; the Namibian government had reformed its education system at the Basic Education Teacher Diploma (BETD) level, as reported in the study by Murangi and Anderson (1992). The programme was planned in 1992 and was implemented in 1993 at the four colleges of education in Namibia. The purpose of the study was to evaluate whether the first group of teachers were prepared to implement the BETD reform programme. Teachers had mixed feelings, some teachers complained of overcrowded classrooms, lack of materials, such as textbooks and stationery to support reforms, lack of classroom, lack of motivation and long distance to go to work. Other teachers indicated that language problems especially English has hindered them from implementing reforms. The previously stated literature is relevant to the current study because it indicates critical pertinent areas in curriculum development. It shows that there might be teacher resistance in adopting a new curriculum. The present study is not concerned with teacher resistance to the new Grade 8 Life Science syllabus however, it seeks teachers' views on their preparedness in implementing the new Grade 8 Life Science curriculum, which could be hindered by the aforementioned reasons. Thus, it was recommended that more studies that focus on the teacher's perspective are needed to determine how to best support instructional practice in the classroom so that learners' learning could be improved during curriculum change process.

It could be summarised that the above literature review indicates that teachers' perceptions of the new curriculum play a significant role on the successful implementation of the new curriculum. It is thus

important to understand these perceptions to be able to formulate best strategies to fix that problem. The next section reviews the best strategies for curriculum implementation.

2.2.3 Best strategies for curriculum implementation

Success in the implementation is believed to be determined by quality of planning, design and dissemination done beforehand (Carl, 2017). It also depends on the extent to which all consumers are informed and have been prepared for envisaged change and whether they are also prepared to associate themselves with it" Carl (2017, p. 157).

Schleicher (2018, p. 221) who did a study in education reforms summarised the seven factors to be considered when reforming education. These are presented in the sections below.

i) Setting the direction

A clear picture as well as a long-term vision of what is to be accomplished for learner learning needs to be communicated. Teachers and other stakeholders are more likely to accept changes if they understand the reason for change and the role they play within the broad strategy. To achieve this evidence based on underlying policy, diagnosis, research findings on alternative policy options and their likely impact as well as information on the cost of reform versus inaction should be disseminated widely in a language that is accessible to all.

ii) Building consensus

Consensus was found to be vital if policy on reforms were to be successful, due to the fact that an education system is characterised by wide varieties of stakeholders. Hence, consensus could be a key in winding up meaning agreement of levels of the lowest common denominator (Schleicher, 2018). The study indicated that consensus could be achieved in the following ways: a) through consultation and feedback that allow concerns to be taken into accounts hence, reduce the likelihood of strong opposition by some stakeholders like the Life Science teachers; (b) regular involvement by

stakeholders in policy design help to reduce capacity and share ideas over time and; (c) engaging stakeholders like teachers in the development of education policy could yield a sense of joined ownership about the need, relevance and nature of reform.

iii) Engaging teachers to help design the policy

The process of developing policy and curriculum was found to be more successful if range of stakeholders, like teachers from the outset are involved. This is significant to this study in a manner that; involving the teacher for Life Science for Grade 8 in the development of the curriculum for 2017 could contribute massively towards its implementation. Schleicher (2018) points out that if teachers are not involved in the design of reforms, they will not be willing help with the implementation. Research places emphasis on regular interactions with teachers because they possess a wide variety of knowledge and skills. Politicians and the Ministry of Education should avoid imposing new policies on teachers and rather focus on getting good practise from classroom into the education system instead of focusing on what the government prescribed to happen in the classroom.

iv) Introducing pilot projects and continuous evaluation

Piloting on projects and experimenting with policy was found to have a positive contribution towards building consensus, allay fear and overcome resistance by evaluating proposed reforms that are fully introduced (Schleicher, 2018). The study also suggested for periodical reform review after implementation. It is important to note that teachers are more likely to accept the new policy if they are aware that they would be given platforms to express their concerns and provide advice on making adjustment.

v) Building capacity in the system

The inadequate capacity, resources and financial resource have been noted as obstacles to implementation of reform. The study advised the government to ensure that teachers are equipped with resources and are prepared to assume new roles and responsibilities which are required during

implementation of reform. This literature contributes to better understanding of the preparedness of teachers on the implementation of the new Grade 8 Life Science curriculum.

vi) Timing is everything

Research cemented that for a reform to be successful one needs to give it time. The study advised reformers to "clearly stipulate a clear understanding of timing of intended, implemented and achieved reforms and for the reform policy to be introduced in a specific sequence. Timing was found to be necessary in order for stakeholders to understand reform, measures, build trust and to develop the necessary capacity to move to the next stage of policy development.

vii) National teacher's union as part of the solution

The study pointed out that the teaching profession could only be put at the heart of education reform if there exists a fruitful dialogue between the government and teaching profession. The research emphasises that a clear and good collaborative relationship between the Ministry of Education and union leaders who are the mediator between the teachers could lead to effective implementations of curriculum reforms.

Ornstein and Hunkins (2018) have described five guidelines, which were found to contribute massively to successful curriculum implementation. Innovations designed to improve student achievement must be technically sound for change to be effective. Furthermore, they suggested that research should be carried out first, so that it could indicate what works and what does not. These guidelines are:

Successful innovations require change in the structure of a traditional school (Ornstein and Hunkins. 2018).

a) For curriculum change to be effective, there should be massive changes in the way teachers and learners interacted in the past as well as in the way classes were allocated (Ornstein and Hunkins, 2018).

b) Innovations must be manageable and feasible.

Ornstein and Hunkins (2018) further advised that governments should not just reform their curriculum for the sake of satisfying their goals and objectives, but the curriculum introduced should be the one that teachers are able to implement and that it should be manageable.

For example, "one cannot innovate ideas concerning critical thinking or problem solving if learners cannot read and write Basic English" (Ornstein and Hunkins, 2018, p. 262).

c) Implementation of successful change efforts must be organic rather than bureaucratic

d) It was founded that for curriculum to be successfully implemented, a government policy should not be based on strike rules and monitoring system, but rather be the one which allows deviating from. This literature highlights the importance of a subject teacher's involvement in curriculum review and change. It suggests that there was a need for Life Science Grade 8 teachers to be involved in the formulation of the new curriculum. This would be a best strategy for its implementation as they are the people on the ground, constantly in touch with the learners' classroom and socio-economic conditions. Successful implementation of the new curriculum also depend on the extent to which teachers are able to conduct assessments, this was mentioned by Josua (2015) who cemented that it is important for teachers to be trained and prepared for the implementation of the new curriculum so that they acquire skills and knowledge especially on conducting assessment. He further added that assessment is important tool in the process of curriculum reform, because it enables teachers to determine whether learners acquired basic competencies as required by the new curriculum. It was

therefore the aim of this study to investigate if these best strategies were adapted by relevant Ministry of Education and NIED.

2.2.4 The revised curriculum for Life Science 2017

Life Science is a Natural Science subject taught from grade 8 to 9. It is then replaced by Biology, a subject studied as from Grade 10 to 12 (Ministry of Education, Arts and Culture, 2016a). The Natural Science subjects "contribute to the foundation of knowledge-based society, by empowering learners with scientific knowledge, skills and attitudes to formulate hypothesis and to investigate, observe, make deduction and understanding of the physical world in a rational scientific way. In Natural Science, learners are able to develop the necessary knowledge, skills and attitudes to lead a healthy life." (MEAC, 2016a, p. 11). According to the MEAC (2016a, p.1) "the purpose of Life Science is to provide basic scientific background for the Namibian learners, the hope of providing the much-needed scientists for the country. The country needs to be scientifically literate in order to cope with challenges of the changing global technology requirements (MEAC, 2016a, p. 1).

Furthermore, teaching Life Science is said to promote the following aims in the curriculum (MEAC, 2016b, p. 2):

a) Knowledge with understanding

b) Value and attitudes

c) Scientific skills

d) Democratic principles and inclusive education

In the modern world, teaching Life Science needs to be amended in order to cope with a changing world (National Academic of Science, 1996). The National Academic of Science, (1996) indicates that the current reform efforts, like that of Life Science for Grade 8 require an applicable change on

how science is taught, a substantive change in professional development practices. In order for reforms to be successfully implemented, the professional development process must include experiences that engage prospective and practicing teachers in active learning that builds their knowledge, understanding and ability (National Academic of Science, 1996). Science content increases and changes, therefore, teachers' understanding of science must be kept at peace (National Academic of Science, 1996). However, some Namibian science teachers especially Life Science teachers were found to be reluctant to change or to implement what is stipulated in curriculum framework, due to some daily challenges in the education system (Uugwanga, 2012).

The challenges found were lack of subject content knowledge, poor teaching strategies, the school context, shortage of teaching aids, lack of teachers' commitments and issues of time frame (Uugwanga, 2012). It further adds that, teachers' decision and understanding in the implementation of science subjects were reported to be very important, because they are the "sole facilitators and assessors of their classrooms and learners. Hence, science teachers especially for Life Science, need to be "motivated and encouraged to teach learners for deeper understanding". The aforementioned literature is relevant to the present study, as it contributes to a better understanding of the revised curriculum for 2017, therefore, it defines the hindrances caused by the lack of preparedness of the Grade 8 Life Science teachers.

2.2.5 Conclusion

This chapter discussed the theoretical framework, major curriculum reforms in Namibia after independence, teacher's perceptions towards curriculum reforms, best strategies for curriculum implementation and the revised curriculum for Life Science for 2017, were discussed. The reviewed literature was relevant to the present study because it informs the study objectives and formulate data

collection instruments that specifically focused on research questions. Lastly, it discussed some of the major research work relevant to the study. The next chapter will discuss the research methodology that was applied to the present study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The previous chapter presented the literature review and the conceptual framework that the study was based on. This chapter presents the methodological approach used to collect data on the teachers' preparedness regarding the implementation of the new Grade 8 Life Science curriculum. The chapter includes research paradigm, research methodology, research design, population and sampling, data collection methods and instruments. The chapter further discusses the data collection procedures, pilot study, data analysis as well as the ethical consideration.

3.2 Research paradigm

This study followed an interpretivist research paradigm. Kivunja and Kuyini (2017) asserts that an interpretivist paradigm seeks to understand and interpret what the subject is thinking and the meaning he/she is making of the context. The interpretivist approach makes efforts to get into the heads of the subjects being studied and understand their view and perceptions (Kivunja and Kuyini (2017). The present study applied this approach to understand the views and perceptions that the Life Science teachers hold towards the implementation of the new Life Science curriculum for Grade 8.

3.3 The qualitative research approach

A research approach describes the research process. According to Wilkinson (2000) research approach is the specific procedures or techniques used to identify, select, process, and analyse information about a topic. This research approach section answers two questions namely how the data collected was, generated and how it was analysed, (Wilkinson, 2000). The study employed a

qualitative approach. Qualitative research is the systematic enquiry into social phenomena (Teherani, Matimianakis, Hayes, Wadhwa and Varpio, 2015). Qualitative approach allows the researcher to study social issues in depth in order to understand and capture the point of view of other participants without predetermining the participants views (Butina, 2015). This approach was deemed appropriate for this study as it allows the researcher to explore the perceptions of Life Science teachers on the implementation of the new curriculum for Life Science Grade8. The qualitative approach injury is diverse and can be numerous. In this regard the narrative qualitative research design was employed in this study. The narrative qualitative research design will be discussed in the next paragraph.

3.4 Research design

This study followed a narrative qualitative research design. Qualitative narrative research seeks to understand the phenomenon in their natural setting (Flick, 2007). This is the most compatible design for this study as this research is interested in creating an in-depth understanding of the teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum. Qualitative narrative case study research gathers data from the area in which the problem under study is encountered by participants (Cresswell, 2014). Using a narrative case study design was appropriate because it allowed for "richer and more in-depth understanding of a process or phenomena**"** (Lingard, 2016, p.1). Therefore, using narrative case study made the researcher to listen and understand how participants were narrating the stories about the teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum in three schools in the Oshigambo Circuit, Oshikoto Region. Therefore, the study used qualitative narrative case study with the purpose that the researcher had face-to-face conversation with the participants at their natural settings which is their schools.

3.3 Population and Sampling procedures

3.3.1 Population

Matthews and Ross (2010) define population as the total number of cases that could be included in a research subject. The population consisted of a total number of 22 schools out of a total number of 332. There are 11 Life Science teachers for Grade 8 and 6 Heads of Department (HODs) for Science at the selected schools in Oshigambo Circuit, in Oshikoto region.

3.3.2 Sample and sampling strategies

A sample is a small group of participants that are intended for the study from a larger population. According to Mertens (2015, p. 319); McMillan and Schumacher, (2010) sampling refers to the method used to select a given number of people from a population. The sample of this study consists of six teachers who have been teaching Life Science in Grade 8 for more than five years. Purposive sampling deemed most suitable for this study. Three HODs from each of the selected schools also formed part of the study. The teachers are sampled based on the following criteria that the teachers should: a) be a qualified teacher for Life Science for Grade 8, b) being teaching Life Science for five years, c) currently teaching Life Science in Grade 8.

According to Mertens (2015) purposeful sampling, involves choosing a group that allows the researcher to best explore the research question. Matthews and Ross (2010) also agree with this and add that sampling is done by the researcher with the purpose of identifying information rich cases that permit the researcher to study the case in-depth. Five public schools were purposefully selected of which two were pilot cases based on the following criteria: a) the schools should be easily accessible within 13 km from the circuit; b) the school should have a qualified teacher for Life Science

who has taught for at least five years and; c) the school should have a head of department for at least three years.

3.4 A brief overview of the research setting

Oshikoto Region has got private and public schools. This study was conducted in three combined public schools in Oshigambo circuit. All the three selected schools were within 13 kilometres, which made it accessible by the researcher. These schools accommodate teachers who are teaching various grades and various subjects. However, the targeted teachers were those with experience of teaching Life Science in Grade 8 in both the old and new curriculum.

3. 5 Data collection methods and instruments

3. 5. 1 Interview

An interview is a structured face to face conversation, with questions prepared and presented to each interviewee in an identical way (Hancock, Ockleford & Windridge, 2009). The researcher used a one on one semi structured interview, with a set of questions in a pre-determined order. Face to face interview permitted the researcher to obtain in depth data from the participants about teachers' preparedness in the implementation of the new curriculum for Life Science Grade 8 in Oshigambo circuit. Individual face to face discussions provided important and additional data that the researcher did not get from the observations. However, interviews explored deeper and gave the researcher an opportunity to probe the participants' responses. The aim was to gather quality and detailed information about how teachers are well prepared in the implementation of the new curriculum for Grade 8 Life Science in Oshigambo circuit.

One on one semi structured interviews were found to be useful in understanding the topic of interest, in this case, the teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum. Galletta (2013, p. 24) states that semi structured interview allows for considerable reciprocity between the participant and the researcher. This reciprocity is of significance in research because in the process of give and take, allows the researcher to probe the participant's responses for clarification, making meanings and create reflection (Galletta, 2013). Semi- structured interviews were used to investigate if the teachers were prepared to implement the new Life Science curriculum for Grade 8 at the departmental level. A total of three heads of department of Science and three teachers were interviewed. The interview guide (refer to Appendix C) enabled the researcher to gather the data on the questions of how well the teachers are prepared to implement the new Life Science Grade 8 curriculum. The interview guide (refer to Appendix D) enabled the researcher to gather the questions for the heads of departments on how well the teacher are prepared to implement the new Life Science Grade 8 curriculum under the Science department.

3. 5. 2 Non-participant Observation

Non-participant observation method was used in the process of collecting data. According to De Clerck, Willen and Christiane (2011) non-participant observation refers to the researcher's long-distance observation of activities related to the topic of interest. This type of observation did not require the researcher to take part in the activities during the time of observation. Non participant observation allowed the researcher to observe the classroom teaching and learning activities and obtain precise information on how the teachers were teaching some new topics of Grade 8 Life Science curriculum. Further, observation also gave the researcher an opportunity to see and record things which were not mentioned by the participants during the interviews. The researcher observed six lessons, two lesson in each classroom meaning that each teacher was observed twice and the head

of department were not observed. Observation guide (refer to Appendix E) was used to assist the researcher to investigate if the teachers are prepared to implement the new Life Science curriculum for Grade 8 at the teaching level (in the classroom setting). The specific topics observed were the Scientific process, Plant as a living thing and how assessment is carried out.

3.5.3 Document analysis

Qualitative research also use a document analysis tool so that they obtain necessary background information of the situation and insights into the dynamics of everyday functioning (Mertens, 2015, p. 387). Documents are more important because they allowed the researcher to gain information that might not be available through the use of other research methods. Documents reviewed for the study included the old and new curriculum for Grade 8 Life Science. Document analysis method was used to identify the fundamental differences between the old and new Grade 8 Life Science curriculum. Hence the document analysis checklist was used (refer to Appendix F).

3.6 Data collection procedures

The research instruments (guides) were designed and finalised under the supervision of the supervisors. For credibility purposes, the research instruments were first piloted with some teachers who teach Life Science in Grade 8. The researcher obtained ethical clearance from the University of Namibia Ethics Committee and the permission letter from the Permanent Secretary of Education to conduct research in government schools. Appointments were made with the school principals, Science heads of department and Science teachers. Further, the researcher explained the purpose of the study and the methods to be used. The researcher again, explained that, she will use an audio recorder to record the interviews. All the data collection procedures were explained to the participants. The data were collected as follows:

(a) Face to face semi- structured interviews were conducted with the Life teachers for Grade 8 to find out where they are prepared to implement the new curriculum for Life Science Grade 8. Face to face semi- structured interviews were conducted with the three heads of departments for Science at the three selected schools in order to find out how the Grade 8 Life Science teachers were coping with the implementation of the new curriculum. The duration of interviews varied between 20 to 30 minutes. Given consent by the participants, all interviews were audio- recorded.

b) Six classroom observations were conducted by the researcher at three selected schools, to observe how teachers were teaching specifically scientific process topic and plants as living things and how assessment activities are carried out.

c) Analysed documents were old and new Grade 8 Life Science curriculum, the content and objectives.

3.7 Pilot study

Pilot study was conducted in two public schools in Oshigambo circuit. The two schools were chosen because the participants were in possession of knowledge and experience that better represented the entire population (Johanson and Brooks, 2010). A pilot study is a small-scale study conducted to test the instruments to minimise the likelihood of respondents having problems in answering the questions as well as allowing some assessment of questions' validity and reliability of data that will be collected (Saunders, Lewis and Thornhill, 2007). After conducting the pilot study, the researcher realised that most of the interview questions addressed the objectives of this study. However, the first question which sought to ask how teachers felt about the introduction of the new curriculum for Life Science Grade 8 did not really address the first research question of the study, which is about establishing teachers' perceptions on the implementation of the new curriculum for Life Science Grade 8**.** Hence,

the question that was asked were altered to read: ‘how did you perceive the introduction of the new curriculum for Life Science Grade 8’. This question unlike the previously mentioned, enabled the researcher to collect succinct responses.

3. 8 Data analysis

There are various approaches and methods used to analyse qualitative data. The present study applied the inductive approach, with thematic analysis as a method of analysing qualitative data (Gay and Airasian, 2009). The study focused on implementation of the new curriculum, aimed at investigating the teacher’s preparedness on the implementation, establishing the teachers’ perceptions of the new curriculum for Grade 8 Life Science and to identify the fundamental differences between the old and the new curriculum. The researcher had to transcribe the collected data from the recorded audio into written text, read through the text, followed by interpreting data by classifying the research questions into categories using different highlighters. The researcher used code names for the participants. Code names were given as follow: Teacher A, teacher B, teacher C, school A, school B, school C, HoD 1, HoD 2 and HoD 3.

Inductive content analysis is specifically concerned with analysing qualitative data (Anandarajan, Hill and Nolan, 2019). This approach involves transforming a large amount of text into highly organised and concise summary of key results (Erlingsoon and Brysiewics, 2017). They further explained that the approach allows the researcher to develop a theory and identify themes from transcripts and documents. The link between the generated themes and research questions will then be created, (Anandarajan et al., 2019). “This approach was appropriate when the researcher wants to build a new theory or expand on a current theory with the collected data” (Anandarajan et al., 2019, p.18). The researcher looked at participants’ response, analysed data in details to look for emerging patterns or concepts and generating theory and explanation from it, (refer to fig 2). The researcher

compared themes with the findings in the literature in order to identify if there is any link or connection as well as looking out for differences that might have aroused, in order to create a general understanding of the teacher's view regarding their preparedness to implement the new curriculum for Life Science Grade 8.

In summary, the following diagram illustrates the process followed in analysing and presenting the data:

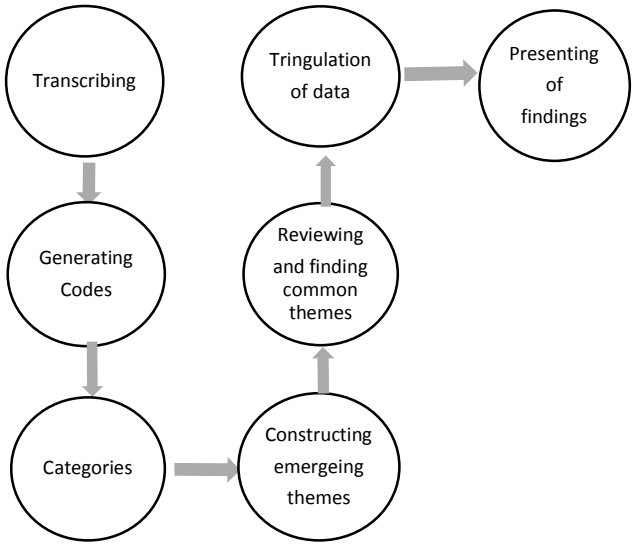

Fig 2. The summary of analysing and presenting data

3.9 Ethical consideration

Ethical issues refer to conducting research in a manner that does not result in harming the participants in one way or another and no psychological harm, maintain confidentiality, be honest and ensure that data collected is protected (Matthews and Ross, 2010). The researcher needs to take into consideration cultural and diversity aspects in research. In this study, the researcher obtained an ethical clearance certificate from the University of Namibia's ethics committee to carry out this study. Permission from

the permanent secretary of the Ministry of Education, Arts and Culture to conduct research in the selected schools in Oshikoto Region was sought. The principals for the targeted schools were contacted to obtain permission to conduct research at their schools. The teachers and heads of department participating in the study were also informed about the purpose and value of the study. The researcher explained to the participants that information provided as well as their identity would be kept confidential. They were also further informed about their right to withdraw from the research should they feel uncomfortable to continue with the study. Data collected would be kept for a period of three years after the completion of the study and thereafter, destroyed.

3.10 Conclusion

This chapter outlined the research methodology that was employed in this study to investigate the teachers' preparedness on the implementation of the new Grade 8 curriculum for Life Science. The chapter also discussed the research paradigm, research approach, research design, sample, population and sampling procedures that were used in this study. The research instruments which best answer the research questions such as one on one interview guide, observation schedule and document analysis guide, data collection procedures, and ethical consideration were also discussed. The next chapter presents the findings of the study.

CHAPTER 4

PRESENTATION OF FINDINGS

4.1 Introduction

The previous chapter presented the methodology that was employed to collect, analyse and present the data. This chapter presents the results obtained from the present study that investigated teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum at the rural schools in the Oshikoto region. It further provides demographic information of the participants. The chapter will also discuss the themes that emerged from the study. They are presented in accordance with the following three research questions as outlined in Chapter 1 and 3:

- What are the teachers' perceptions on the implementation of the new Namibian Grade 8 Life Science curriculum?
- What are the fundamental differences between the old and the new curricula in terms of the content, learning outcomes and assessment criteria that impede teacher preparedness in implementing the new curriculum?
- What is the level of the teacher's preparedness in the implementation of the new Grade 8 Life Science curriculum?

4.2 Biographical information of the participants

A total of six (6) participants took part in this study- three Junior Secondary teachers and three Junior Secondary Heads of Department (HoDs). Teacher participants were coded as Teacher A, Teacher B, Teacher C, Teacher D, Teacher E while heads of department were coded as HoD A, HoD B and HoD C. Out of the six participants, three were female and three were males. Participants' ages ranged

between 35 and 45 years. All participants had professional teaching qualifications, with either a diploma or a degree and all had more than five years of teaching experience.

4.3 Presentation of findings according to themes and sub-themes

The findings are presented according to the themes and sub themes as outlined in the introduction section of this chapter. Three sub-themes were identified in the process of analyzing the data on teacher's perceptions with regard to curriculum change and implementation. The views of participants are presented below.

4.3.1 Teachers' perceptions on their involvement in curriculum design

The participants of this study were asked to respond to a question on their involvement in the new grade 8 Life science curriculum design. Majority of participants indicated that they were not involved in the process of designing Grade 8 Life Science revised curriculum. Teacher B responded that,

> "*Mmh…myself I was not approached; I have no idea if the curriculum developers have involved other teachers during the development of the new curriculum*". In addition, HoD C said: "*The majority of teachers, more especially teachers in rural schools were not contacted to find out what changes need to be done". O*n the contrary, Teacher A expressed that*, "As far as I am concerned, Life Science teachers were not involved, rather they have involved Biology teachers who are national markers", instead of teachers who teach Life Science.*

The study findings revealed that the majority of the heads of Science and Life Science teachers for Grade 8 in Oshigambo circuit, were not involved in the process of designing the new curriculum for Grade 8 Life Science. This means that there are fewer participants who felt the teachers were involved in the process. The study findings further revealed that only teachers who were examination markers of the Biology subject were involved in the development of the new curriculum.

4.3.2 Teachers' perceptions on the implementation of the new curriculum

The analysis of data illustrates that some participant teachers had a positive feeling about the introduction and implementation of the new curriculum for Life Science while some teachers have fear about the changes. Three participant teachers pointed out that they feel good about the changes, as Namibia would be on par with other countries. For example, Teacher A said that,

> "*This is a good move…I feel good about the introduction and implementation of the new curriculum for Life Science… I have a hope that some of these changes may bring improvement in the teaching and learning process".* In addition, Teacher C expressed that, *"I am in support of the new curriculum…it includes… and explains clearly the teaching methods that contribute to the teaching and learning of Life Science".* Consequently, HoD C said that, *"The revised curriculum is a good initiative from the government…lifting up the level of education in our country".* On the contrary, HoD A and HoD B, pointed out that they have fears of the unknown about the introduction of the new curriculum for Life Science. They specifically stated that they did not know what they should do, and they noticed the confusion among the learners. For example, HoD A pointed out that "*For me, I have fear, I am afraid…yes, I had fear when the new curriculum was introduced since I did not know what exactly will happen afterward".* Similarly, HoD B reasoned that, *"Aaah, I wonder if the planning division of the Ministry of Education was ready with the introduction and implementation of the new curriculum…I am seeing poor planning…We are still struggling".*

The response given above revealed that the majority of the teachers and heads of departments have good perceptions towards the introduction of the new curriculum for Life Science Grade 8. It also

shows that fewer participants fear the introduction of the new curriculum for Life Science grade 8 because they were not fully acquainted with the new curriculum.

4.3.3 Teachers' perceptions on the challenges of the new curriculum

Three factors such as inadequate content knowledge, lack of teaching resources and lack of laboratory and chemicals were identified as challenges that are impeding the implementation of the new curriculum. These factors are presented below.

a). Inadequate content knowledge

The participant teachers interviewed indicated that most of the teachers have little knowledge on some of the themes and topics in Life Science curriculum especially the scientific processes. For example, Teacher C revealed that,

> "*I struggled to prepare my first lesson from the scientific processes theme… which made me to feel uncomfortable during the teaching and learning process…mmm, that is what I regard as little knowledge on the topic".* In the same sentiment Teacher A, alluded: *"Oh! It was a bit confusing…unclear…very challenging, since I had a hard time teaching the scientific processes content in my class, though I was prepared".* In addition to Teacher C and A, HoD A said that ***"****Mhhh…when the new curriculum was introduced, the teachers struggled with preparing and presenting the scientific processes topic".*

During the observation, the researcher observed that Teachers A and C were struggling to explain to their learners the topics such as plants as living things, passage of substance including the activities. Further, it was noted that the teachers observed were reading from the textbook most of the time.

The study found out that teachers had little knowledge of some themes and topics of the new curriculum for Life Science Grade 8 and hence they were struggling to prepare and present this topic. This means that the Life Science teachers presented the topic reading straight from the textbook and some were not sure what they were presenting to the learners.

b). Lack of teaching resources

The analysis of data shows that the participant teachers were provided with materials such as syllabuses, scheme of works, year plans and the assessment plans to support the implementation of the new curriculum. However, all of the six participant teachers pointed out that the lack of appropriate textbooks, models, and visuals aids made it difficult for the teachers to implement the new curriculum. For example, Teacher A stated that;

> "*We don't have enough textbooks at our school. As far as I am concerned no school in our circuit has received more than five textbooks for Life Science. However, each school was expected to buy its own textbooks…the budget is not enough to buy books…nevertheless, the school managed to get five textbooks…One can imagine that I have 70 learners sharing those five textbooks…Oh…this is very difficult for my learners and myself".*

Consequently, Teacher B added that*;*

> *"One of our biggest challenge is…mmm…we don't have enough textbooks at our school…this is hindering the implementation of the new curriculum".*
>
> Further, HoD C cemented that, *"We are faced with the challenge of lack of the teaching materials such models, videos, visual aids and other teaching materials that teachers can use to demonstrate their lessons".*

Furthermore, some excerpts from individual transcriptions indicated the lack of textbooks and other related teaching materials. The participant teachers explained that since the learners do not have

textbooks, teachers had to make copies and sometimes there are no ink cartridges and papers to make copies. Teacher B suggested that;

> "*Mhhh…I do understand and seeing what is happening in our school classrooms…since we do not have enough textbooks…We (teachers)…must prepare notes for the learners by writing on the chalkboard and making copies…what else can we do? But we have a big challenge of making copies*". HoD B also pointed out that *"aa…there were insufficient textbooks for both teachers and learners to implement the new Life Science Grade 8 curriculum*".

On the same note the classroom observation revealed that teachers presented their lessons using a single textbook while learners were either copying notes from the chalkboard or sharing handouts. In addition, the researcher observed that the physical setting of the Life Science classrooms did not support the teaching and learning of Life Science. It was evident that relevant teaching and learning aids such as posters, pictures, videos and overhead projectors were not available.

The results of the study indicated that the lack of resources was a detrimental factor that hindered the implementation of the new curriculum for Life Science for Grade 8. This means that the teachers were provided with the following examples of teaching materials; syllabuses, scheme of works, year plans and the assessment plans, to implement the new curriculum for Life Science. This implies that there were not enough textbooks for both teachers and learners to implement the new curriculum for Life Science. The lack of funds was another factor that made it even more difficult for schools to avail the right textbooks for the implementation of the new curriculum.

c). Lack of laboratories and chemicals

The participant teachers interviewed indicated that the lack of laboratories and chemicals, had made it difficult to implement the new curriculum. Further, the participant teachers detailed that the

chemicals they had at their respective schools were expired and they could not use them. HoD A had this to say;

> *"We have one laboratory at our school which we share with the Physical Science teachers…mmm…but…there are no chemicals and there are times when our lessons crash"* … on the contrary Teacher B pointed out that "*Our school does not have a lab…no chemicals….sometimes we purchase the chemicals…but we don't have a place to store them. This is very dangerous for us and our learners…because not all of the chemicals were supposed to be exposed".* Similarly, Teacher C lamented that: *"As we are talking, there is no laboratory at our school…aaa…the chemicals that we have are expired…sometimes, the chemicals provided by the region only support the teaching of other subjects like Physical Science" ...* The HoD C suggested that, *"I feel, it could be better if all schools should have laboratories…aaaa…necessary apparatus and sufficient chemicals"*

The study findings revealed that the lack of laboratory equipment made it difficult for the Life Science teacher for Grade 8 to implement the new curriculum. The study's findings further revealed that in the few schools that had a laboratory, the chemicals were expired.

4.4 The fundamental difference between the old and new curriculum

According to the two documents analysed, old and new curricula, the researcher explained the changes made. The differences identified in the two documents are explained and organised into the following sub-themes; a) the content of the curricula; b) learning outcome of the curricula; c) assessment criteria of the curricula. They are presented as follows;

4.4.1 The content of the two curricula

Table 4 below illustrates the differences between the new and old curriculum.

Table 4: The differences between the new and old curriculum in terms of learning content

Description	The old curriculum	The new curriculum
Content	• simple and contain basic content of Life Science and Agriculture	• more Life Science
Length	Short	Long
Passing requirements	A-F	A-E
Level of competence	• simple • less practical • less demanding	• more advanced • more practical • more demanding

Participants interviewed noticed the differences in the two curricular, some of the participants appreciate the content of the new curriculum saying that it is well organised and the layout of the content is well arranged in terms of knowledge transition from lower to upper grades. They felt that the new curriculum is the best, as it would help learners to understand what Life Science entails. The participants further outlined that the new curriculum focuses on Life Science unlike in the old curriculum which had more Agricultural content. For example, Teacher C confirmed that;

> "the fact is…*the content of the new curriculum gives a link between Life Science and Biology…unlike the old curriculum…the new curriculum is best…it prepares the learners for Grade 10 Biology…they will already have a good base and introduction to Biology, that's why I like it…"*

Teacher A, HoD A and Teacher B clearly pointed out that, the new curriculum is more of Life Science, and not a combination like in the previous curriculum and the content is linked to the next grade. Teacher B specifically stated that;

> *"The new curriculum explains well the health of education and living organism unlike the old curriculum…and the difference between the two curriculums is that the old curriculum was too shallow compared to the new curriculum".*

Contrary to that it was evident from the document analysed that the content in the old curriculum is short, less practical, less demanding while the new curriculum's content contains lots of information, more of an advanced level, complicated, too difficult and more competencies have been added. This was confirmed by HoD A who narrated that;

> *"…the new curriculum is packed…the content for Grade 8 needs to be reduced…ooh!... some topics need to be shifted to Grade 9…the content is too much for our learners…looking at their ages, they look not mature to handle all the content in the new curriculum".*

The results of the above response indicated that teachers for Life Science and heads of department for Science had different views about the content of the new curriculum. This implies that some teachers and heads of departments feel that the content of the new curriculum was good as gave a clear link between Life Science in Grade 8 and Biology in Grade 10. The curricula objectives are well formulated, and straight forward. Those in disagreement feel that the content is packed, and some topics need to be reverted to Grade 9. The participants also feel that the content of the new curriculum was too much for the learners in Grade 8 considering at their age, they were not ready to handle too much workload.

Table 5: Summary of learning content for the old curriculum:

Source: (MoE, 2010)

Summary of Learning Content for Grades 8 - 10 Life Science

GRADE 8	GRADE 9	GRADE 10
What is Life Science		
Topic 1.1 What is life science	-	-
Scientific Processes		
Topic 1 Scientific processes	Topic 1 Scientific processes	Topic 2 Scientific processes
Health Education		
Topic 2 Health education	Topic 2 Health education	Topic 1 The body's immune system
Diversity of Organisms		
Topic 3 Living organisms	Topic 3 Living organisms	Topic 3 Classification of living organisms
Topic 4 Plants and their abiotic environment	Topic 4 Plants	Topic 4 Cell theory
Topic 5 Plant reproduction	-	Topic 5.1 Six kingdoms
Human Biology		
-	Topic 5 Human biology	Topic 6 Nutrition Topic 7 Human body
Ecology		
Topic 6 School garden Topic 7 Ecosystem	Topic 6 Ecosystem	Topic 8 Ecology

Table 6: Summary for the learning content in the new curriculum

Table: Summary of learning content for Grades 8 – 9 Life Science

Grade 8		Grade 9	
Scientific Processes and Experimental Techniques			
Topic 1	Scientific processes	Topic 1	Scientific processes
Health Education			
Topic 2	Sexual health and diseases	Topic 2	The body's immune system
Living organisms			
Topic 3	Living organisms	Topic 3	Classification of living organisms
Topic 4	Passage of substances	Topic 4	Cell theory
Topic 5	Plants as living organisms	Topic 5	Diversity of living organisms
Human Biology			
Topic 6	Human Biology	Topic 6	Nutrition
-		Topic 7	Human body
Environment			
Topic 7	Ecosystem	Topic 8	Ecology

Source: (MEAC, 2016b)

Table 5 and 6 show that the old curriculum consisted of the following topics: what is Life Science, health education, plant reproduction, plant and their abiotic environment and school gardening existed

but in the new curriculum, some topics were either removed or reframed. Topics such as scientific processes, sexual health and diseases, passage of substance and human biology were totally new, while topic such as plant and their abiotic environment was reframed into plant as living organism.

4.4.2 The learning outcome of the curriculum

The analysis of document revealed that in the old curriculum the learning outcome are expected to be acquired by the completion of Grade 10. Whilst in the new curriculum; Life Science is taught up to Grade 9 and replaced by Biology in Grade 10. It was also recorded that the old curriculum strives for the learners at the end of Grade 10 to acquire necessary skills in the scientific area of learning; to understand the whole world. The skills were: communication, numeracy, information, self–management and competition, problem solving, participation, physical. The learning outcomes for the new curriculum on the other hand, focused on completing the Junior Secondary phase in Life Science. Learners are expected to know the following scientific processes: health education and characteristics of living organisms. Teacher C emphasized that*;*

> *"…teachers need to study and be able to differentiate the items that are phased out with the old curriculum and acquaint/ enrich themselves with the new curriculum…since there is no backward"*.

The study findings suggest that teachers need to work hard, that requires them to study and understand the expected outcomes of the new curricula in order to effectively implement the new curriculum for Life Science Grade 8.

4.4.3 The assessment criteria

Evidence from the old and new curriculum indicated that the assessment criteria from both curricula have the same aim and weight. Nevertheless, in the old curriculum; the teachers are expected to assess

the learners on how well each learner mastered the basic competencies described in the subject syllabuses. Whilst in the new curricular, the teachers have to assess learners on how well each learner has mastered a specific objective as described in the syllabus.

Through analysis of documents, the researcher took notes that both curricula had similar requirements for awarding continuous assessments grades. According to table 8 and 9, it was clearly detected that there is a slight change in the grading system of the two curricula. It was noted that the old curriculum graded learners with A- 80% being the highest and U-0-19% being the lowest. Whilst the new curriculum, the learners are graded the same as the latter, but it was changed to U-0-39% being the lowest.

Table 7: Summary of the grade descriptions in the old curriculum

Grades	Mark range	Grade descriptor
A	80%+	Achieved Basic Competencies exceptionally well. The learner is outstanding in all areas of competency.
B	70-79%	Achieved Basic Competencies very well. The learner is highly proficient in most areas of competency.
C	60-69%	Achieved Basic Competencies well.
D	50-59%	Achieved Basic Competencies satisfactorily.
E	40-49%	Achieved a sufficient number of Basic Competencies to exceed the minimum competency level.
F	30-39%	Achieved the Basic Competencies needed to be considered competent. The learner needs learning support.
G	20-29%	Achieved the minimum number of Basic Competencies worthy of a grade. The learner needs learning support
U	0-19%	Did not achieve the minimum level of competence. The learner needs learning support

Source: (MoE, 2010)

Table 8: Summary of the grade descriptions in the new curriculum

Grade	% Range	Grade descriptors
A	80%+	**Achieved objectives exceptionally well.** The learner is outstanding in all areas of competency.
B	70-79%	**Achieved objectives very well.** The learner's achievement lies substantially above average requirements and the learner is highly proficient in most areas of competency.
C	60-69%	**Achieved objectives well.** The learner has mastered the specific objectives and can apply them in unknown situations and contexts.
D	50-59%	**Achieved objectives satisfactorily.** The learner's achievement corresponds to average requirements. The learner may be in need of learning support in some areas.
E	40-49%	**Achieved the minimum number of objectives to be considered competent.** The learner may not have achieved all the specific objectives, but the learner's achievement is sufficient to exceed the minimum competency level. The learner is in need of learning support in most areas.
U	0-39%	**Ungraded.** The learner has not been able to reach a minimum level of competency in the objectives, even with extensive help from the teacher. The learner is seriously in need of learning support.

(MEAC, 2016b)

The table 8 is a summary of grade descriptors of the new curriculum for Life Science 2017.

By examining the assessment criteria of the two curricular, it was noted that the new curriculum provided a clear guidance on how to award grades to the learners unlike in the old curriculum. Teacher C stressed that;

> *"…the assessment criteria for the new curriculum is clearer and more detailed than the old one…we just need to be focused and serious".* In addition, it was also noted that the aims,

procedures and explanations of what a learner is expected to have in order to achieve a certain grade have been outlined in the new curriculum.

This response shows that the assessment criteria for the new curriculum is clear, straightforward and well formulated in such a way that it measures the learner's achievements, it means that the teachers need to understand the assessment procedures to effectively assess the performances of the new learners.

When asked about the performance of learners under the new curriculum, the participants indicated that there is not much difference in terms of learners' performance between the old and new curriculum. Conversely, they expect learners' performance to improve in the new curriculum. Teacher A mentioned that,

> "*the new curriculum improved learners' ability to perform better"*. HoD B indicated that *"…to me…the new curriculum is straightforward…I expect learners to perform better as the competencies are clearly stipulated"*. Similarly, to that HoD A elaborated that *"When there are changes and they are implemented…one expects improvement*".

On contrary, HoD C and Teacher B explained that the learner's performance went down reason being that learners are promoted from Grade 7 with six subjects to Grade 8 with nine subjects this is a bit challenging, difficult and the passing requirement which was changed to 40% and from F to G could also be a problem discouraging them in the process.

On the issue regarding practical activities, it was found that the old curriculum suggested practical activities only for assessment purposes and are listed below the corresponding topic. Whilst the new curriculum suggested practical for teaching and assessment purposes and they are listed at the end of each topic in a separate box. This was confirmed by the participants, who narrated that the new curriculum required them to conduct more practical activities unlike the old curriculum. The

participants complained that they struggled with assessing learners and also had difficulties in conducting experiments because they lack the know-how. Teacher B, Teacher C and HoD C indicated that teachers are struggling to assess and conduct practical activities. Specifically, Teacher B said;

> *"umh...we don't know how to assess and conduct practical activities on some of the topics…but the required practicals are too much". HoD C stated that "…teachers simply assess for the sake of assessing…but they don't really have ideas of what to do and how to do it".*

It is revealed that the participants had different views regard the learner's performance in the new curriculum for Life Science Grade 8. The study findings indicated that some participants felt that the new curriculum improves the performance of learners and their competencies developed. Some of the participants felt that the performance of learners in the new curriculum dropped because of factors such as changes in the promotion requirements, teacher's inability to conduct practical activities and the lack of knowledge on how to conduct assessments.

4.5 Teachers' preparations on the implementation the new curriculum

Through the analysis of the data factors that had contributed to the unpreparedness of teachers to implement the new curriculum were identified: namely: a) insufficient in-service training; b) inadequate professional support from the school and regional office. They are presented below.

4.5.1 Insufficient in-service training

Teachers who participated in this study narrated that they received a training workshop at regional, circuit and school levels. Participants further explained that the training was on how to interpret the

syllabus and partially on how to assess the learners for the new curriculum, but not on how to implement the new curriculum. For example, HoD A said;

> *"Ou Yes…the fact is…these teachers were well prepared through a single workshop…mmhh…firstly two teachers per circuit were selected, and trained at NIED…secondly, these teachers together with the advisory teacher trained other teachers from various schools within the circuit and thirdly…the training workshop was on how to go about the new curriculum, to assess learners and how to conduct experiment".*

Consequently, Teacher A added that;

> *"Aaam…the reality is that…the teachers received training through workshop mode on how to implement their syllabus".* In addition, HoD B also indicated that *"teachers were invited for a workshop and given the syllabus and three textbooks with different titles, so generally teachers are well prepared".* On a different note, Teacher C explained that, *"Yes, the training was conducted…however it was insufficient…firstly some teachers were selected per circuit and were then trained at NIED…mmh…these teachers were called trainers of trainees and I was part of them. Right…when we came back to train our colleagues at circuit level, it did not materialise because there was no money…so some colleagues were not trained at all".*

In agreement, Teacher B described:

> "*Yes, the training was insufficient… it ran for a short lived and rushed time…not everything was explained…mmhh and after all…not all teachers got a chance to attend the workshop. The fact is…lack of funds also contributed to poor training".* He suggested that, "*at least people from the regional office should train all the Life Science teachers on how to teach new topics of the new curriculum and conducting experiments.*

HoD B *explained that: "Not all Life Science teachers at my school got a chance to attend the workshop…I wonder if all other circuits were invited to the workshop".* Further, HoD C stipulated that, "*It is a pity…teachers who did not get a chance to attend the training workshop struggled with implementing the new curriculum…hence, they do not have the knowledge on how to teach some of the topics and do the experiments".*

The results from the above response indicated that participants had different views about proper preparation in the implementation of the new curriculum for Life Science for Grade 8. Some participants felt that they were well prepared to work at the national, regional, circuit and school levels. However, some teachers felt that even though they had received some training, the skills were short lived, insufficient and was only offered to selected groups of teachers. This means that the teachers were insufficiently prepared to implement the new curriculum for life Science Grade 8.

4.5.2 Inadequate professional support from the school and regional office

All six (6) participants pointed out that they received support from the regional office through advisory teachers (educational offices), colleagues in the circuit and colleagues from other circuits. Participants further explained that a local institution called Rossing Foundation assisted in implementing the new curriculum, yet it was unsatisfactory. For the personal growth, Teacher B explained how she got supported by the advisory teacher.

"*I always call the advisory teacher (education officer) for guidance and she always advised me to use different visual aids such as posters and videos and that would help to explain well to the learners…that way, I made them understand".* HoD C felt that, *"Teachers need to work closely with advisory teachers (education officer) …they are very helpful and they render their services when they are asked to and when they are available".* However, Teacher A outlined that *"Yes, we received the assistance from our colleagues within and outside the*

school as well as from advisory teachers…however, this support is not enough…reason being that both teachers and advisory teachers do not have knowledge of how to teach all the topics…do not have sufficient information on the new curriculum". In addition, HoD B has this to say "*I know, we have advisory teachers (education officers) who are very supportive…but we should also understand that…the assistance we get from advisory teachers (education officer) and Rossing Foundation is insufficient due to the timeframe…therefore, assistance is needed".*

The study findings in the response above shows that the Life Science teachers received support from advisory teachers (educational offices), colleagues in the circuit and colleagues from other circuits, to implement the new curriculum for Life Science Grade 8. This means that even though they received this support, it was not sufficient as sometimes the colleagues and advisory teachers did not have sufficient knowledge about some of the themes and topics of the new curriculum. The findings further suggest that teachers needed to work together with advisory teachers and other stakeholders for effective implementation of the new curriculum for Grade Life Science.

4.6 Conclusion

In this chapter the findings from one-on-one semi- interview, observation and document analysis were presented in alignment with the research questions. The findings presented are based on the data gathered from teachers regarding their preparedness on the implementation of the new Grade 8 Life Science curriculum. The study was conducted at a rural school, in the Oshikoto region. From the teachers' responses and observation, it was found that teachers were unprepared to implement the new curriculum for Life Science. The lack of training and insufficient professional support contributed to the poor implementation of the new curriculum. It was also found that teachers have positive perceptions towards the new curriculum for Life Science Grade 8, however challenges such

as inadequate content knowledge, lack of teaching resources, and lack of infrastructure and chemicals were major factors impeding the successful implementation of the new curriculum. The next chapter discusses the research findings.

CHAPTER 5

DISCUSSIONS OF FINDINGS

5.1 Introduction

The previous chapter presented the findings of the study. This chapter discusses the main findings of the study that explored the teacher's preparedness on the implementation of the new Grade 8 Life Science curriculum. The findings are discussed according to the four themes and subthemes, namely: (a) teachers' perceptions on curriculum change and implementation; (b) teacher's perceptions on the challenges of the new curriculum (c) the fundamental difference between the new and old curriculum (d) the preparations of teachers in implementing the new curriculum. The study will further, where necessary, relate the findings to Taba's model that have informed the study.

5.2 Teachers' perceptions on curriculum change and implementation

Involving teachers during the design and development of the curriculum was found to have a positive impact on the implementation of the new curriculum. This sentiment agrees with Taba's grassroot approach which describes the teachers as people who are mandated to implement the curriculum in the classroom, hence, their voice matters in the process of curriculum development. However, Huizinga et al. (2014) argued that even though teachers' involvement in curriculum design fosters implementation, teachers lack knowledge and skills to design the curriculum. In fact, when the teachers are not properly involved at the early stage of designing the curriculum, they struggle with delivering. This finding concurs with Alshammari (2013) who made references that Life Science teachers would not feel comfortable in their daily teaching when they are not involved in the design. Hulme et al. (2010) stressed that involving teachers and other stakeholders in all stages of drafting and piloting the curriculum materials made them strong and committed towards the implementation

of new curriculum and its pedagogy than those who were only consulted. That means teachers are effective when they are well supported from the onset so that they grow professionally whereby they acquire skills and knowledge (Huizinga et al., 2014).

Participation of teachers and management as the users of the curriculum need to be strengthened from the onset, because it contributes significantly to the implementation of the new curriculum for Life Science Grade 8. Bondi (2011) argued that teachers could not find personal satisfaction in the classroom if they are not involved in the creation of the curriculum where they are also not given a chance to make learning enjoyable to their learners. However, it could have led to a more effective and efficient delivery if the teachers who teach that specific subject are consulted since they are the beneficiaries and users of the curriculum. On the other hand, Nghihalwa (2018) explained that involving or not involving teachers during curriculum design does not really matter because people who formulate curriculum have the knowledge and see no need to involve teachers from school. Kelly (2010) warns the planners that imposing curriculum changes on the teachers might promote opposition and hostility instead of supporting.

Relating this specific finding to the conceptual framework which informed the study, Taba (1962) stated that teachers would understand the curriculum better and be more prepared to transmit essential knowledge to the learners. The findings support the views of this particular model because it also stresses that teachers should be involved in the development of the curriculum material, because they possess valuable experience from the classroom that is needed to implement it successfully. Handler (2010) alluded that professional development of teachers is an important factor that contributes to the success of curriculum development and implementation. It is vital for the teachers to possess sufficient subject content knowledge. The model, however, failed to stipulate the need for teacher's professional development before participating in curriculum development. Teachers are the

custodians of the curriculum, hence the need for them to be equipped with valuable skills to understand it efficiently in their classrooms.

Some Life Science teachers were not happy with the way the implementation was introduced, citing that it was rushed. This had affected the implementation of new curriculum, as teachers were stressed most of the time. Similarly, Ramparsad (2001) found out that teachers especially for Grade 1 were not happy during the implementation of the curriculum for 2005 in South Africa, as the implementation phase was rushed as the facilitators had inadequate time to train teachers adequately to meet the given national deadline.

5.3 Teacher's perceptions on the challenges of new curriculum

The teachers' perceptions on the challenges of the new curriculum will be discussed under the following subthemes; inadequate content knowledge, the lack of teaching resources and the lack of laboratory equipment and chemicals.

5.3.1 Inadequate content knowledge

Although the records showed that all teachers who participated in this study have teaching qualifications, the study revealed that the teachers had little knowledge on some of the themes and topics included in Life Science curriculum especially the scientific processes. In the same vain, Yunhuo and Zhu (2014) deliberates that teachers especially those from small towns and rural areas in China experienced difficulties when implementing curriculum which was reformed in 1999 due to insufficient content knowledge. In the same vein, teachers in South Africa expressed uncertainty on their pedagogical knowledge of the new topic which was introduced in the revised curriculum for Physical Science at Secondary School level (Ramnarain and Fortus, 2013). It is worth noting that it

is a challenge when preparing a lesson from the topic that you are not acquainted with. Therefore, presenting topics about the scientific process confuse many teachers. The results of this study are in line with Adu and Ngibe (2014) who argued that South African teachers were hesitant to see changes come as many lacked skills and knowledge to carry out the innovation. This uncertainty contributed to confusion during the implementation of the new Grade 8 Life Science curriculum. Such uncertainty could also contribute to negative perceptions of the curriculum reforms, which could lead to ineffective implementation of the new Life Science Grade 8 curriculum. Cheung (2012) stipulated that learning diversity in class and teacher's inadequate understanding of the reform affected the implementation of curriculum reforms in Hong Kong. In the same line Taba's model stipulated that teachers are the best implementers of curriculum reforms, hence they should be provided with adequate skills and knowledge for the effective implementation of curricula.

5.3.2 The lack of teaching resources

Laurman (2017) strengthen that the teachers' knowledge about the new curriculum and ability to implement instructional practice are necessary ingredients of teachers' professionalism. It emerged from the present study that the curriculum was put into practice but supporting teaching materials were insufficient specifically for Life Science. The ministry provided the schools with resources such as syllabi, schemes of work, year plans, assessment plans and a few textbooks with different titles to support the implementation of the new curriculum. This result is in agreement with Schleicher (2018) who claim that inadequate capacity, resources, and financial resources is an obstacle on the implementation of the new curriculum. Suyanto (2017) concurred with Schleicher (2018) who found out that schools in Indonesia were not ready to implement the new curriculum due to minimum availability of textbooks for both teachers and learners. As a result, this affected the teachers and learners negatively by delaying the teaching and learning process. This was also confirmed by other

scholars like Alshammari (2013) who pointed out that teachers were stressed and frustrated during the implementation of the new curriculum due to the lack of resources and support.

5.3.3 The lack of laboratory and chemicals,

It is evident that the Life Science teachers were supportive of the reformed curriculum for Life Science Grade 8 and excited when the new curriculum was introduced, but due to lack of resources they were stressed and confused during the implementation of the Life Science curriculum. The study findings revealed that the lack of laboratories, equipment, chemicals, models and visuals aids made it difficult for the teachers to implement the new curriculum for Life Science Grade 8. Nyanda (2011) also share a similar sentiment that Indonesian teachers encountered difficulties in the teaching of Science in the absences of well-equipped laboratories. The present study found out that the limited chemicals that were available were expired and it was difficult to conduct practical experiments. Participants further felt that the government was supposed to ensure that the resources were made available before they introduced the new curriculum. Aloovi (2016) postulated that the implementation of NSSC Biology in Namibia was hindered by the lack of textbooks and laboratory equipment. Such challenges could put pressure on the teachers and frustrate them, leading to negative perceptions of the new curriculum, which could further hinder the implementation of the new Life Science curriculum for Grade 8.

5.4 The fundamental difference between the old and new curriculum

The current study established that there is a significant difference between the old and the new curriculum for Life Science in terms of **content, learning outcomes, assessment criteria and in learners' performance**. These will be discussed under the same sub-headings.

5.4.1 Content of the new curriculum

Teachers and other stakeholders are in favour of the new curriculum with the reason that it is clear and helps them to understand Life Science better. Bantwini (2010) revealed that teachers who taught Biology, Life Science and Environmental Science in South Africa supported the reform as it helped them to understand Science better. The present study findings further indicated that the content of the new curriculum is well organised, and the layout is well arranged in terms of knowledge transition from lower to upper grades. Even though the new curriculum provided a clear link from lower to upper grades, Grades 7 to 8 learners are still struggling, since there was no link in terms of content transition.

It was determined that the content of the new curriculum for Life Science contain a lot of information that is more practical, and more complex compared to the content of the old curriculum, as shown in Table 8. For effective implementation and delivery of Life Science it requires competent and well-trained teachers with adequate provision of resources. The new curriculum also requires a strong involvement of both teachers and learners. This finding is supported by Bediako (2019) who described the teacher and learner as an important tools in the process of curriculum implementation. Bediako (2019) further stipulated that the teacher has to make efforts to know and understand the content of the new curriculum and align it with their learners' needs in the classroom. Learners on the other hand influence teachers in their selection of the learning content. It was evident that the majority of teachers understand the new revised curriculum positively in a way that it connects Life Science to Biology and serves as a valuable foundation to Biology at Grade 10. For effective teaching, teachers need in-service training, through workshops and seminars for them to acquire sufficient knowledge and skills to be able to teach effectively.

The current study discovered that the time frame given to cover the content of the subject appears not to be enough, therefore participants call for some content to be shifted to Grade 9 for a better implementation. An example is that of the topic 'Kingdom' was not part of the old curriculum, but introduced in the new curriculum, this serves as a good platform for learners as it creates a good understanding for Science. As far as the issue of additional topics is concerned, Arikan (2017) is in agreement with the study findings by confirming that teachers in Turkey perceived the content of the new curriculum positively citing that it is applicable to the needs of their learners and it supported their learners' age group. This sentiment is similar to Taba's view that specified that the teacher has to ensure that they understood the content of the new curriculum and ensure that it is organised in a meaningful sequence, to meet both maturity of the learners' academic achievements and their interests. Contrary to that, Alshammari (2013) indicated that teachers in Kuwait had trouble with the content of the new curriculum because it was difficult for their learners' age group since some lessons had been taught in upper grades and were shifted to lower grades. It appears that the teachers had positive perceptions towards the content of new curriculum. Such perceptions could contribute to the successful implementation of the new curriculum for Life Science for Grade 8. In line with that, Vanderlinde and Van Brack (2011) are of the view that teachers' perceptions and beliefs play a pivotal role in the implementation of curriculum reforms.

5.4.2 Learning outcomes

The conceptual framework that framed the present study advocate for teachers to know and understand the learning outcome of the new curriculum, as it provides a clear guideline in the implementation of the curriculum**.** With regard to the learning outcomes of the two curricula for Life Science, the study findings revealed that in the old curriculum, the learning outcomes are expected to be acquired in Grade 10 whilst that of the new curriculum are expected to be acquired at the end of

Junior Secondary Phase, which ends in Grade 9. This was also confirmed by Iipinge and Hako (2017) that the Junior Secondary Certificate was moved from being attained after completing Grade 10 and shifted to Grade 11. It is evident that in the revised curriculum the subject of Life Science is only taught from grades 8 to 9. With reference to Table 5, which presents the differences between the two curricula for Life Science Grade 8, under the new curriculum, the learners are expected to complete the new curriculum within two years. According to Ornstein and Hunkins' (2018) massive changes in the way teachers and learners interacted in the classroom in the past need to change for effective implementation.

5.4.3 Assessment criteria

Regarding the assessment criteria, the study revealed that the old curriculum assessed learners on how they mastered the basic competencies and later indicates how they have mastered the specific objectives. Hence, Josue (2015) and Moen, (2017) stressed that the assessment of learners is important in the process of curriculum reform and for teachers to be able to conduct assessment, they require knowledge and skill. Further, the MoE (2017) explains that the criterion- referenced grades, both curricula have the same aim, that is, awarding continuous assessment, but the new curriculum provided clear guidelines on how teachers should conduct the assessments. The findings of the current study indicated that teachers have experienced difficulty when assessing learners in certain topics and practical activities. Even though the new curriculum provided clear guidance on how to assess learners, the Life Science teachers struggled with conducting formative and practical assessments. Suyanda, (2017) shared similar views that teachers in Indonesia lacked competence in implementing scientific approach and conducting assessments. Contrary to that Veloo et al., (2015) showed that the Malaysian teachers were knowledgeable in conducting School- Based Assessment for their Secondary School learners in 2012. This shows that teachers are willing to implement the new

curriculum for Life Science but need time and training on how to conduct formative and practical assessments. On curriculum and learner performance, some participants outlined that learners performed better in the old curriculum, whereas some obtained better grades in the new curriculum simply because competences are well formulated, and learner's performance is improved.

5.4.4 Learners' performance

The findings of the present study reported the lack of resources and laboratory and this is failing learners and discouraging them in the process. Similarly, Tshiredo (2013) reported that the learner's performance in Mathematics and Science declined during the implementation of the Curriculum Assessment Policy Statement (CAPS) in 2005 in South Africa, which was attributed to factors such as inadequate teaching and learning resources, laboratory, workload and time. Further, all the participants of this study, indicated that the poor performance could be attributed to the following: a) insufficient training to implement the new curriculum; b) lack of knowledge and skills towards the content of new curriculum; c) lack of information on the passing requirements, since symbol G and F were removed. d) Lack of laboratories and equipment to carry out practicals.

5. 5 The preparations of teachers to implement the new curriculum

The Government should make sure that teachers are well prepared for implementing the new curriculum through training and meetings and to accept the unforeseen changes. However, the present study indicated that the Life Science teachers were insufficiently prepared to implement the new curriculum. Carl (2017) and Sengai and Mokhele (2020) shared a similar incident that some Zimbabwean teachers were frustrated during the implementation of the new syllabus which is called the 2166 syllabus, as they were not prepared to meet the implementation challenges associated with

new syllabus. Bounders (2016) advocate for teachers to be adequately prepared for reform by providing them with adequate educational and professional workshops and in-service training to increase their knowledge for the implementation of the new curriculum. This sentiment is in support of the Taba's model which stipulates that it will be a waste of resources to develop curriculum material if teachers are not adequately trained to implement new curriculum. Omar (2020) maintained that in-service training is crucial for teachers to acquire knowledge in order for them to face new challenges and changes in education world.

On a different note, the findings indicates that, some teachers received training, but the in-service training received was short-lived and rushed, which made it possible for them to complete the whole training session. The study further revealed that the training that was received focused only on how to interpret the syllabus and a bit on how to assess the learners. Consequently, Hoadley and Jansen (2009) stated that the training that the South African teachers received was given in a short period of time and the focus was more on the policy document, instead of curriculum implementation. Contrary to that, the Serbian authority had offered a massive training and support programme for its primary school gymnasiums and secondary vocational teachers to implement new curriculum, which was implemented by 2019, (United Nations Children's Fund, 2019). On the other hand, Kelly (2010) calls for teachers to be trained through continuous in-service training for them to acquire adequate skills and knowledge. It appears that the Life Science teachers were insufficiently prepared for the implementation of the new curriculum for Life Science and hence, they lack skills, knowledge and competencies of the new curriculum. This could attribute to negative perceptions among teachers on the revised curriculum which could influence the way they implement it.

The study findings revealed that the Life Science teachers received professional support from their colleagues at school, circuit, advisory teachers (education officers) and from the local institutions like Rossing Foundation. It emerged that the support that teachers have received was not sufficient as

most of the time, the education officers are not available and lack knowledge on the subject. Aloovi (2016) shared a similar sentiment that Namibian teachers lacked support from the advisory teachers (education officers) and heads of department to implement the NSSC Biology curriculum, which was then IGSC curriculum. The Biology teachers further indicated that the only support they get is when they are provided with curriculum documents such as syllabi and scheme of work. However, a study done by Sengai and Mokhele (2020) pointed out that, History teachers had a very supportive History Education Officer (EO) who used to organise History seminars, subject panel meetings and clusters. In the same vein, Taba's model calls for teachers to be supported for effective implementation of curriculum reform. It transpired that the teachers needed more support to effectively implement the new Life Science Grade 8 curriculum. Meanwhile teachers in Kuwait, also indicated that they doubted their readiness to implement the new curriculum as they needed more support to implement the new curriculum (Nanayakkara et al., 2018). In line with that, Flores (2011) mentioned that teachers in Portugal were not supported to implement the new curriculum as a result they were stressed and frustrated. The study revealed that teachers lacked professional support, during the implementation of the new curriculum for Life Science. The study findings revealed that the Ministry of Education Arts and Culture and the teachers were not prepared for the implementation of new curriculum for Life Science because it seemed to have been rushed. The lack of preparation could contribute to the ineffective implementation of the new curriculum. Bantwini, (2010) warned that for teachers to understand the content of the new curriculum, they need an ongoing professional development programme.

5.6 Conclusion

This chapter discussed the main findings of the study by using the research questions and the model where the study was based on. The findings confirmed that it is important to include all the

stakeholders from the onset of the planning of the curriculum, as advocated by Taba's model that framed this study. For effective teaching and learning, teachers need to be trained in all aspects that are included in the implementation of the new curriculum, for the benefit of the whole nation. The facilities need to be available before the implementation of the curriculum. The next chapter summarises and concludes the study, then finally provides recommendations for further studies.

CHAPTER 6

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6. 1 Introduction

The previous chapter…This chapter presents a summary of the findings of the study and conclusion as well as the recommendations based on the findings of the study. The chapter further identifies possible areas for further research.

6. 2 Summary of the finding of the study

The purpose of this study was to investigate teachers' preparedness on the implementation of new Grade Life Science Grade 8 curriculum. The study employed a qualitative narrative approach, using a case study design. Purposive sampling was used to select three Junior Secondary Schools, three Life Science teachers as well as the three heads of departments for science in Oshigambo circuit, Oshikoto region. Six teachers participated in the main study and two participated in the pilot study. The teachers were selected on the basis that they taught Life Science for the past three years and they had implemented the new Life Science curriculum. The following instruments were used to collect data: one on one interview guide, semi-structured interview guide, document analysis guide and observation guide. Inductive approach was used to analyse the data.

It became evident that there was little or no involvement of teachers in the process of designing the Grade 8 Life Science Curriculum. It is vital to involve teachers in the process of designing the curriculum as advocated by Taba's model which framed this study. Some teachers had positive feelings about the introduction and implementation of the new curriculum. However, few teachers were uncertain and felt unprepared for the implementation of the new curriculum because they did not receive sufficient in-service training. In addition, Life Science teachers had little knowledge on

some themes and topics especially the scientific process. The results of the study also showed that the lack of teaching resources such as appropriate textbooks, models, visual aids and lack of laboratories and chemicals negatively affected the implementation of the new curriculum for Life Science Grade 8. The lack of resources made it difficult for teachers to implement the new curriculum. The expected learning outcomes of the old curriculum are expected to be acquired by the completion of Grade 10 whilst in the new curriculum, it is taught up to Grade 9 and replaced by Biology in Grade 10. It was found out that the grading system was changed in the new curriculum whereby a learner who scored lowest was graded with U-0-19% in old curriculum whilst in the new curriculum the grade changes to U-0-39%.

6. 3 Conclusion

It could be concluded that the teachers in the targeted region and circuit do not have negative perceptions of the new curriculum for Life Science Grade 8. They acknowledge it and see it as a tool for improving Namibia's education system. In acknowledging their role and contribution, the participants highlighted the challenges that act as impediments that result in negative perceptions. One of the challenges identified was the rolling out of the new curriculum before availing adequate resources like textbooks, science equipment and chemicals for practical experiments, constructing laboratories in all affected schools and the adequate training of teachers so that they are fully prepared. These inadequacies could be seen as possible factors that could lead to the fermentation of negative perceptions of the new curriculum. The study further concludes that the Life Science teachers were insufficiently prepared for the implementation of the new curriculum for Grade 8. Lack of support from colleagues, regional education officers and the community also acted as detrimental factors that contributed to the ineffective implementation of the new curriculum. The study findings also revealed that the length of the new curriculum, changes in the passing requirements, learners' background and

the inability of teachers to conduct practical experiments contributed to poor performance of the learners in the new curriculum.

6. 4 Recommendations

The recommendations from the present study are grouped into four categories: (a) for staff development programs, (b) for school and head of departments, (c) for the advisory teachers (education officers) through the Regional Office, Ministry of Education Arts and Culture and curriculum planners and (d) for further studies.

6. 5 Recommendations for staff development programs

The study recommends that teacher training programmes should be introduced especially for combined school teachers. Such training programmes should train teachers through workshops, meetings, group discussions and debates. The study further recommends that training should be conducted at school, circuit level, regional and across regions. The study also recommends for a one-week Science Indaba workshop in which emphasis are placed on a specific topic like Scientific process, assessment procedures and to conduct practical activities.

6. 6 Recommendations for school management and heads of departments

The study recommends for school management to avail appropriate textbooks for both teachers and learners and models, visuals and posters that support the implementations of the new curriculum. Schools should be furnished with working laboratories equipment, apparatus, and sufficient chemicals for teachers to conduct experiments as required by the new curriculum. The heads of department for Science should support, motivate and make sure that the Life Science teachers are provided with necessary teaching resources for effective implementation of the new Life Science Grade 8 curriculum.

6. 7 Recommendations for the advisory teachers (education officers)

The study recommends that the advisory teachers (education officers) must be exposed to more training on the new curriculum, so that they are able to provide the necessary assistance to the Life Science teachers. In addition, the study recommends that the advisory teachers (education officers) should support and visit schools occasionally to identify areas where teachers need assistance with the implementation of the new curriculum for Life Science Grade 8.

6. 8 Recommendations for Ministry of Education Arts and Culture and curriculum planners

The Ministry of Education Arts and Culture and curriculum planners must provide teaching and learning resources to all schools in the country before the curriculum is introduced. In addition, the study recommends that the ministry together with the curriculum planners at NIED need to make sure that teachers are consulted, involved in the creation of the new curricular material as advocated by the conceptual framework which frame this study. They should also make sure that teachers, learners and parents are informed about the changes and that they understand them to avoid the rejection of the new curriculum. The study further recommends for the Ministry of Education and curriculum planners introduce changes periodically.

6. 9 Recommendations for future research

This study applied the qualitative narrative approach and the results are from a relatively small sample of participants and cannot be generalised. Therefore, the study recommends for future studies to consider using mixed approach and get a general understanding from two angles that allows for generalisation of the findings. The study was done in one circuit with a few schools participating, therefore, future studies need to include many schools in order to compare the findings and establish an understanding of the development and implementation of the new curriculum for the Life Science

Grade 8 and the need to involve the teachers for successful implementation of reform. Further, it is recommended that similar studies can be conducted to evaluate how the education officers are supporting the Life Science teachers on the implementation of the new curriculum Life Science Grade 8.

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APPENDICES

APPENDIX A: Ethical Clearance Certificate

UNAM
UNIVERSITY OF NAMIBIA

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: FOE /550/2019 **Date: 25 November, 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: Teachers' Preparedness On The Implementation Of The New Grade 8 Life Science Curriculum In Oshigambo Circuit In Oshikoto Region

Researcher: RAHAB NDEMUPA OMBILI NAMOLO

Student Number: 200324071

Supervisor(s) *Dr S.M.Iipinge (Main) Dr M.N.Mushaandja-Mufeti (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
pp D. Verbeeck

Ms. P. Claassen: HREC Secretary
Paula Claassen

APPENDIX B: Student's Permission from The University of Namibia To Conduct Research

CENTRE FOR POSTGRADUATE STUDIES

University of Namibia, Private Bag 13301, Windhoek, Namibia
340 Mandume Ndemufayo Avenue, Pioneers Park
☎ +264 61 206 3275/4662; Fax +264 61 206 3290; URL: http//www.unam.edu.na

UNAM
UNIVERSITY OF NAMIBIA

RESEARCH PERMISSION LETTER

Student Name: Ms. Rahab N.O. Namolo

Student number: 200324071

Programme: MASTER OF EDUCATION (CURRICULUM STUDIES &ASSESMENT)

Approved research title: TEACHERS' PREPAREDNESS ON THE IMPLEMENTATION OF THE NEW GRADE 8 LIFE SCIENCE CURRICULUM IN OSHIGAMBO CIRCUIT IN OSHIKOTO REGION

TO WHOM IT MAY CONCERN

I hereby confirm that the above mentioned student is registered at the University of Namibia for the programme indicated. The proposed study met all the requirements as stipulated in the University guidelines and has been approved by the relevant committees.

The proposal adheres to ethical principles as per attached Ethical Clearance Certificate. Permission is hereby granted to carry out the research as described in the approved proposal.

Best Regards

21 January 2019

Prof. Marius Hedimbi

Director: Centre for Postgraduate Studies

Tel: +264 61 2063275

E-mail: directorpgs@unam.na

Centre for Postgraduate Studies
Office of the Director
2019 -01- 21
University of Namibia
UNAM

APPENDIX C: Interview Guide for Teachers

Teachers' interview questions

My name is Rahab N O Namolo, student No 20034071 and a master's student at the University of Namibia. I am conducting my research on the teacher's preparedness on the implementation of the new Grade 8 Life Science curriculum. I am going to collect data through the interview as well as observation. Therefore, I am requesting you to feel free when answering the interview questions. This research is for academic purpose and all the information that will be revealed here will be treated confidential.

Thank you for your participation

Interview questions for teachers

1. (i) How did you perceive the introduction of the new Curriculum for Life Science Grade 8?

   (ii) Can you please give a brief explanation on how you as a Life Science teacher for Grade 8 were prepared for the new curriculum?

   (iii) You have mentioned that the training was done for week, where was the training held?

   (iv) What kind of teaching materials were given for the introduction and implementation of the new curriculum for Life Science Grade 8?

2. (i) Please share your experience when you first implemented the new Curriculum for Life Science Grade 8. How did you go about it?

(ii) What did you do in situation where you do not understand these topics?

3. (i) What challenges have you experienced in implementing the new Curriculum for Life Science Grade 8?

   (ii) What type of support did you receive from your colleague inside the school or from outside?

4. (i) What are the fundamental differences between the new and old curriculum for Grade 8 Life Science?

   (ii) In comparison, which of the two curricula improved learners' ability to perform better in exam?

   (iii) How does this issue of having a majority of average learners affect the learner's performance on the new curriculum for Life Science Grade 8?

5. (i) How can the implementation of the new Life Science Curriculum be improved?

   (ii) What is your view on teachers being consulted on curriculum change?

APPENDIX D: Interview Guide for Heads of Department

Interview questions for Heads of Department

My name is Rahab N O Namolo, student No 200324071 and a master's student at the University of Namibia. I am conducting my research on the teacher's preparedness on the implementation of the new Grade 8 Life Science curriculum. I am going to collect data through the interview as well as observation. Therefore, I am requesting you to feel free when answering the interview questions. This research is for academic purpose and all the information that will be revealed here will be treated confidential.

Thank you for your participation

1. (i) How did you perceive the introduction of the new Curriculum for Life Science Grade 8?

(ii) Can you please give a brief explanation on how the Life Science teachers for Grade 8 were prepared to implement the new Curriculum?

(iii) Can you remember the length of the workshop give for the Life Science teachers for Grade 8?

(iv) Did all the Life Science teachers in the circuit attend this workshop?

2. Please share your experiences on the introduction of the new curriculum for Life Science Grade 8, how did teachers in your department handled it?

3. What challenges have the Life Science teachers for Grade 8 experienced in the implementation the new Curriculum for Life Science Grade 8 that they have reported to your office?

4. In comparison, which of the two curricula improved learners' ability to perform better in exam?

5. (i) How can the implementation of the new Life Science Curriculum be improved?

   (ii) What is your view on teachers being consulted on curriculum change?

APPENDIX E: Observation Schedule Guide adapted from Machina, 2012

1. <u>Theme and Topic</u> (a) Topic/ theme presented in syllabus	**Scientific process**
2. <u>Lesson Objectives</u> (b) Lesson objectives clearly stated as stipulated by the syllabus	Understand the importance of recording and communicating results from experimental investigations (the use of ICT can be incorporated in this objective)
3. <u>Basic competence</u> (c) Basic competence clearly stated as per requirements of the syllabus	Draw up/tabulate results of an investigation in tables, heading each column of the table with the name of the physical quantity and the appropriate unit (e.g. time/s)
4. <u>Presentation of Lesson</u> **4.1 Monitoring of homework done** **(d)** Teacher gave homework based on the previous lesson	Teacher gave homework, it was clearly marked with praising remarks but the questions where not clear.
4.2 Appropriate short introduction based on the prescribed requirement (e) Teacher gave a short, simple and brief introduction based on syllabus requirement	• Teacher gave brief introduction of the lesson, and made the lesson interesting • Teachers tried to present the topic in order, but one can see that he was struggling especially on choosing the dependent and independent variable, he

(f) Lesson presented incorporated learners' interest (g) Teacher presented lesson using real or local example (h) Teachers lesson included all learners with different need (i) Lesson presented in order from simple to complex	resorted to reading straight from the book. • Teacher applied to have insufficient content knowledge on the topic.
5. <u>Assessment/ Homework/ Task/ Exercise</u> (l) Teacher assessed learners based on the syllabus requirements (m) question asked accommodated all learners with different abilities Teachers assess the learners based on the lesson objectives	• The assessment given was based on syllabus requirement and based on the lesson objectives, but still the question where not clear as teacher struggled with formulating the question.
6. <u>English Across the curriculum</u> (n) Teacher gave a reading in the lesson (o) Teacher gave a written activity in the lesson, at least one learner to write a	• Teacher ask one learner to read out loud and one to write a term on the chalkboard. • Language barrier was observed among the learners.

word/ term on the chalkboard based on the lesson presented	
7. <u>Reflection and compensatory</u> (p) teacher reflected the lesson presented **<u>7.1 Compensatory</u>**	Teacher summarized and concluded his lesson
(q) teacher made attempt to compensate for the slow learners	Learners who were struggling with drawing the table were asked to remain the classroom, and teachers tried to assist them

APPENDIX F: Document Analysis Guide

Differences	Old Curriculum	New Curriculum
Content	• Simple and containing basic content of Life Science and Agriculture	• More Life Science
Grade Descriptor	A-F	A-E
Similarities	• Have seven topics • Topics; Living organism and Ecosystem existed	• Have seven topics • Topic Living organism and Ecosystem is not changed

APPENDIX G: Consent form for Life Science Teachers

Rahab N O Namolo
P/ Bag 3738
Ondangwa
20 May 2019

Dr S. M. Iipinge
University of Namibia
Hifikepunye Pohamba Campus
Private Bag 5507
Ongwediva
Namibia
+264 (65) 2323000

INFROMED CONSENT

Dear Respondent

I would like to invite you to participate in my research project

The topic of the study is about **TEACHER'S PREPAREDNESS ON THE IMPLEMENTATION OF THE NEW GRADE 8 LIFE SCIENCE CURRICULUM IN OSHIGAMBO CIRCUIT IN OSHIKOTO REGION.** The study will collect data on the teachers' preparedness to implement to new Grade 8 Life Science curriculum.

I would like you to participate in this study, because you are a senior teacher for Life Science Grade 8, you have been teaching Life Science Grade 8 for the past five years and you are currently implementing the new Grade 8 Life Science curriculum. The reason why I'm conducting this study

is because, I would like to find out if the teachers are prepared to implement the new Grade 8 Life Science curriculum.

I'm sure you will benefit from this study, because the study will expose your view, with regard to whether you prepared or not prepared to implement the new Grade 8 Life Science, moreover your suggestion will help in better implementations on the new curriculum. By participating in this study, you are faced with possible risks one of it might be missing some of the lessons, but I have asked permission from your principle.

However, I would like to inform you, that your time to participation in this study is valued and very important, you should also know that your participation is entirely voluntary, If you choose to participate in this study, and an issue arises you have a right to withdraw any time or if you free not comfortable.

If you have experienced any problem or issues or not happy with the way the study is conducted, you are free to contact me or my supervisor (above).

Thank you

……

……

APPENDIX H: Consent form for Heads of Department for Science

Rahab N O Namolo
P/ Bag 3738
Olunkono
Ondangwa
20 May 2019

Dr S. M. Iipinge
University of Namibia
Hifikepunye Pohamba Campus
Private Bag 5507
Ongwediva
Namibia
+264 (65) 2323000

INFROMED CONSENT

Dear Respondent

I would like to invite you to participate in my research project

The topic of the study is about **TEACHER'S PREPAREDNESS ON THE IMPLEMENTATION OF THE NEW GRADE 8 LIFE SCIENCE CURRICULUM IN OSHIGAMBO CIRCUIT IN OSHIKOTO REGION.** The study will collect data on the teachers' preparedness to implement to new Grade 8 Life Science curriculum.

I would like you to participate in this study, because you are a head of department for since, you have been heading the science department for the past five years and the Life Science teachers for grade 8

are under your department. The reason why I'm conducting this study is because, I would like to find out if the teachers are prepared to implement the new Grade 8 Life Science curriculum.

I'm sure you will benefit from this study, because the study will expose your view, with regard to whether you prepared or not prepared to implement the new Grade 8 Life Science, moreover your suggestion will help in better implementations on the new curriculum. By participating in this study, you are faced with possible risks one of it might be missing some of the lessons, but I have asked permission from your principle.

However, I would like to inform you, that your time to participation in this study is valued and very important, you should also know that your participation is entirely voluntary, If you choose to participate in this study, and an issue arises you have a right to withdraw any time or if you free not comfortable.

If you have experienced any problem or issues or not happy with the way the study is conducted, you are free to contact me or my supervisor (above).

Thank you

…….

…….

APPENDIX I: Letter to Permanent Secretary of Education requesting permission to conduct research at public schools in Oshigambo Circuit

Rahab N. O. Namolo
P/ Bag 3738
Ondangwa
20 May 2019

The Permanent Secretary
Ministry of Education
Private Bag 43186
Windhoek

Dear Madam

RE: Request for permission conduct educational Research in the Oshikoto Region on the **topic 'THE TEACHERS' PREPAREDNESS ON THE IMPLEMENTATION OF THE NEW GRADE 8 LIFE SCIENCE CURRICULUM IN OSHIGAMBO CIRCUIT, IN OSHIKOTO REGION'**

I am final year master's student at the University of Namibia, under the department of Curriculum Instruction and Assessment studies. In a partial fulfilment of the requirement of the completion of this degree, I am required to conduct a research project on the topic stated above in May 2019.

In 2014 the 3th Cabinet approved the curriculum reforms for Basic Education and the implementation of the new curriculum as from 2015 (MoE, 2014). The reforms were announced through Cabinet directives on the outcomes of the 2011 National Education Conference and the Fourth National Development (NIED, 2014). Reforms were found to be necessary for countries like Namibia, to meet the changing demands of the global economy. The Life Science curriculum for Grade 8 was implemented in 2017 and teachers appeared to be insufficiently prepared to its implementation. Following this background, the researcher wishes to investigate on the teacher's preparedness on the implementation of new curriculum for Life Science Grade 8 and one of

the objectives is to establish the teacher's perceptions on the implementation of the new curriculum for Life Science Grade 8.

I am kindly requesting your good office to grant me permission to conduct research in the three schools in Oshikoto region in Oshigambo circuit, at the Junior Secondary Phase. The study will be conduct as follow; (a) classroom observation, in which one lesson for Life Science will be observed per school will be conducted (b) semi structured interview with one head of department for Science per school (c) focus group discussion for Life Science teachers, from the three selected school, which will be carried out at the circuit.

The participants will be informed about the purpose and objectives of the study and how will they benefit from it. They will also be informed about their right to participate and that they have right to withdraw from the study should they feel so.

The study will inform the Ministry of Education and Curriculum Developers about the hardship the Life Science teachers are facing during the implementation of the new curriculum for Life Science Grade 8. Their recommendation and suggestion could also lead to the effective implementation of the new curriculum not only for Life Science Grade 8, but for other subjects as well.

Looking forward for your good response.

Yours sincerely

Rahab N. O. Namolo

Masters student

University of Namibia.

APPENDIX J: Approval Letter from Permanent Secretary to conduct research at the public schools in Oshigambo Circuit

REPUBLIC OF NAMIBIA

MINISTRY OF EDUCATION, ARTS AND CULTURE

Tel: +264 61 -2933202
Fax: +264 61- 2933922
Enquiries: G. Munene
Email: gm12munene@yahoo.co.uk
File no: 13/2/9/1

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

Ms Rahab N. O. Namolo
Private Bag 37386153
Ondangwa

Dear Ms Namolo,

SUBJECT: PERMISSION TO CONDUCT AN ACADEMIC RESEARCH IN OSHIKOTO REGION

The Ministry wishes to acknowledge receipt of your email seeking permission to conduct an academic research at schools for your Masters' study which is focussing on: *"The Teachers' Preparedness on the Implementation of the New Grade 8 Life Science Curriculum in Oshigambo Circuit, in Oshikoto Region, Namibia."*

Permission is hereby granted to you provided you seek for further clearance from the Regional Director of Education, Arts and Culture at the Oshikoto Region where you wish to conduct your research to ensure that:

- That permission is sought from the school principals and parents;
- Should not interrupt teaching and learning;
- That participation is voluntary.

Furthermore, you are kindly requested to share your research findings with the Ministry after completion of the research project. You may contact Mr G. Munene at the Directorate: Programmes and Quality Assurance (PQA) for submission of your research findings at the above indicated details.

We wish you the best in conducting your research and the Ministry looks forward to hearing from you upon completion of your study.

Yours Sincerely,

Sanet L. Steenkamp
EXECUTIVE DIRECTOR

Ministry of Education, Arts and Culture
Office of the Executive Director
16 OCT 2020
Tel: 061-2933523/4
Fax: 061-253371
Private Bag 13186, Windhoek, Namibia

16/10/2020.
Date

All official correspondences must be addressed to the Executive Director.

APPENDIX K: Letter to the Director of Oshikoto region requesting permission to conduct research at public schools in Oshigambo Circuit

Rahab N. O. Namolo
P. O. Bag 3738
Ondangwa
20 May 2019

The Director
Ministry of Education
P/Bag 2028
Ondangwa
+264 (65) 281900

Dear Madam

RE: Request for permission to conduct educational research in the Oshikoto region on the topic **'THE TEACHERS' PREPAREDNESS ON THE IMPLEMENTTION OF THE NEW GRADE 8 LIFE SCIENCE CURRICULUM IN OSHIGAMBO CIRCUIT, IN OSHIKOTO REGION'**

I am a final year master's student at University of Namibia, under the department of Curriculum Instruction Assessment studies. In a partial fulfilment of the requirement of the completion of this degree, I am required to conduct a research project on the topic stated above in May 2019.

In 2014 the 3rd Cabinet meeting approved the curriculum reforms for Basic Education and the implementation of new curriculum as from 2015 (MoE, 2014). The reforms were announced through Cabinet directives on the outcomes of the 2011 National Education Conference and the Fourth National Development (NIED, 2014). Reforms were found to necessary for countries like Namibia, to meet the changing demands of the global economy. The Life Science curriculum for Grade 8 was implemented in 2017 and teachers appeared to be insufficiently prepared for its implementation. Following this background, the researcher wishes to investigate on the teachers' preparedness on the implementation of new for Life Science curriculum for Grade 8 and one

of the objectives is to establish the teacher's perceptions on the implementation of the new for Life Science curriculum for Grade 8.

I am kindly requesting your good office to grant me permission to conduct research in the three schools in your region in Oshigambo circuit, at the Junior Secondary School phase. The study will be conducted as follow; (a) classroom observation, in which one lesson for Life Science will be conducted per school (b) semi structured interview with one the Head of Department for Science per school (c) focus group discussion for the Life Science teachers, from the three selected school. This focus group discussion which will be carried out at the circuit.

The participants will be informed about the purpose and objectives of the study and how will they benefit from it. They will also be informed about their right to participate and that they have a right to withdraw from the study should they feel so.

The study will inform the Ministry of education and the curriculum developers about the hardship the Life Science teachers are facing during the implementation of the new curriculum for Life Science. Their recommendations and suggestion could also lead to the effective implementation of the new curriculum not only for Life Science, but for other subjects as well.

Looking forward for good response

You sincerely

Rahab N. O. Namolo

Masters student

University of Namibia.

APPENDIX L: Approval letter from Director of Oshikoto region to conduct research at public schools in Oshigambo Circuit

REPUBLIC OF NAMIBIA

OSHIKOTO REGIONAL COUNCIL
DIRECTORATE OF EDUCATION, ARTS AND CULTURE

Tel (065) 281900
Fax (065) 240315
Enq: Ms H Tende

Private Bag 2028
ONDANGWA
29 April 2019

Ref: 12/3/10/1

Ms Rahab N. O. Namolo
PO Box 3738
Ondangwa
Cell: 0812900180

Dear Ms Namolo

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN OSHIKOTO EDUCATIONAL REGION SCHOOLS

The Office of the Director acknowledges receipt of your letter, seeking for permission to conduct a research study to investigate the teachers' preparedness on the implementation of the new grade 8 Life Science curriculum. Kindly be informed that permission has been granted to you to carry out the research in schools within the Oshigambo circuit.

It is very important that your research does not interfere with the normal teaching and learning process at school, any participation should be on a voluntary basis and the information to be gathered should be treated confidential and only for research purposes. Please consult the school principal well in advance to ensure a proper co-ordination of other school activities.

Thank you for showing interest to do the research in the Oshikoto Region. It is our sincere hope that the information you are going to get will be useful towards the completion of your qualification.

Yours faithfully

30/04/19

MS ALETTA A. EISES
DIRECTOR OF EDUCATION, ARTS AND CULTURE
OSHIKOTO REGION

OSHIKOTO REGIONAL COUNCIL
Director
30 APR 2019
PRIVATE BAG 2028
ONDANGWA
DIRECTORATE OF EDUCATION, ARTS AND CULTURE