

FACTORS AFFECTING GRADE 12 LEARNERS' ACADEMIC  
PERFORMANCE IN THE NAMIBIA SENIOR SECONDARY  
CERTIFICATE ORDINARY LEVEL BIOLOGY IN THE KHOMAS  
EDUCATIONAL REGION, NAMIBIA

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Nancy K. Muyoyeta

Student Number: 9996567

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Main Supervisor: Dr James Abah

Co-Supervisor: Mr Desalu Denuga

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## **Dedication**

The study is dedicated to my mother Anna T. Muyoyeta, and my children Abraham,  
Keamogetse and Floritha.

## **Declarations**

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## **Abstract**

The main purpose of this study was to investigate the factors that affect Grade 12 learners' academic performance in the Namibia Senior Secondary Certificate Ordinary (NSSCO) level Biology in the Khomas Educational Region, Namibia. The study addressed two research questions. Three categories of samples made up of 15 Science Heads of Departments (HODs), 15 Biology teachers and 450 Grade 12 NSSCO Biology learners respectively were selected using the simple random sampling technique. Furthermore, a sub-sample of 2 Biology teachers and 2 Science HODs who have taught NSSCO Biology for at least, three consecutive years and also completed the questionnaires were purposively selected to participate in the interview. Descriptive statistics (percentages) and content analysis were used to analyse the quantitative and qualitative data respectively. The study found that learner-based factors such as learners' indiscipline, lack of motivation; teacher-based factors such as: teachers' low expectations and motivation, teachers' workload, teachers' competency and teaching methods used; as well as school-based factors like: lack of teaching resources, overcrowded classrooms, large syllabus content for Biology, and lack of commitment from the school management affect Grade 12 learners' academic performance in NSSCO Biology in the study area. In dealing with the identified factors, the Biology teachers and science HODs indicated that they used the following strategies: giving motivational speeches to encourage the learners, involving parents to address the learners' shortcomings, improvising on available teaching materials, networking with other professional colleagues within the same school clusters and conducting after-school and holiday classes. Thus, the study recommended that the learners should be encouraged to participate actively in the after-school and holiday classes put in place to cover the large content of NSSCO Biology syllabus. In addition, the Biology teachers need to attend capacity building workshops to improve their skills on the topics that they could not teach competently. There is also need for provision of teaching and learning resources for the NSSCO Biology in the study area.

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## **Acronyms and Abbreviations**

CBT	-	Conditions-Based Theory
DNEA	-	Directorate of National Evaluation and Assessment
EMIS	-	Education Management Information System
HODs	-	Head of Departments
MEC	-	Ministry of Education and Culture
MoE	-	Ministry of Education
NSSCO-		Namibia Senior Secondary Certificate Ordinary level
UNICEF-		United Nations International Children's Emergency Fund

## **Chapter One**

### **Introduction**

#### **1.1 Orientation of the study**

The importance of education in general and science education in particular has become crucial as science and technology are now widely considered as the pillar of a country's development. Aikenhead (1996) noted that science education is imperative for useful living in any society and it is at the centre of producing resources necessary for socio-economic, scientific and technological development needed for advancement of any nation. Namibia is no exception to this, because in *Namibia's Vision 2030*, Namibia envisions a country that is advanced in science and technology. Nevertheless, much has been debated about secondary school learners' poor performance in science generally and Biology in particular. However, learners' performance in Grade 12 Namibia Senior Secondary Certificate Ordinary level Biology has been unsatisfactory over the years. Various researches have put forward explanations as to the causes of poor performances. Epri (2016) noted that when classrooms are overcrowded, teachers fail to support learners with special needs and there are shortages of teaching and learning resources as a result of overcrowded classroom. Overcrowded classrooms therefore affect the quality of teaching and learning. The negative attitudes of learners also affect their academic performances (Mukhwana, 2013). Learners will need to be motivated in order to succeed in their school work. Meanwhile, Jackson (2009) also concluded that lack of parental involvement, poor school management, and shortage of educational facilities and resources can cause poor academic performance.

The poor performance in science and Biology in particular in secondary schools require some interventions so as to improve performance. The senior secondary level

is the final phase for basic education in Namibia (Ministry of Education [MoE], 2010). This phase prepares learners for further education at tertiary institutions and employment (MoE, 2010). However, if learners are to advance to tertiary education, they have to perform well at secondary school level. In addition, those who wish to pursue careers in science need to perform well in science subjects such as Biology, Physical Science and also Mathematics. In order to cater for learners' needs, the Ministry of Education recommended the learner-centred teaching method in which learners are expected to be at the centre of the teaching-learning process (Ministry of Education and Culture [MEC], 1993). This approach is expected to significantly bring about improved learning outcomes. Further, the approach expects teachers to use hands-on and problem-solving activities in order to promote high thinking skills and accommodate different learners' needs in their teaching.

Despite this approach to teaching and learning, learners still continue to underperform in senior secondary certificate examinations. For example, the Namibia Senior Secondary Certificate Ordinary level (NSSCO) Biology has been one of the subjects where learners continue to perform poorly with less than 30% of learners graded in the priority symbols A<sup>+</sup> - D in the whole country (Education Management Information System [EMIS], 2012). A learner who scores more of the non-priority symbols (E-G) will most likely not meet the general degree admission criteria of 25 points in five subjects for admission to both the University of Namibia (University of Namibia, 2014) and the Polytechnic of Namibia now the Namibia University of Science and Technology (Polytechnic of Namibia, 2014).

In the Khomas Educational Region, there has been a decline in the percentage of learners who are graded in the priority symbols A<sup>+</sup> - D in NSSCO Biology: 30.58% in 2010, 29.75% in 2011, 25.46% in 2012 and 25.62% in 2013, 25.32 in 2014 and

27.98 in 2015 (Directorate of the National Examinations and Assessment [DNEA], 2015, 2014, 2013, 2012, 2011, 2010). This trend of performance leaves room for several questions regarding the factors affecting the desired learning outcome of Grade 12 learners in NSSCO Biology in the Khomas Educational Region where the capital city, Windhoek is located; and hence, the quality of teaching and learning is supposed to be among the best in the country.

Meanwhile, the United Nations International Children's Emergency Fund (UNICEF) (2000), in a discussion paper on defining quality in education noted that learners in secondary schools with effective school management, teachers with high knowledge in their subject areas, adequate learning facilities and relevant curriculum tend to perform well. Despite the Ministry of Education's statistics in 2012 which showed that the number of qualified teachers in Namibia's secondary schools is more than 92 percent in most regions (EMIS, 2012), learners' poor performances still persist. Therefore, the continued poor performance of Grade 12 learners in the NSSCO Biology examination in the Khomas Educational Region calls for relevant studies with a view to identify the factors militating against improved learning outcomes and recommending remediation strategies.

## **1.2 Statement of the problem**

The Natural Sciences are one of the main drivers of the transformation of society and the world (MoE, 2010) and hence, the need for improved learners' performance in the science subjects, such as Biology, Physical Science and Mathematics. However, NSSCO Biology is among the subjects that learners in the Khomas Educational Region, Namibia have been performing poorly in the priority symbols (A<sup>+</sup> - D) for the past years (EMIS, 2012). Between 2010-2015, the NSSCO Biology examination statistics for the region shows that the following percentages of learners were graded

in A<sup>+</sup> -D symbols: 30.58% in 2010; 29.75% in 2011; 25.46% in 2012; 25.62% in 2013; 25.31% in 2014 and 27.98% (DNEA, 2015; 2014; 2013; 2012; 2011; 2010). The trend of this statistics reveals a decline in the learners' performance in the NSSCO Biology which could be attributed to several factors. Ajayi (2012) found that the learners, teachers and the school can affect learners' academic performance. Thus, there is need for relevant researches on the learners' poor performance in the NSSCO Biology in the Khomas Educational Region with a view to identifying the associated factors and recommending strategies that could be applied to improve the Grade 12 learners' performance in the subject in the area. To the researcher's best knowledge, no research has been done on factors affecting learners' academic performance in the NSSCO Biology in Namibia. This therefore, leaves a literature gap which needs to be filled. Thus, this study investigated the factors affecting Grade 12 learners' academic performance in NSSCO Biology in the Khomas Educational Region, Namibia.

### **1.3 Research questions**

The research study was guided by the following research questions:

1. What are the learner-based, teacher-based and school-based factors affecting Grade 12 learners' academic performance in NSSCO Biology in the Khomas Educational Region?
2. How do the Biology teachers and science HODs handle these factors in order to improve Grade 12 learners' performance in NSSCO Biology in the Khomas Educational Region?

#### **1.4 Significance of the study**

This study is relevant to scholars, educationists and other readers as it is in line with the educational policy in Namibia which is currently emphasizing continuous improvement of science education. An increase in the academic performance of learners is critical, especially in Namibia where more investment is directed towards education. The results of this study would provide an in-depth knowledge on the learner-based factors, teacher-based factors and school-based factors which affect Grade 12 learners' performances in NSSCO level Biology examination in the Khomas Educational Region, Namibia.

Furthermore, it would provide insight into how the Biology teachers could handle the learner-based, teacher-based and school-based factors that affect learners' academic performance. The study suggested steps that could be taken in order to improve Grade 12 learners' performance in the subject. It is envisaged that this information will be valuable to education stakeholders: the Ministry of Education, advisory teachers, education inspectors, school principals, Biology teachers and National Institute for Educational Development (NIED) in the effort towards reversing the downward trend of Grade 12 learners' poor performance in the NSSCO Biology examination in the Khomas Educational Region.

The research would also add to the existing body of current knowledge on the factors that affect academic performance of Biology learners in Namibia.

#### **1.5 Limitations of the study**

The researcher carried out the study when the secondary schools were in full session. Thus, the researcher experienced challenges due to the involvement of Science HODs, the Biology teachers and learners in various school activities which affected 100% participation of the respondents. The study also had no control over the exact

information that the participants (Biology learners, Biology teachers, and Science HODs) would choose to give or withhold.

### **1.6 Delimitation of the study**

The study was carried out in Khomas Educational Region and thus, the generalisation of the study was limited to Senior Secondary Schools in the region. The research was only confined to the factors related to the learners, teachers and the school. As such, any other factor that influences the academic performance of learners which was not part of the defined parameters of the study was deemed out of scope. The results were then interpreted within the context of the study. The study was also limited to participants in 15 secondary schools that were selected in the Khomas Educational Region.

### **1.7 Definition of terms**

- a) **Academic performance**- In this study, it refers to the grade/symbol that a Grade 12 learner obtained in the Namibia Senior Secondary Certificate Ordinary level examination.
- b) **Learner-based factors**- they refer to the variables that are related to the learner which affects learners' academic performance- e.g, discipline, and study habits.
- c) **Teacher-based factors**- they refer to the variables that are related to the teacher, which affects learners' academic performance- e.g teaching methods used, teachers' competencies.
- d) **School-based factors**- they refer to the variables that are related to the school, which affect learners' academic performance- e.g teaching-learning resources, and school leadership.

## **Chapter Two**

### **Theoretical framework and literature review**

#### **2.1 Theoretical framework**

This study is based on the second and fourth propositions of the Conditions-Based Theory (CBT). Ragan, Smith and Cuda (n.d) stated that the Conditions-Based Theory is based on the propositions that: 1) learning goals can be categorized into learning outcomes or knowledge type, 2) the acquisition of the different learning outcome category requires different conditions, 3) learning outcomes can be represented in a predictable pre-requisite relationship, 4) different internal processes are supported by identifiable different instructional support.

This theory relates to the current study because the 2010 -2015 statistics of the Grade 12 learners' performance in NSSCO Biology examination in the Khomas Educational Region indicated performance which may be influenced by conditions which are learner-based, school-based or teacher-based. The conditions provided during teaching and learning of the subject affect the learners' performance. This is related to the second proposition which states that acquisition of different learning outcome category requires different conditions. Hence, for improved learning outcome in the NSSCO Biology, the learners, teachers and schools must respectively provide conditions that will bring about the desired learning outcome. The prior knowledge that learners have on any topic to be taught may also determine their performance in the subject. Therefore, the teachers need to consider the learners' experiences when preparing lessons. Furthermore, schools should be supportive of learners through providing relevant instructional resources such as textbooks, laboratory equipment, and other teaching aids to facilitate teaching and learning. When learners have the teachers and school supports in this way, they will be



motivated to learn effectively which will reflect in their performances both in tests and examinations and this is supported by the fourth proposition which states that different internal processes are supported by identifiable different instructional support. Thus, the right conditions of learning and instructional resources must be provided if improved performance of Grade 12 learners in NSSCO level Biology is to be realised.

## **2.2 Learner-based factors affecting learners' performance**

Learners are at the centre of teaching and learning in schools. Hence, their active participation is of utmost importance in improving performance. McWan (2009) noted that unless learners are fully invested in their own learning, teachers will fail to maximize their academic performance. Therefore, it is important that learners show interest in their learning. However, South Africa teachers continue to experience learners who are not serious and do not want to learn (Mji & Makgato, 2006). If learners are not serious with their studies this could badly affect learning outcomes, especially in Namibia where the approach to education is based on the learner-centred approach which calls for the learners to be actively involved in their own learning (MEC, 1993). Learners have responsibilities which includes doing school work, being disciplined and paying attention in the class. Improved learners' performances in Biology may require the learners to carry out their responsibilities diligently.

### **2.2.1 Learners' motivation, attitude and interest**

It has been noted that most learners perform below average due to lack of motivation (Lebata & Mudau, 2014). They are neither motivated to learn nor do they do what they are expected to do. Several researchers have suggested that only motivation

directly affects academic achievement; all factors affect achievement only through the effect of motivation (Tucker, Zyco & Herman, 2007). However, Lebata and Mudau (2014) concluded that it is not easy to understand what motivates learners.

Learners' attitude indicates the best predictor to achievement in Biology (Gbore & Delamora, 2013). Gagne and Briggs (1979) defined attitude as "an internal state which affects an individual's choice of action toward some objects, person and/or event" (pg 85). Learners' attitude may determine whether the learners will like or enjoy Biology lessons or not. A positive attitude towards Biology may bring about good results while negative attitude may bring poor performance. Learners' attitude and interest towards Biology may cause poor performance (Mukhwana, 2013). When learners show negative attitudes towards Biology, it leads to lack of motivation and hence, affect their performance in the subject (Mukhwana, 2013). In addition, Dinah (2013) noted that learners with positive attitude towards a subject perform better than those with negative attitudes. Those with positive attitude are motivated to work hard and this is reflected in the good marks scored in the examination.

Furthermore, learners' may have attitude towards their teachers. Some learners tend to dislike their teachers. The effect of this kind of attitude is that the learner may not want to attend such teacher's lessons or when in the class, they may not pay attention to the teacher, and also may show some disrespect. Gbore and Daramola (2013) in their study on relative contributions of selected teachers and students attitude towards academic achievement in Biology among senior secondary schools in Ondo State, Nigeria, concluded that there is need for both the learners and teachers of Biology in senior secondary schools to have positive attitudinal change towards learning and teaching the subject in order to improve on the performance of the learners.

Making lessons interesting may promote positive attitude in learners which eventually can lead to increased motivation to learn. An advantage of having motivated learners in the class is that learners cause fewer discipline problems because they care about what they are learning (Curvin & Mendler, 1988). Meanwhile, Borger, Carroll, and Schiller as cited in Curwin and Mendler (1988) offered 13 strategies for increasing motivation in the classroom and these includes:

1. Increase student response. Ask more low risk, open ended questions.
2. Monitor your behaviour to see that low-ability students have an equal chance to respond.
3. Encourage students to persist with difficult problems and to finish projects.
4. Foster excitement about new ideas.
5. Assign more in-depth projects, activities, or independent studies.
6. Incorporate student self-evaluation in your grading system.
7. Involve students more in scheduling classroom learning.
8. Exhibit high expectations for your students.
9. Increase your students' readiness to learn. Begin lessons with intriguing questions. Use special objects or activities to help children to focus on the concept.
10. Increase involvement and interest.
11. Give cooperative assignments to increase motivation, but you must also teach communication skills.
12. Audiences are great motivators. Invite the principal, parents or other classes to activities.

13. Check to see that your low-ability students are “school wise”. Do they need instruction on how to organize their desks, take down assignments, or memorize facts? (Curwin & Mendler, 1988, p. 162)

Biology teachers have the responsibility to make sure learners have an interest in and enjoy the subject they teach them. There is also need to instil in learners more positive attitudes towards science because it "leads to a positive commitment to science that influences lifelong interest and learning in science" (Simpson & Oliver, 1990).

### **2.2.2 Reported factors contributing to high school learners’ poor performances**

Jackson (2009) conducted a study to investigate the factors contributing to poor performance of Grade 12 Cambridge Overseas School Certificate (COSC) learners in Lesotho. It was found that poor academic performance of learners in Lesotho was attributed to various factors including teachers. Jackson (2009), concluded that poor performance of COSC learners in Lesotho can be inter alia, attributed to the following: lack of parental involvement, an inappropriate curriculum, poor school management, a non-welcoming school climate and shortage of educational facilities and resources, second language as a medium of instruction, fear of external examinations, inadequate qualified educators, lack of discipline and poor school attendance by both the teachers and learners. This study is important as it guides and sheds light to this research.

Akiri and Nkechi (2009) were of the opinion that ineffectiveness of teachers in classroom interaction with the learners could be responsible for the observed poor performance of learners and the widely acclaimed fallen standard of education. Poor academic performance of learners can be linked to poor teachers’ performance in

terms of accomplishing the teaching task, negative attitude to work and poor teaching habits which have been attributed to poor motivation (Akiri & Nkechi, 2009). However, Lebata and Mudau (2014) reported that in most schools in Lesotho, ineffective teaching is due to conditions such as lack of resources facilitating teaching and learning. These resulted into negative influence on the instructional quality in schools, and translated into poor academic performance, attitude and values.

### **2.2.3 Study habits**

The relationship between study habits and academic performance has received attention recently. Anwar (2013) while investigating the relationship between academic performance and study habits among secondary school learners of Lucknow city in India found that a high degree of relationship existed between academic performance and study habits of senior secondary learners. This meant that learners with good study habits perform higher compared to those who have poor study habits (Anwar, 2013). Good study habits may include among others learners being able to complete their homework, scheduling study time as well as revising the notes or summary given during the lessons. However, learners' poor study habits and inadequate preparation for examination affect performance in Biology (Ajayi, 2012). Learners may not find time to study because they are too busy with modern technologies such as play stations and chatting on the cell phones as well as spending too much time watching television programmes. As a result of these activities, learners may fail to complete their homework. These type of learners may be labelled as lazy and indisciplined. However, Curwin and Mendler (1988) had noted that the problem of not doing homework is more related to lack of motivation than learners trying to break school rules. If teachers are to encourage learners to complete

homework, teachers should make sure that the homework is challenging, interesting, proportionate, related to what have been covered in class, is corrected quickly, has choices and is not always done alone (Curwin & Mendler, 1988). Some learners may avoid homework because it is never marked.

#### **2.2.4 Learners' school attendance**

Attending school is as important as attending the lesson and irregular attendance of classes can affect learners' performance (Ajayi, 2012). Gupta and Lata (2014) noted that regular attendance of school is crucial for a learner's ability to learn, grow and thrive. Further it has a long term effect on the learner because it "forms the foundation for further academic and social development" (Gupta & Lata, 2014). Oluremi (2013) while studying the relationship between truancy and academic performance of secondary school learners in Nigeria also found that truancy hinders effective learning which leads to poor academic performance by such learners. Truancy or absence from school is likely to affect learning because the learner misses out on the day's work.

The Namibia *Education Act of 2001* states that learners' school attendance is compulsory. Despite this, learners continue to absent themselves from school. There are many reasons for learners' absence from school which are both related to school as well as the learners. According to Gupta and Lata (2014), lack of subject interest and personal interest in studies, poor teaching skills of teachers, unfavourable learning environment, teacher absentee and available opportunities for entertainment like (going to malls) are among some of the reasons learners may be absent from school. School related factors could be boring lessons and lack of discipline in the

school, whereby some learners may be scared of being bullied. Some learners may be absent from school for no reason while others may be due to ill health.

Absence from lessons can compromise learners learning (Gupta & Lata, 2014). A learner who is not in class to get help from the teacher has a higher chance of being left behind (Gupta & Lata, 2014) and this results in a backlog academically. Due to the effects of absenteeism on academic performance, it is vital that mechanisms be put in place. Parents are crucial in this regard. When teachers realise that a certain learner does not attend the lessons, parents should be informed or made aware of their child's behaviour (Oluremi, 2013). It is possible for the parents to be unaware of their child not attending lessons. Thus, approaching them may bring change in the learners' behaviour.

### **2.2.5 Learner Discipline**

Teaching and learning need to occur in an environment that is safe and orderly. Thus, it is critical that learners are disciplined. Nyoroge and Nyabuto (2014) noted that discipline is vital if learners are to succeed academically because indiscipline leads to poor academic performance. In addition, indiscipline: 1) leads to time wastage; 2) affects teacher-learner relationship; and also 3) disrupts the learning environment (Nyoroge & Nyabuto, 2014). More time can be wasted on trying to discipline the learners and thus teaching time is not used optimally. Furthermore, learners who are indiscipline tend to have poor relationships with teachers because the teacher may feel that such learners have no respect. If there is poor relationship between the teacher and learner, this may affect teaching and learning. For example, the teachers may not be willing to listen to such an indiscipline learner. There are different misbehaviours that can affect learners' performance. Truancy, lack of punctuality,

disobedience and use of abusive language as well as lack of commitment to studies were the frequent offences committed by the learners (Yaghambe & Tshabangu, 2013). Nyoroge and Nyabuto (2014) also concluded that lack of support services, guidance and counselling, insufficient learning materials, poor teacher-learner relationship as well as ignoring learners' complaints are some of the school related factors that affect discipline. Failure of learners to exercise self-discipline contributes to underachievement of learners (Stanley, 2014). It is therefore, vital that teachers find strategies that they can use to discipline learners in order to continue with the most critical role of teaching the learners. Some of the ways used to discipline learners include giving a stroke, manual work and counselling (Yaghambe & Tshabangu, 2013), detention, suspension, parental involvement, effective instruction, and corporal punishment (Njoroge & Nyabuto (2014).

Time spent on the task is also important in maintaining discipline. Increasing the learners' time on the class task can be very helpful in improving classroom discipline because the learners cannot be busy with classroom activity and be disruptive at the same time (Curwin & Mendler, 1988). Some learners will be disruptive because they have nothing to do. Although this is important, the type of activity will determine whether the learners will be involved. If the learners find the activity to be boring or difficult or even one which is not of their level, they may resort to disruptive behaviour such as walking around, throwing papers and or talking in the class. When these happen, teaching time may be wasted trying to call the learners to order. Jackson (2009) argued that lack of learners discipline affects performance badly as some learners are ill disciplined, uncontrollable, and difficult to work with in class and such learners deliberately ignore instructions from teachers, leave the class during lessons, come to school late or disappear before school closes.



### **2.3 Teacher-based factors affecting learners' performance.**

The role of the teacher in the teaching-learning process can never be underestimated. Teachers as the main implementers of the curriculum in schools are critical in the teaching-learning process. Meanwhile, there are factors which have effects on the academic performance of learners in secondary school. The following are some of the teacher-related factors that have been reported to account for learners' academic performance.

#### **2.3.1 Teacher's school attendance**

The teacher's school attendance is as important as they are the facilitators of teaching and learning in the school environment. Teachers are mostly needed in schools in order for teaching and learning to optimally occur and thus, teacher absenteeism may affect performance in Biology negatively. Lebata and Mudau (2014) in their study on factors affecting performance in Biology 5090 at selected high schools in Lesotho found that high rates of teacher absenteeism and lack of commitments from the teachers negatively affects performance. In spite of this, some teachers have reportedly been absent from school for various reasons.

In a study on the impact of teacher absenteeism on learners' academic performance and school discipline in Windhoek Senior Secondary Schools, Mwoombola (2001) found various reasons related to teachers' absenteeism. These included ill-health, death in the family, lies- fabricated and not real reasons, tiredness due to long trimester, lack of commitment, using government leave days, stressful working conditions, transport problems, and attending to workshops and examinations were among the reasons teachers were absent from school (Mwoombola, 2001). The author also reported another type of absenteeism where teachers may be present in

school but absent in their classes or may be present in class but may not be teaching on that day (Mwoombola, 2001). Teacher absenteeism also causes learners to be absent from school (Gupta & Lata, 2014). All this may account for loss of teaching time and eventually lead to inability to complete the syllabus, which eventually affect learners' performance.

### **2.3.2 Teacher's attitude and interest**

Teachers' attitude can also affect teaching and learning of learners in school in general and Biology in particular. Teachers who show unprofessional behaviour may be a bad example to the learners in schools. Gbore and Daramola (2013) pointed out that good or bad professional conduct on the part of the teacher goes a long way to stimulate, influence and encourage student to develop positive or negative attitude respectively to the studying of Biology. Further, the authors explained that demonstration of good professional teaching behaviours probably stirred up the potentials in the learners to manifest positive attitude to learning. Positive and effective relationship between the teacher and the pupils will perhaps show positive interrelationship with educational performance in the school subjects on the part of the pupils (Gbore & Daramola, 2013).

Behaviours such as teachers' non-care attitude towards their learners may have an effect on the learners' academic performances. It is likely that some teachers would go to their classrooms and instead of teaching, would rather sit down and engage in other activities for example getting busy on their cell-phones. This type of behaviour is likely to promote laziness in learners. In fact, such teachers are bad examples to the learners. A teacher should be in the forefront of promoting a culture of hard-work in learners.

### **2.3.3 Teaching methods used**

While studying the relationship of teacher quality to academic performance in Biology, it was found that teaching methodology, use of appropriate teaching material and teacher experience do promote academic performance in Biology (Akinfe, Olofinniyi & Fashiku, 2012). Teaching methods are critical in the delivery of the curriculum. The Namibian educational approach to teaching encourages the use of learner-centred methods (MEC, 1993). According to this approach:

- The starting point is the learners' existing knowledge, skills, interest and understanding.
- The natural curiosity and eagerness of all young people to learn, to investigate and to make sense of a widening world must be nourished and encouraged by challenging and meaningful tasks.
- The learners' perspective needs to be appreciated and considered in the work of the school;
- Learners should be empowered to think and take responsibility not only for their own, but also for one another's learning and total development; and
- Learners should be involved as partners in, rather than receivers of, educational growth (MEC, 1993).

Furthermore, the learner-centred approach encourages teaching methods that allow active participation of learners. Teachers should therefore use teaching materials because teaching materials engage learners' attention, actively involve the learners, as well as combine challenge and enjoyment (MEC, 1993).

Meanwhile the way teachers present their lessons may affect learning. When teachers change their teaching methods from one to another, they are more likely to maintain learner interest (Curwin & Mendler, 1988). This could be done with the use of

teaching aids such as models. Learners are likely to be motivated to learn when they see and feel what they are learning. Using different teaching methods may also help motivate learners instead of the continuous use of chalkboard and talk method. Aredeini and Awodun (2013) recommended that science teachers should be exposed to seminars and workshops to boost their motivation skills. It is when teachers are knowledgeable and skilful in teaching their subjects, that learning among learners could be enhanced (Darling-Hammond, 1999). The teacher's verbal ability is also crucial as it is part of the teachers' quality. This is because teachers depend on talking, explaining, asking questions and giving instructions which are important in Biology where learners need to carry out experiments by following instructions.

Curriculum implementation greatly depends on the teacher who should be the implementer. If the contents are not delivered effectively to the learners, there will be poor understanding which will greatly hinder performance. Qualified teachers who have knowledge and skills in the subject can effectively make a change in the performance of learners (Darling-Hammond, 1999).

#### **2.3.4 Syllabus completion**

The inabilities of teachers to complete the syllabus on time before examination have also been found to relate to learners' poor performance (Mji & Makgato, 2006). The syllabus guides the teacher on what should be taught. The subject syllabus shows the particular subject's overall objectives, the core content and possible organisation (Carl, 2012). It is therefore important that the Biology syllabus is covered before the commencement of examination as this will benefit the learners. Syllabus coverage of Biology content creates confidence in learners which is needed to handle examination and equips learners with the necessary knowledge in Biology (Mukhwana, Chelagat, & Magdaline, 2013). If learners are not familiar with the

content because it was not covered, they are likely not to perform well in the examination such as the NSSCO Biology.

Some teachers may not follow the scheme of work which is supposed to guide them but rather teach the textbook and thus, end up not teaching the learners the basic competencies normally tested in the examination. However, conducting extra lessons during weekends and school holidays in order to complete the syllabus have been successfully used to complete the syllabus (Lebata & Mudau, 2014). Working during the holidays when schools are closed however will need teachers who are motivated and committed to see learners performing higher in the subject they teach.

#### **2.4 School-based factors affecting learners' performance**

Several factors may affect learners' academic achievement in schools and these effects may manifest in learners' poor performances at examinations. Ajayi (2012) reported that learners themselves, teachers, government commitment, parents/guardians attitudes, and school's management can contribute significantly to learners' poor performances.

In separate studies on factors affecting Grade 10 learners performance in Onamutai Circuit, Oshana region (Namupala, 2013), and Grade 11 learners' performance in Mathematics in the Omusati Education region (Stephanus, 2008); the authors reported lack of instructional resources, over crowdedness in classrooms and lack of class visits by the school managers as critical school-based factors affecting the learners' performance.

### **2.4.1 Learning resources**

Studies have found that there is a relationship between the use of learning resources and the performance of learners. Schools with adequate resources perform better than those with inadequate resources (Mudulia, 2012). The use of teaching materials for example, improves academic performance in Biology (Akinfe et al. 2012). Lack of enough teaching materials further affects discipline in schools (Nyoroge & Nyabuto, 2014). This is likely because when learners work with few materials, they may be expected to always work in groups which in some cases, give chance to learners to talk issues unrelated to the work at hand. Overcrowded classrooms also are likely to make it difficult in using the limited resources. Biology is learned better through involving learners and letting them carry out practical on their own with the guidance of the teachers. In a similar opinion, Jackson (2009) noted that many of the laboratories in schools are not functional due to lack of equipment to carry out practical work and the equipment includes gas, running water and electricity. This practical work may supplement the theory content learnt by the learners which may help learners to understand more.

The importance of teaching material is critical in the teaching of science and Biology in particular. Dinah (2013) noted that availability of textbooks, laboratory apparatus and other learning resources contribute significantly to the performance of learners in Biology examination. However, several laboratories in schools are ill-equipped and the Biology syllabus is over loaded (Ajayi, 1998). Therefore, these may affect the learners' academic performance negatively.

### **2.4.2 Overcrowded classrooms**

Access to education is a human right and therefore, many governments have made provision to provide education to its citizens. Generally, especially in public schools, learners are enrolled even where the infrastructures are limited and thus, creating overcrowded classes. Classes that are overcrowded may have an effect on the quality of both teaching and learning. In a study on the impact of large classes on student learning in schools in Papua New Guinea (PNG), Epri (2016) found that overcrowded classes lead to teachers overloaded with work, and making it difficult with marking learners' work. The author further noted that teacher absenteeism, lack of support for the learners who are weak and shortage of teaching and learning resources can also be a result of overcrowded classes (Epri, 2016). All this factors may reduce the performance of learners, for example if less time is spent in school due to absenteeism. In addition, learners in overcrowded classrooms do not participate actively because the teachers end up using the teacher centred approaches such as the lecture method (Dabo, 2015). Learners may not receive the desired attention needed to promote effective learning and they will be forced to share most of the resources available. In the science subjects such as Biology which requires a lot of practical works, this may lead to passive learning with profound effects on learners.

### **2.4.3 School management and leadership**

Leadership refers to the actions of those vested with responsibilities of developing and implementing policies and procedures and with ensuring the smooth running and future development of an organisation (Miller, 2003). Organisations such as schools need sound leadership in order to function. Poor school leadership have effects on learners' performance (Stephanus, 2008). Poor school leadership could lead to

complete breakdown of discipline on the part of both teachers and learners with negative effect on the qualities of teaching and learning. In addition to providing adequate learning infrastructures, there should be sound leadership structures to ensure commitment to achieving optimum learning goals. Robinson, Lloyd and Rowe (2008) reported that leaders should ensure an orderly and supportive environment where teachers focus on teaching and the learners on learning. Schools should have a leadership that is willing to listen to learners, teachers and all its clients because a school leadership that does not respond to its people can affect school discipline (Nyoroge & Nyabuto, 2014). As part of the school community, learners need to be listened to. Ignoring learners' complaints can lead to indiscipline (Nyoroge & Nyabuto, 2014). This is likely because learners may feel undervalued. Learners may be heard in schools through class prefect or the learner representative council (LRC). At the same time, during lessons, learners should be given chances to give their ideas. They should be given the chance to ask questions where they do not understand. This in turn may motivate them to attend school and thus increase their performance because they will be actively involved.

Schools need to be supportive of both teachers and learners and be able to deal with their problems as soon as possible to allow teaching and learning to occur in a calm environment. One way that the school management could support teachers is by doing class visits so they could identify teachers' weaknesses and strengths as well as lend a listening ear to the learners and teachers. Positive feedback from the school management is likely to improve content delivery as well as classroom management which could help in improving teaching and learning and hence, improving the academic performance. However, some of the supervisors do not perform this duty or if they do, they fail to give constructive feedback to the teachers which could help



to improve teaching and classroom management (Stephanus, 2008). Dean (2002) suggested that the following should be considered when doing classroom observation. 1) Has the teacher planned adequately for the class, group and individual learning? 2) Does the teacher have knowledge of teaching content? 3) Does the teacher select appropriate teaching methods? 4) Does the teacher control learners competently? 5) How effective does the teacher use praise? 6) Is the teacher able to use a range of assessment techniques? 7) Does the classroom represent a good learning environment? 8) Is the teacher using time profitably? 9) Is the teacher using resources to the learners' advantages?; 10) Is the homework being used effectively to further learners' learning? and 11) How well are the learners performing academically in this class?

The task of leaders and managers is to raise the levels of achievement of learners (Dean, 2002). Team teaching, improvising, giving learners more work and giving remedial lessons among others could be used to improve Biology (Lebata & Mudau, 2014). In addition, teaching resources should be provided to the teachers.

## **2.5 Conclusion**

A review of the literature has indicated that factors related to learners, teachers and schools can affect the academic performance of learners. The learner-based factors such as discipline, attitude and motivation, study habits and school attendance have been variously reported to affecting the academic performances of learners. Learners should have positive outlook on their studies if they are to perform better in NSSCO Biology such as being disciplined and attending school regularly. Furthermore, teachers' use of certain teaching methods, lesson attendance, and teacher's attitude as

well as the quantity of content covered from the Biology syllabus also affect the learners' performances in the subject.

This chapter has also revealed that school factors such as availability of resources and the school leadership are important if learners are to perform effectively academically. Schools with adequate and relevant resources perform better than those with inadequate and irrelevant resources. Therefore, there is need for provision of adequate and useful teaching and learning resources to enhance NSSCO Biology learners' performance. In addition, the schools' leadership should help to maintain discipline in the school so that teaching and learning occurs in a safe environment.

## **Chapter Three**

### **Methodology**

#### **3.1 Research design**

This study used a mixed methods research design involving both quantitative and qualitative research. Mixed methods design broadens understanding of a study (Creswell, 2009). Further, a mixed research design is beneficial for method development. The use of the questionnaires for example, may help in the construction of the interview schedule.

The quantitative research based on a survey design was used to collect data on the perceived learner-based factors, teacher-based factors, and the school-based factors affecting learners' performance. The qualitative research was used to collect data on how the Biology teachers handle these factors in order to improve learners' performance in the NSSCO Biology. This will help the researcher to suggest useful ways to deal with the identified problems.

#### **3.2 Population**

The population of the study included all the 25 Heads of Science Departments (HODs), 25 Biology teachers and 1750 Grade 12 NSSCO Biology learners in the 25 Government Senior Secondary Schools (EMIS, 2012) in the Khomas Educational Region. The reason for the selection of this population was because the HODs for Science, the Biology teachers and the NSSCO Biology learners may have different experiences and views of the different factors that affect performance of learners in the NSSCO Biology. This therefore, provided more insight into the factors affecting Grade 12 learners' performance in NSSCO Biology in the Khomas Educational Region.

### **3.3 Sample and sampling procedures**

The sample of the study consisted of 15 Heads of Science Departments, 15 NSSCO Biology teachers and 450 Grade 12 NSSCO Biology learners. Firstly, the names of 25 different Government Senior Secondary Schools offering ordinary level Biology in the Khomas Educational Region were written on pieces of papers and put in one bowl. Secondly, names of 15 schools (one at a time) were randomly drawn from the bowl which was shaken after each drawn. Each school has one HOD for Science and one NSCCO level Biology teacher. Therefore, purposeful sampling technique was used to select the Science HODs and NSSCO Biology teachers that constituted part of the sample of the study. Furthermore, simple random sampling technique using the lottery method was used to select 30 NSSCO Biology learners per school in the 15 selected schools to form the learners' sample of the study. The simple random sampling technique allows equal chance for the sample to be included in the study (Check & Schutt, 2012).

For the interviews, a sub-sample of 2 out of the 15 Science HODs and 2 out of the 15 Biology teachers who completed the questionnaires and have taught NSSCO Biology for at least two consecutive years were purposively selected to participate in the interviews.

### **3.4 Research instruments**

In this study, questionnaires and interview schedules were used to collect data.

#### **3.4.1 The Questionnaire**

The Factors Affecting Learners' Performance Questionnaire was used to gather data on the perceived learner-based factors, teacher-based factors, and school-based factors affecting performance of Grade 12 learners in NSSCO Biology in the

Khomas Educational Region. The questionnaire was developed by the researcher, and it contained closed-ended questions rated on a five-point Likert scale (strongly agree, agree, disagree, strongly disagree, and undecided). The questionnaire also consisted of three components namely; perceived learner-based factors, perceived teacher-based and perceived school-based factors affecting Grade 12 learners' performance in NSSCO Biology in the Khomas Educational Region. The same type questionnaire was administered to all the study participants in order to have the learners, HODs for Science and the NSSCO level Biology teachers' opinions respectively on the investigated factors.

### **3.4.2 The Interview**

The same interview guides were used to gather data from both the Biology teachers and science HODs on how the teachers handle the identified factors in order to improve learners' performance in the subject. This allowed the interviewer to gather information regarding the individual teacher's and HOD's experiences and knowledge (Best & Kahn, 2006) of the factors affecting Grade 12 learners' performance in NSSCO Biology in the Khomas Educational Region. The interviews employed open-ended questions to allow for in-depth responses by the participants. Uniform open-ended questions were used in all the interviews to reduce elements of bias (Boudah, 2011), thus, ensuring that data on the same issues are collected from the different participants. The interview was tape- recorded.

### **3.6 Data collection procedure**

The data collection involved two-phase process. First, questionnaires were used to collect data on the perceived learner-based, teacher-based and school-based factors affecting learners' academic performance in NSSCO Biology. While in the schools,

the questionnaires were administered by the researcher personally to the participants (learners, teachers and HODs) and they (questionnaires) were completed on the same day they were administered, after which the researcher collected them personally for analysis. Secondly, face to face interview schedules were used to collect data on how the Biology teachers handle the identified learner-based, teacher -based and school-based factors in order to improve Grade 12 learners' performance in the NSSCO Biology. After preliminary analysis of the data collected in the questionnaires, separate appointments were made for the face to face interviews with the 2 Biology teachers and 2 Science HODs in the sampled schools.

### **3.7 Data Analysis**

The researcher used descriptive statistics (percentages) to analyse the quantitative data collected using the questionnaires. Frequency tables were used to present the frequencies to which the factors (learner-based; teacher-based; school-based) reoccur in the participants' responses. The qualitative data from the interviews were analysed using the content analysis technique in order to identify patterns, ideas and themes that emerge from the data (Neuman, 2011). Firstly, the researcher transcribed the recorded data verbatim using the Microsoft Word. The researcher then read through the data interview transcripts, code the data using pre-determined themes developed from the research questions and then interprets the data in detailed discussions.

### **3.8 Research Ethics**

An ethical clearance letter to conduct the study was first obtained from the University of Namibia's Research and Ethical Clearance Committee. Then, permission to carry out the study in the Senior Secondary Schools offering NSSCO Biology in the Khomas Educational Region was sought from the Ministry of

Education, Arts and Culture (The permanent secretary, and the Khomas Educational Region Director for education) and the school principals. After obtaining the permissions, the researcher went to the schools to seek the consent of the Biology teachers and Grade 12 NSSCO Biology learners to voluntarily participate in the study. The researcher clearly informed the participants of the purpose of the study and also assure them of their right to withdraw from the study if they so wish to at any time during the course of data collection. All effort was taken to ensure that no harm is done to any participant. The identities of the participants were kept anonymous by the exclusion of participants' names and used false names. The data collected were kept confidential by storing the questionnaires in a locked suitcase and the audio recordings in a password protected personal computer.

## Chapter Four

### Results and Discussions

#### 4.0 Introduction

This chapter presents the background information of the study participants, results obtained and the discussion according to the research questions. The results are presented under the major themes derived from the research questions as follows: The perceived learner-based, teacher-based and school-based factors affecting Grade 12 learners' academic performance in NSSCO Biology in the Khomas Educational Region and the strategies used by Biology teachers to handle such factors so as to improve the learners' performance in the subject.

#### 4.1 Background information about participants

Table 1: Different categories of the study participants

<b>Sample</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
NSSCO Learners	257	193	450
Biology Teachers	9	6	15
Science HODs	11	4	15
<b>Total</b>	<b>276</b>	<b>204</b>	<b>480</b>

Table 1 reveals that there are more male learners, teachers and HODs than their respective female counterpart. This could be that more males are taking up science subjects than the female counterparts in the study area.



Table 2: Years of teaching experience

Number of years	Biology Teachers		Science HODs		Total
	Male	Female	Male	Females	
0 -2	2	1	2	1	6
3 and more	7	5	9	3	24
<b>Total</b>	<b>9</b>	<b>6</b>	<b>11</b>	<b>4</b>	<b>30</b>

The results in Table 2 show the number of teaching experiences of teachers and HODs in the study area in the Khomas Educational Region.

The results in Table 2 show that more teachers and HODs have 3 years and more teaching experience. As a result teachers are expected to be more effective in teaching NSSCO Biology.

#### **4.2 Results from the questionnaires**

**Research question 1:** What are the learner-based, teacher-based and school-based factors affecting Grade 12 learners' academic performance in NSSCO Biology in the Khomas Educational Region?

##### **4.2.1 Learner-based factors affecting Grade 12 learners' academic performance in NSSCO Biology in the Khomas Educational Region**

**i. Learners' motivation**

Table 3: Participants' response frequencies on the motivation of Grade 12 NSSCO Biology learners

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
Learners need constant teacher's supervision to do the class work.	Freq.	12	0	3	79	7	3	11	0	0	247	6	6	101	2	3
	%	3	0	20	18	47	20	2	0	0	55	40	40	22	13	20
Learners study Biology beyond what they learn in the class.	Freq.	69	2	4	203	7	3	13	2	2	95	2	4	70	2	2
	%	15	13	27	45	47	20	3	13	13	21	13	27	16	13	13
Learners compete for best marks in the tests.	Freq.	30	2	2	250	5	3	20	1	2	74	6	5	76	1	3
	%	7	13	13	56	33	20	4	7	13	16	40	33	17	7	20
Learners actively participate in Biology lessons.	Freq.	45	1	0	145	3	3	25	0	0	167	9	7	68	2	5
	%	10	7	0	32	20	20	6	0	0	37	60	47	15	13	33
Learners are confident that they will pass Biology.	Freq.	43	1	0	86	3	2	32	0	2	234	6	5	55	5	6
	%	10	7	0	19	20	13	7	0	13	52	40	33	12	33	40
Learners are not serious with their studies.	Freq.	19	1	2	100	3	4	28	0	0	266	7	6	37	4	3
	%	4	7	13	22	20	27	6	0	0	59	47	40	8	27	20

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HO

The results in Table 3 show the participants' response frequencies on motivation of Grade 12 learners in NSSCO level Biology in the Khomas Educational Region. The results in Table 3 indicate that majority of the learners (55%) agreed that learners need constant teacher's supervision in order to do their class work. More learners (45%) also disagreed that learners study beyond what they learn in the class. It was also found that more learners (52%) agreed that they are confident that they will pass Biology examination. However, more learners (56%) disagreed with the statement that learners compete for best marks during tests and 16% agreed. More learners (59%) are also in agreement that learners are not serious with their studies while 22% disagreed and 4% strongly disagreed.

The results in Table 3 further revealed that more teachers (47%) disagreed that the learners need teachers' constant supervision to do class work, 40% agreed, and 13% strongly agreed with the statement. More teachers (47%) also disagreed that learners do study Biology beyond what they learn in class while 27% strongly disagreed with the statement. More teachers (40%) also agreed that learners are confident that they will pass Biology while 33% strongly agreed. However, the majority (47%) of teachers agreed that learners are not serious with their studies and 27% strongly agreed while 20% disagreed with the statement.

The results in Table 3 also showed that more HODs (40%) agreed that learners need constant teacher's supervision to do the class work, 20% disagreed, and another 20% strongly disagreed with the statement. More HODs (33%) also agreed that learners compete for the best marks in the tests while 20% disagreed. In addition, majority of the HODs (47%) also agreed that learners actively participate in Biology lessons, 33% strongly agreed while 20% disagreed with the statement. Furthermore, majority of the HODs (40%) agreed that learners are not serious with their studies while 27% disagreed with the same statement.

**ii. Learners' study habits**

Table 4: Participants' response frequencies on the study habits of Grade 12 NSSCO Biology learners

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
Learners take notes/summaries during the lessons.	Freq.	31	0	2	121	4	4	12	0	0	187	6	4	99	5	5
	%	7	0	13	27	27	27	3	0	0	42	40	27	22	33	33
Learners only use the prescribed Biology textbooks to study.	Freq.	39	0	1	109	4	3	11	1	2	267	6	5	24	4	4
	%	9	0	7	22	27	20	2	7	13	59	40	33	5	27	27
Learners visit the library to do their assignments.	Freq.	97	2	4	146	6	4	35	1	3	108	6	4	64	0	0
	%	21.55	13	27	32.44	40	27	7.77	7	20	24	40	27	14.22	0	0
Learners use past examination papers to study Biology.	Freq.	45	1	0	75	3	3	12	0	1	109	9	6	209	2	5
	%	10	7	0	16.66	20	20	2.66	0	7	24.22	60	40	44.44	13	33
Learners attend the holiday classes organised.	Freq.	78	2	0	75	3	3	25	1	1	197	1	5	75	4	6
	%	17.33	13	0	16.67	20	20	5.56	7	7	43.78	7	33	16.67	27	40
Learners review work done in the class everyday	freq.	55	2	2	183	2	5	34	2	2	89	6	6	89	3	0
	%	12.22	13	13	40.66	13	33	7.56	13	13	19.78	40	40	19.78	20	0

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.

The results in Table 4 show the response frequencies of the participants on the study habits of Grade 12 learners' in NSSCO level Biology in the Khomas Educational Region. The results in Table 4 reveal that more learners (42%) agreed that learners take notes during lessons and 22% learners strongly agreed with the same statement.

More learners (59%) also indicated that learners only use the prescribed Biology textbooks to study while 22% disagreed with the same statement. Majority of the learners (32%) also disagreed that learners visit the library to do their assignments while 24% agreed that they visit library to do assignments. More learners (44%) also agreed that they attend the holiday classes organised for them while 17% strongly agreed with the statement.

More learners (41%) disagreed with the statement that learners revise the works done in the class everyday but 20% of the learners agreed with the same statement. The results in Table 4 also indicate that more teachers (60%) agreed that learners use the prescribed textbooks only and 27% strongly agreed. There are 33% teachers who agreed that learners attend the holiday classes organised.

However more than half of the teachers (48%) disagreed and 13% strongly disagreed with the statement that learners revise works done in the class everyday while 40% other teachers agreed with the statement. Table 4 further reveals that 27% HODs agreed that learners take notes/summaries during lessons, 33% strongly agreed and 27% disagreed with the statement. The table also reveals that 33% HODs agreed, 27% strongly agreed and 20% disagreed that learners only use the prescribed Biology textbooks to study. However, 13% of HODs were undecided.

**iii. Learners' attendance**

Table 5: Participants' response frequencies on lessons' attendance of Grade 12 NSSCO Biology learners'

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
Learners come to school but skip Biology lessons.	Freq.	179	3	8	181	9	7	10	1	0	50	2	0	30	0	0
	%	39.78	20	53	40.22	60	47	2.22	7	0	11.11	13	0	6.67	0	0
Learners who miss Biology lessons are disciplined accordingly.	Freq.	105	0	4	113	9	5	24	1	2	118	4	4	90	1	0
	%	23.33	0	27	25.11	60	33	5.33	7	13	26.22	27	27	20	7	0
Learners miss Biology lessons with valid reasons.	Freq.	40	1	6	62	3	7	35	2	2	107	5	4	206	0	0
	%	8.89	7	40	13.78	20	47	7.78	13	13	23.78	33	27	45.78	0	0
Learners arrive late for Biology lessons.	Freq.	113	3	6	175	8	3	21	0	1	74	4	2	67	0	3
	%	25.11	20	40	38.89	53	20	4.67	0	7	16.44	27	13	14.89	0	20
Learners who are weak report for remedial classes.	Freq.	92	3	3	60	2	4	45	0	0	99	9	3	154	1	5
	%	20.44	20	20	13.33	13	27	10	0	0	22	60	20	34.22	7	33
Learners do not turn up for holiday classes.	Freq.	57	3	7	215	8	3	37	1	2	84	3	3	57	0	0
	%	12.67	20	47	47.78	53	20	8.22	7	13	18.67	20	20	12.67	0	0

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.

The results in Table 5 show the response frequencies of participants on the lesson attendance of Grade 12 learners' in NSSCO level Biology in the Khomas Educational Region. The results in Table 5 show that majority (40%) of the learners disagreed and 40% strongly disagreed that learners come to school but skip Biology lessons. In addition, more learners (25%) disagreed that those learners who missed Biology lessons are disciplined accordingly while 23% of them strongly agreed. However, majority of the learners (39%) disagreed with the statement that learners arrive late to Biology lessons, 25% of them strongly disagreed while only 16% of the learners agreed with the same statement.

The results in Table 5 also revealed that more teachers (60%) disagreed and 20% of teachers strongly disagreed that learners come to school but skip Biology lessons while 13% agreed. Majority of the teachers (33%) also agreed that learners missed Biology lessons with valid reasons while 20% disagreed and 13% were undecided. Furthermore, the results showed that more teachers (53%) disagreed and 20% strongly disagreed that learners arrive late for Biology lessons while 27% agreed. The results in table 5 also revealed that 60% of teachers agreed and 7% strongly agreed that learners report for their remedial classes, while 13% disagreed and 20% strongly disagreed with the same statement. The results in Table 5 further show that all HODs (100%) disagreed with the statement that learners come to school and skip Biology lessons. Majority of the HODs (47%) disagreed while 40% strongly disagreed that the learners missed Biology lessons with valid reasons while 27% agreed with the same statement. In addition, the results in Table 5 shows that more HODs (47%) strongly disagreed and 20% disagreed that learners do not report for holiday classes while 20% agreed with the statement.

**iv. Learners' discipline**

Table 6: Participants' response frequencies on discipline of Grade 12 NSSCO Biology learners

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
Learners actively participate in Biology lessons.	Freq.	56	0	2	86	3	3	20	0	0	234	6	3	54	6	7
	%	12	0	13	19	20	20	4	0	0	52	40	20	12	40	47
Learners use cell phones at school.	Freq.	56	5	6	165	3	3	34	2	1	129	2	3	66	3	2
	%	12	33	40	37	20	20	8	13	7	29	13	20	15	20	13
Learners are disobedient to the teacher.	Freq.	47	3	3	163	3	5	10	0	0	179	6	4	51	3	3
	%	10	20	20	36	20	55	2	0	0	40	40	27	11	20	20
Learners fail to complete assignment/homework given.	Freq.	78	2	7	182	4	1	31	0	0	117	6	4	42	3	3
	%	17	13	47	40	27	7	7	0	0	26	40	27	9	20	20
Learners are disruptive during Biology lessons.	Freq.	78	3	3	186	4	6	11	0	0	99	7	4	76	1	2
	%	17	20	20	41	27	40	2	0	0	22	47	27	17	7	13
Learners cooperate during group work in Biology lessons.	Freq.	57	2	0	101	2	3	23	0	1	206	5	8	63	6	3
	%	13	13	0	22	13	20	5	0	7	46	33	53	14	40	20

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.



The results in Table 6 show the response frequencies of the participants on Grade 12 NSSCO Biology learners' discipline in the Khomas Educational Region.

The results obtained show that more learners (52%) agreed that learners actively participate in Biology lessons while 19% disagreed and 12% strongly disagreed with the statement. The results also revealed that a large number of learners (37%) disagreed and 29% agreed that learners use cell phones at school while 15% of the learners strongly agreed with the statement. More learners (40%) also agreed that learners are disobedient to teachers while 36% disagreed with the statement. However, majority of the learners (46%) agreed that learners are cooperative during group works while 22% disagreed with the statement.

The results in Table 6 further indicate that more teachers (40%) agreed that learners actively participate in Biology lessons, another 40 strongly agreed and only 20% teachers disagreed with the statement. More teachers (33%) also agreed that learners cooperate during group works, 40% strongly agreed, while 26% of the teachers disagreed with the statement. However, majority of the teachers (47%) agreed that learners are disruptive during Biology lessons while 27% disagreed.

The results in Table 6 also show that majority of the HODs (47%) strongly agreed that learners do actively participate in Biology lessons while 20% disagreed. More HODs (40%) also strongly disagreed that learners' use cell phones at school and 20% agreed.

The majority of the HODs (47%) also strongly disagreed with the statement that learners fail to complete assignment/homework given to them while 27% agreed. Majority of the HODs (53%) also agreed that the learners cooperate during group works in Biology lessons while 20% strongly agreed and another 20% disagreed.

## 4.2.2 The teacher-based factors that affect Grade 12 learners' academic performance in NSSCO level Biology

### i. Teachers' attendance

Table 7: Participants' response frequencies on Biology teachers' attendance of lessons

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
The teacher is absent at least once every week.	Freq.	200	7	0	125	8	15	12	0	0	56	0	0	57	0	0
	%	44	47	0	28	53	100	3	0	0	12	0	0	13	0	0
The teacher comes late to the lesson at least once a week.	Freq.	102	5	0	208	7	5	9	0	0	104	3	8	27	0	2
	%	23	33	0	46	47	33	2	0	0	23	20	53	6	0	13
Other school work makes the teacher to miss a whole Biology lessons.	Freq.	66	4	0	108	5	0	14	0	0	193	6	0	69	0	0
	%	15	27	0	24	33	0	3	0	0	43	40	0	15	0	0
The teacher leaves the lesson to attend to other school related work.	Freq.	47	4	0	133	6	5	17	0	0	189	5	10	64	0	0
	%	10	27	0	30	40	33	4	0	0	42	33	67	14	0	0
The teacher's attendance of lessons sets a good example to the learners.	Freq.	28	0	0	91	0	2	13	0	0	252	11	13	66	4	0
	%	6	0	0	20	0	13	3	0	0	56	73	87	15	27	0
The teacher's attendance of after-school classes is satisfactory.	Freq.	19	0	0	62	0	3	19	0	0	233	14	7	117	1	5
	%	4	0	0	14	0	20	4	0	0	52	93	47	26	7	33

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.

The results in Table 7 show response frequencies of the participants on teachers' lesson attendance. The results in Table 7 shows that majority of the learners (44%) strongly disagreed while 28% disagreed that the Biology teachers are absent at least once every week. Majority of the learners (46%) also disagreed that the teachers come to the lesson at least once a week, 23% strongly disagreed while 23% agreed with the statement. More learners (43%) also agreed that other school related work keeps the teacher out of the class for the whole lesson while 24% disagreed.

The results in Table 7 further reveal that 53% of the teachers disagreed and 47% strongly disagreed that the Biology teachers are absent at least once every week. More teachers (47%) also disagreed that Biology teachers come late to the lesson at least once a week and 33% strongly disagreed with the statement while 20% of the teachers agreed with the statement. The Table also showed that more teachers (33%) disagreed that other school work makes the teacher to miss a whole Biology lesson, 27% strongly disagreed and 40% of the teachers agreed with the statement.

Furthermore, majority of the teachers (73%) agreed that teachers' attendance of lessons set a good example to the learners while 27% strongly agreed. Table 7 also shows that all the HODs (100%) disagreed that Biology teachers are absent at least once every week. The table also showed that more HODs (53%) agreed that the teachers come late to lessons at least once a week while 33% disagreed. Furthermore, 67% of the HODs agreed that the teachers leave the lesson to attend to other school works and only 33% HODs disagreed with the same statement. In addition, 87% HODs agreed that the teachers' attendance of Biology lessons sets a good example to the learners and only 13% disagreed with the statement.

**ii. Teachers' motivation of learners in the Khomas Educational Region**

Table 8: Participants' response frequencies on Biology teachers' motivation of learners

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
The teacher believes that all learners can learn Biology	Freq.	43	0	0	79	4	0	25	0	0	164	7	7	139	6	8
	%	10	0	0	18	27	0	6	0	0	36	47	47	31	40	53
The teacher usually encourages learners to learn.	Freq.	29	0	0	35	0	0	16	0	0	247	13	11	123	2	4
	%	6	0	0	8	0	0	4	0	0	55	87	73	27	13	27
The teacher marks learners' tests/home works within a short period of time.	Freq.	115	0	1	151	5	7	20	0	0	98	8	7	66	2	0
	%	26	0	7	34	33	47	4	0	0	22	53	47	15	13	0
The teacher puts extra effort in his/her work.	Freq.	24	0	0	73	0	5	11	0	0	131	12	9	211	3	1
	%	5	0	0	16	0	33	2	0	0	29	80	60	47	20	7
Teacher presents lessons with confidence.	Freq.	32	0	0	64	0	2	15	0	0	235	14	12	104	1	1
	%	7	0	0	14	0	13	3	0	0	52	93	80	23	7	7
The Biology classroom is visually attractive with materials on the wall.	Freq.	82	0	0	195	7	9	23	0	0	78	6	5	72	2	1
	%	18	0	0	43	47	60	5	0	0	17	40	33	16	13	7

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.

The results in Table 8 show the participants' response frequencies on the Biology teachers' motivation in the study area. The results revealed that more learners (36%) agreed that the teachers believed that all learners can learn Biology and 31% strongly agreed with the statement. More learners (55%) also agreed that the teachers usually encourage learners to learn and 27% strongly agreed. Majority of learners (34%) disagreed while 26% strongly disagreed that teachers marked learners tests/assignments within a short period of time and 22% of learners agreed with the same statement. However, 29% of the learners agreed that the teachers put extra effort in their work and 47% of them strongly agreed with this statement. Furthermore, majority of the learners (43%) disagreed and 18% strongly disagreed that the Biology classrooms are visually attractive with learning aid materials on the walls. Also, more than half of the learners (52%) agreed that teachers present their lesson with confidence and 23% strongly agreed with the statement.

The results in Table 8 further show that 47% of the teachers agreed that the teachers believed that all the learners can learn Biology and 40% strongly agreed. Majority of the teachers (87%) also agreed that the teachers usually encourage learners to learn while 13% strongly agreed. Majority of the teachers (93%) also agreed and 7% strongly agreed that the teachers present lessons with confidence. However, teachers were divided as to whether Biology classroom is visually attractive with learning aid materials on the wall: 47% disagreed while 40% agreed and 13% strongly agreed with the statement. The table also showed that more HODs (73%) agreed that the teachers usually encourage learners to learn while 27% strongly agreed. When asked whether the classroom is attractive with Biology related materials displayed on the wall, 60% of the HODs disagreed while 33% agreed with the statement.

### iii. Instructional strategies and methods

Table 9: Participants' response frequencies on Biology teachers' instructional strategies and methods

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
Teaching materials are used to explain Biology content.	Freq.	48	0	0	126	4	5	13	0	0	209	7	9	54	4	1
	%	11	0	0	28	27	33	3	0	0	46	47	60	12	27	7
The teacher asks questions to check on learners' understanding.	Freq.	23	0	0	23	0	0	21	0	0	272	11	9	111	4	6
	%	5	0	0	5	0	0	5	0	0	60	73	60	25	27	40
Some topics are rushed through to complete the syllabus.	Freq.	30	4	0	76	5	6	34	0	0	233	6	8	77	0	1
	%	7	27	0	17	33	40	8	0	0	52	40	53	17	0	7
More time is spent by teacher talking while the learners sit and listen.	Freq.	55	3	0	121	12	8	11	0	0	203	0	7	60	0	0
	%	12	20	0	27	80	53	2	0	0	45	0	47	13	0	0
Learners work cooperatively in groups.	Freq.	34	0	1	122	5	4	24	0	0	137	7	5	133	3	5
	%	8	0	7	27	33	27	5	0	0	30	47	33	30	20	33
Adequate assessment tasks e.g tests are given to the learners.	Freq.	41	0	0	108	0	2	21	0	0	197	9	13	83	6	0
	%	9	0	0	24	0	13	5	0	0	44	60	87	18	40	0

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.

The results in Table 9 show the participants' response frequencies of participants on Biology teachers' instructional strategies and methods. The results in Table 9 indicate that more learners (46%) agreed that teaching materials are used to explain the Biology content while 28% learners disagreed. The table also showed that majority of the learners (52%) agreed and 17% strongly agreed that some topics are rushed through to complete the syllabus while 17% of them disagreed with the same statement. Furthermore, 45% of the learners agreed that more time is spent by the teacher talking while the learners sit and listen and 27% of the learners disagreed with the statement. More learners (44%) also agreed and 18% strongly agreed that adequate assessment tasks are given to the learners while 24% of them disagreed with the statements.

The results in Table 9 further reveal that more teachers (47%) agreed that teaching materials are used to explain Biology content and 27% teachers strongly agreed. The result also showed that 73% of the teachers agreed that the teachers ask questions to check on learners' understanding and 27% strongly agreed with the statement. The table also showed that majority of teachers (80%) disagreed that more time is spent by teachers talking while the learners sit and listen while 80% of them strongly disagreed with the statement. The results in Table 9 also show that the majority of HODs (69%) agreed that teaching materials are used to explain Biology content while 33% disagreed. There are 60% of the HODs who agreed that the teachers ask questions to check on learners' understanding and 40% of them strongly agreed with the statement. When asked whether some topics are rushed through to complete the syllabus, 40% of the HODs disagreed while majority (53%) agreed and 7% strongly agreed with the statement. Majority of the HODs (87%) also agreed that adequate assessment tasks are given to the learners.

**iv. Classroom interactions**

Table 10: Participants' response frequencies on classroom interactions

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
The teacher creates time to listen to learners' ideas.	Freq.	37	0	0	52	0	0	13	0	0	253	12	12	95	3	3
	%	8	0	0	12	0	0	3	0	0	56	80	80	21	20	20
Learners are afraid to ask questions in class.	Freq.	104	3	2	176	7	6	24	0	0	112	5	7	34	0	0
	%	23	20	13	39	47	40	5	0	0	25	33	47	8	0	0
The teacher is friendly with the learners.	Freq.	37	0	0	101	0	3	19	0	0	208	7	11	85	8	1
	%	8	0	0	22	0	20	4	0	0	46	47	73	19	53	7
The teacher treats learners with respect.	Freq.	37	0	0	66	0	0	22	0	0	299	10	9	26	5	6
	%	8	0	0	15	0	0	5	0	0	66	67	60	6	33	40
Learners help each other to learn.	Freq.	41	0	0	34	0	0	13	0	0	211	13	12	151	2	3
	%	9	0	0	8	0	0	3	0	0	47	87	80	34	13	20
Learners laugh at others when they ask questions.	Freq.	67	2	2	137	7	4	14	0	0	164	6	8	68	0	1
	%	15	13	13	30	47	27	3	0	0	36	40	53	15	0	7

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.



The results in Table 10 show the participants' response frequencies on Biology classroom interactions

The results in Table 10 show that more than half of the learners (56%) agreed that the teachers created time to listen to learners' ideas, 21% strongly agreed while 12% disagreed with the statement. Majority of the learners (39%) also disagreed that learners are afraid to ask questions in class, 23% of learners strongly disagreed while 25% of them agreed with the statement. In response to the statement of whether learners laugh at others when they ask questions, majority of the learners (36%) agreed with the statement and 15% strongly agreed while 30% disagreed. The results in Table 10 also show that majority of the teachers (80%) agreed that the teachers created time to listen to learners idea, and 20% strongly agreed. The table also showed that 33% of the teachers agreed that learners are afraid to ask questions in the class while 47% disagreed with the statement. However, majority of the teachers (87%) agreed that learners help each other to learn. In addition, 47% of the teachers disagreed with the statement that learners laugh at one another when they ask questions while 40% of the teachers agreed. Furthermore, the results in Table 10 show that 80% of the HODs agreed with the statement that the teachers created time to listen to learners ideas while 20% strongly agreed with the statement. More HODs (73%) also agreed that the teachers are friendly with the learners while 20% disagreed. In addition, 80% of the HODs agreed that learners helped each other to learn and 20% strongly agreed with the statement.

More HODs (53%) agreed that learners laughed at one another when they ask questions, 27% disagreed and 13% strongly disagreed with the statement.

### 4.2.3 The school-based factors that affect Grade 12 learners' academic performance in NSSCO Biology

#### i. Availability of resources

Table 11: Participants' response frequencies on the availability of resources

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
The school has enough Biology textbooks for each learner.	Freq.	5	1	0	83	3	4	9	0	0	254	7	5	99	4	6
	%	1	7	0	18	20	27	2	0	0	56	47	33	22	27	40
The school has sufficient laboratory equipment.	Freq.	99	2	3	208	8	8	5	0	0	98	4	4	40	1	0
	%	22	13	20	46	53	53	1	0	0	22	27	27	9	7	0
The school has a functional science laboratory.	Freq.	45	0	0	200	4	4	10	0	0	124	7	4	71	4	7
	%	10	0	0	44	27	27	2	0	0	28	47	27	16	27	47
The classroom for Biology is overcrowded.	Freq.	44	2	2	141	6	8	21	0	0	171	7	5	73	0	0
	%	10	13	13	31	40	53	5	0	0	38	47	33	16	0	0
There is lack of Biology references books for learners and teachers.	Freq.	43	0	0	81	2	2	22	0	0	244	11	8	60	2	5
	%	10	0	0	18	13	13	5	0	0	54	73	53	13	13	33
The school has a qualified Biology teacher.	Freq.	19	0	0	14	0	0	20	0	0	277	13	8	120	2	7
	%	4	0	0	3	0	0	4	0	0	62	87	53	27	13	47

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.

The result in Table 11 shows the participants' response frequencies on the availability of resources. The results in Table 11 show that more learners (56%) agreed that the school has enough Biology textbooks and 22% strongly agreed with the statement. The table also revealed that more learners (46%) disagreed that the schools have sufficient laboratory equipment while 22% strongly disagreed. In response to whether the school have functional science laboratories, 44% of the learners disagreed while 28% agreed with the statement. Furthermore, 38% of the learners agreed that the classroom for Biology is overcrowded, 31% disagreed while 10% strongly disagreed with the statement. More learners (62%) agreed and 27% strongly agreed that the school have qualified teachers.

The results in Table 11 also revealed that more teachers (47%) agreed and 27% strongly agreed that the school has enough Biology textbook for each learner while 20% disagreed. More teachers (53%) also disagreed that the school has sufficient laboratory equipment but 27% agreed with the statement. The result in Table 11 further indicated that 47% of the teachers agreed and 27% strongly agreed that the school has a functional science laboratory. More teachers (40%) disagreed that the classroom for Biology is overcrowded while 47% agreed with the same statement. The table also showed that 73% of the teachers agreed that there is lack of references books for learners and teachers, and 13% strongly agreed with the statement while another 13% disagreed. As further shown in the results in Table 11, more HODs (40%) strongly agreed that the schools have enough Biology textbooks for the learners while 27% of them disagreed with the same statement. The table also revealed that more HODs (53%) disagreed with the statement that the school has sufficient laboratory equipment while 27% agreed with it. Furthermore, 53% of the HODs agreed and 47% strongly agreed that schools have qualified Biology teachers.

**ii. School support**

Table 12: Participants' response frequencies on schools support

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
Classrooms are available for learners to study after school.	Freq.	69	0	0	20	3	4	9	0	0	255	9	7	97	3	4
	%	15	0	0	4	20	27	2	0	0	57	60	47	22	20	27
Learners are called for counselling for not performing as expected.	Freq.	29	0	0	109	5	0	9	0	0	269	8	9	34	2	6
	%	6	0	0	24	33	0	2	0	0	60	53	60	8	13	40
The school offers remedial classes for learners who are underperforming.	Freq.	100	0	0	166	0	0	13	0	0	105	11	9	66	4	6
	%	22	0	0	37	0	0	3	0	0	23	73	60	15	27	40
The school reward learners who perform well in in their studies.	Freq.	24	0	0	55	0	0	11	0	0	149	10	8	211	5	7
	%	5	0	0	12	0	0	2	0	0	33	67	53	47	33	47
The school has a career and guidance day.	Freq.	72	0	0	67	0	0	15	0	0	215	11	9	81	4	6
	%	16	0	0	15	0	0	3	0	0	48	73	60	18	27	40
The teacher creates time to assist individual learners after school.	Freq.	57	0	0	194	9	9	22	0	0	109	5	6	68	1	0
	%	13	0	0	43	60	60	5	0	0	24	33	40	15	7	0

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.

The results in Table 12 show the response frequencies of the participants on schools' support. The results in Table 12 show that 57% of learners agreed that classrooms are available for the learners to study after school, 22% strongly agreed while 15% disagreed with the statement. More learners (60%) also agreed that learners are called for counselling for not performing as expected while 24% disagreed with the statement. The table also showed that more learners (47%) strongly agreed and 33% agreed that the schools reward learners who perform well academically. Furthermore, the table revealed that more learners (43%) disagreed with the statement that the teachers created time to assist individual learners after school and 24% agreed while 15% strongly agreed with the same statement.

The results in Table 12 also show that more teachers (60%) agreed that classrooms are available for learners to study after school, 20% strongly agreed while another 20% disagreed with the statement. The table also showed that more teachers (73%) agreed that the schools offer remedial classes for learners who are underperforming and 27% strongly agreed. More teachers (63%) also agreed that the schools reward learners who perform well academically while 33% strongly agreed. More teachers (60%) also disagreed that the teachers created time to assist individual learners after school while 33% agreed with the same statement.

The results in Table 12 further indicate that more HODs (47%) agreed that classrooms are available for the learners to study after school while 27% disagreed. The table also showed that majority of the HODs (60%) agreed while 40% strongly agreed that the schools offer remedial classes for learners who are underperforming. When asked whether the teachers create time to assist individual learners after school, majority of the HODs (60%) disagreed while 40% agreed.

### iii. School management and supervision

Table 13: Participants' response frequencies on school management and supervision

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
There is inadequate supervision of teachers' work by the principals and HODs.	Freq.	10	3	0	79	9	12	10	0	0	209	3	3	142	0	0
	%	2	20	0	18	60	80	2	0	0	46	20	20	32	0	0
The HODs conduct class visits at least once in a term.	Freq.	89	0	0	56	5	4	14	0	0	155	8	7	136	2	4
	%	20	0	0	12	33	27	3	0	0	34	53	47	30	13	27
The school management checks learners' workbooks (exercise books).	Freq.	56	0	0	209	5	5	21	0	0	87	7	5	77	3	5
	%	12	0	0	46	33	33	5	0	0	19	47	33	17	20	33
Learners who do not attend Biology classes are followed up.	Freq.	107	1	0	175	3	4	11	0	0	84	9	11	73	2	0
	%	24	7	0	39	20	27	2	0	0	19	60	73	16	13	0
The management do nothing with the learners who do not perform well.	Freq.	92	6	4	160	9	11	33	0	0	107	0	0	58	0	0
	%	20	40	27	36	60	73	7	0	0	24	0	0	13	0	0
The parents are called in when learners do not perform as expected.	Freq.	36	0	0	78	2	0	21	0	0	212	7	9	103	5	6
	%	8	0	0	17	13	0	5	0	0	47	47	60	23	33	40

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD.

The results in Table 13 show the participants' response frequencies on school management and supervision in the study area.

The results obtained show that more learners (46%) agreed that there is inadequate supervision of teachers' work by the supervisors (principals and HODs), and 32% of the learners strongly agreed with the statement. However, majority of the teachers (60%) and HODs (80%) disagreed with the same statement while only 18% of the learners disagreed.

The results also show that more learners (34%) agreed that the HODs conduct class visits and 30% strongly agreed. When asked about whether the school management checks the learners' workbooks, majority of the learners (46%) disagreed, 19% agreed while 17% strongly agreed with the statement. Further, more learners (47%) agreed and 23% strongly agreed while 17% disagreed that the parents are called in when learners do not perform as expected.

Furthermore, the results in Table 13 reveal that majority of the teachers (60%) and HODs (70%) disagreed with the statement that the management do nothing with the learners who do not perform well. In addition, 40% of the teachers and 27% of HODs strongly disagreed with the same statement. However, 24% of the learners agreed while 13% strongly agreed with the same statement that the management do nothing to the learners who do not perform well.

The results in Table 13 also reveal that 34% of the learners agreed that the HODs conduct class visits at least once in a term while 53% of the teacher and 47% of the HODs also agreed with the same statement. However, 33% of the teachers and 27% of the HODs disagreed with the statement.

**iv. School discipline**

Table 14: Participants' response frequencies on school discipline

Statement		SD			D			UD			A			SA		
		L	T	H	L	T	H	L	T	H	L	T	H	L	T	H
In this school, there are clear school rules and regulations.	Freq.	39	0	0	96	0	0	8	0	0	253	4	8	54	11	7
	%	9	0	0	21	0	0	2	0	0	56	27	53	12	73	47
Rules and regulations are displayed in every classroom.	Freq.	85	2	1	186	7	8	19	0	0	115	6	5	45	0	1
	%	19	13	7	41	47	53	4	0	0	26	40	33	10	0	7
Learners who misbehave are dealt with fairly and consistently.	Freq.	47	0	0	113	0	0	14	0	0	204	8	11	72	7	4
	%	10	0	0	25	0	0	3	0	0	45	53	73	16	47	27
The Principal and HODs help in maintaining discipline in the school.	Freq.	43	0	0	72	0	0	17	0	0	305	11	12	13	4	3
	%	10	0	0	16	0	0	4	0	0	68	73	80	3	27	20
The principal and teachers do not care about learners' indiscipline.	Freq.	111	6	7	191	9	8	11	0	0	86	0	0	51	0	0
	%	25	40	47	42	60	53	2	0	0	19	0	0	11	0	0
The school properties are vandalised.	Freq.	105	9	9	201	4	3	14	0	0	60	2	2	70	0	0
	%	23	60	60	45	27	20	3	0	0	13	13	13	16	0	0

Note: SD=Strongly Disagree, D=Disagree, UD=Undecided, A=Agree, SA=Strongly Agree, and L=Learner, T=Teacher, H=HOD



The results in Table 14 show the participants' response frequencies on school discipline in the study area.

The results in Table 14 reveal that more learners (56%) agreed that in the schools, there are school rules and regulations while 21% disagreed and 9% strongly disagreed with the statement. There are also more learners (41%) who disagreed that rules and regulations are displayed in the classrooms, 19% strongly disagreed while 26% agreed with the same statement. The table further showed that 68% of the learners agreed that the principals and HODs helped in maintaining discipline in the schools while 16% of them disagreed with the statement.

The results in Table 14 also reveal that 27% of the teachers agreed and 73% strongly agreed that the schools have clear rules and regulations. The table also showed that more (47%) teachers disagreed with the statement that rules and regulations are displayed in every classroom while 40% agreed. More teachers (73%) also agreed and 27% strongly agreed that the principals and HODs helped in maintaining discipline in the school.

In addition, the results in Table 14 show that 53% of the HODs agreed and 47% strongly agreed with the statement: In this school, there are clear rules and regulations. However, more HODs (53%) disagreed while 33% of them agreed that the rules and regulations are displayed in every classroom. The table also revealed that 80% of the HODs agreed and 20% strongly agreed that learners who misbehave are dealt with fairly and consistently.

### **4.3 Results from the interviews with teachers and HODs**

**Research question 2:** How do the Biology teachers and science HODs handle these factors in order to improve Grade 12 learners' performance in NSSCO Biology in the Khomas Educational Region?

The following are the findings from the interviews. The interview explored the Biology teachers and HODs' views on the strategies used by them to improve academic performance in Biology.

#### **4.3.1 Learners- based factors that affect learners' performance in NSSCO Biology in the Khomas Educational Region**

##### **i. Discipline among learners**

The respondents generally revealed that Grade 12 learners in the secondary schools lack discipline. Learners: are disobedient, do not study, and are not serious with their school work. This is what teacher B said:

*“I have seen it over a couple of years that it has tormented our performance due to the type of learners that we are having. Learners that do not follow orders and they do not know what time to study; learners that do not take their exams serious and even their preparatory mock exam”*

##### **ii. Learners' motivation and attitude towards school work**

The interview has also revealed that there is lack of motivation from home. There is need for parents to motivate their children in science subjects such as Biology. A teacher explained that:

*“It really does help a lot when kids are well motivated from home and are well resourced with certain extra resources that they may need. With that, we can try to improve here and there”* (Interview, Teacher B).

It was also noted during the interview that the Grade 12 learners’ lacks of commitment to school works often affect their performance in NSSCO level Biology examination. Learners bunk lessons, and also fail to do their homework. Teacher A said:

*“Sometimes learners are coming to school and you just notice that they have not even gone through what you discussed the previous day.... learners themselves do not show much commitment because at times, you give homework and the learners come back to school without doing the homework”*

In addition, learners also bring cell phones to school and use them during lessons instead of paying attention to the teacher during the lessons. As one teacher explained:

*“We really experience a lot of problems when it comes to these devices, because you will catch a learner for example; using a cell phone in the classroom texting, or perhaps during break, they are listening to music, and on social networks communicating with other people during the school hours when they were supposed to focus their concentration on the school activities”* (Interview, Teacher A).

Furthermore, one HOD also indicated that:

*“It is the learners’ commitment affecting their performance in Biology given the fact that most learners are not committed to their studies. For instance,*

*they are not coming to school; they are missing lessons; they are bunking lessons; they are not doing their homework” (Interview, HOD A).*

### **iii. Learners written work**

The interviews revealed that the way learners answer questions during the examination affects their performances. According to the HODs interviewed, learners’ works in Biology can be so untidy especially when they are drawing diagrams, making the works difficult to mark.

The HODs also revealed that learners fail to perform tasks that involve Mathematics. For example, learners do fail to plot graphs. As a result of this, the HOD suggested that there is need for teachers who are teaching Biology to have a Mathematics background so that they can assist the learners in understanding the Mathematics part of Biology.

**Research question 2:** How do the Biology teachers and science HODs handle these factors in order to improve Grade 12 learners’ performance in NSSCO Biology in the Khomas Educational Region?

#### **4.3.2 Strategies used by the Biology teachers and Science HODs to handle the learner-based factors in order to improve Grade 12 learners’ academic performance in NSSCO level Biology in the study area**

1. In order to persuade learners to commit to their school works, teachers have to talk to learners to enable them understand the consequences of their behaviour. This is what a teacher had to say:

*“Encourage them, motivate them mostly through speaking to them and just telling them the consequences of not being committed and I also give them*

*work in an attempt to keep them busy and focused on the subject” (Interview, Teacher A).*

2. In dealing with the learners who are not committed to their school works, the parents are called up on to talk to the learners. One HOD had this to say:

*“We call in the parents of those learners who are bunking classes and those ones that are not doing their assignments, just to talk to the parents so that parents can do their part and motivate those kids. At least we can work together as a team to yield good results” (Interview, HOD B).*

3. In an attempt to involve parents in their children’s education, teachers in the Khomas Educational Region call parents to meetings where they discuss the learners’ performances at the beginning of every school term. Steinberg (2006) had found that learners’ performances improve when parents are involved in their children’s education.

4. The application of school policies is also another way of dealing with learners who for example, bring cell phones to classes. According to this policy, if a learner is caught with a cell phone in the school premises, the phone will be confiscated and kept in the principal’s office. Teacher A said:

*“We have the cell phone policy in place, and it states that if a learner is caught with these devices not only cell phones, but any other, iPods and other stuffs during school hours, then the teacher must confiscate the device and kept it in the principal’s office in the safe and the learner can only get it back at the end of the term” (Interview, Teacher A).*

### **4.3.3 Teacher-based factors that affect learners' performance in NSSCO Biology in the Khomas Educational Region**

#### **i. Teachers' expectations**

The interviews revealed that teachers' failure to set up their own expectations affect learners' performance in Biology. A Biology teacher explained that:

*“There is no competition and there is nothing like if he got A's, 20 A's, I need to beat that and get 30 A's. There is nothing like that at our school. Lack of competition is one of the factors that is bringing our results down. Unlike the first few years when I came here when the school was performing mostly in the top ten, there were quite a lot of competitions among teachers”*

(Interview, Teacher B).

The teachers should indicate their expectations of what performance they want to get in the final examination. In this way, they will work hard to reach their targets. It can also work as a motivation strategy.

#### **ii. Teachers' work overload**

The study also found that Biology teachers are overloaded with work. This is what one teacher explained:

*“In the science field, we are overloaded; we have so many periods and one may teach from grade 8 to grade 12 and the content of the subject is also a lot”* (Interview, Teacher A).

The teacher further explained that such overload affects performance because teachers will only rush through the syllabus content in order to complete the syllabus while teaching for understanding is compromised. Again, this is what Teacher A said:

*“When the teacher is overloaded, he or she cannot concentrate on the important matters. Sometimes, they can even rush just to complete the syllabus and not necessarily putting in a lot of effort for learners to understand the content so that they will be able to answer the questions when asked in tests or examination”*

### **iii. Support for the teachers**

The interview further revealed that there is lack of support for the Biology teachers in Khomas Educational Region. The teachers do not attend training workshops on Biology and they do not have a platform to share ideas with other colleagues on how best to teach Biology. This is what a teacher said during the interview:

*“There are no meetings, and no trainings are held so that teachers are able to share information here and there.”* (Interview, Teacher B).

This lack of teacher support may lead to teachers lacking confidence in teaching certain topics in Biology.

### **iv. Teachers’ competences**

The interview revealed that teachers’ competences affect performance of Grade 12 learners in NSSCO level Biology. It was found that some teachers do not know how to interpret the Biology syllabus objectives. In addition, some of the teachers have problems with certain topics in Biology. This is what one HOD revealed:

*“There are some colleagues who cannot interpret the syllabus or cannot interpret the objectives the way they are supposed to be taught to the learners”.*

Furthermore, the HOD stated that:

*“You will find that there are colleagues who do not understand specific topics. They might understand but just to a certain extent, but cannot explain it well to the learners to understand it properly. As a result, some of them might even go to the extent of skipping some of the areas to be taught because they do not understand them”* (Interview, HOD A).

Furthermore a teacher expressed this sentiment:

*“I always have difficulty with the topic on genetics. Somehow, there are parts which I understand and there are parts where you get a question, you also get puzzled and cannot answer the question directly as a teacher”* (Teacher A).

#### **v. Teaching Methods**

The interviews revealed that certain teaching methods used by teachers do affect the performance of learners in Biology. Biology being a practical subject requires that the learners see the practicality of what they learn being applied in real life. Therefore, exposure to real life situations is critical because it benefits learners. A teacher stated:

*“learners need to see in reality how things are being done, because when they see, they won't forget and they will understand it better”* (Interview, Teacher A).

Teacher A further explained that, teachers should take learners out to places such as the Brewery where they will be able to see for example, how the enzymes are being utilised in the food industry. An enabling environment must be created in terms of instructional aids for the teachers' potentials to be utilized maximally (Akinfe, Olofinniyi and Fashiku, 2012).



In addition, the science terms and concepts may render challenge. The teachers need to teach learners on how to answer questions based on the action verbs used in the question papers. As one HOD submitted;

*I think it is the use of scientific words, Biological terms if I may put it that way. Biology is a science subject and when teachers are teaching Biology, they must stick to those scientific words because during markings, the markers are always looking for those scientific terms (HOD A.)*

#### **4.3.4 Strategies that the Biology teachers used to handle the teacher-based factors in order to improve Grade 12 learners' academic performance in NSSCO level Biology in the study area**

1. When it comes to teachers overloaded with lessons, they (Biology teachers) said that there is nothing that they can do because the teacher –learner ratio (30 learners per teacher) is being followed and therefore, they have to cope with the workload. This means that the teachers end up with more learners despite the teacher- learner ratio which is mostly on paper only while in reality it is not being followed. As a result teachers have to deal with the extra number of learners in their classrooms leading to work overload.

2. The interviews reveal that in order to deal with teacher's competency, the teachers link up with their professional colleagues in the neighbouring schools where they try and discuss on the subject matter even though, it is difficult to get the needed assistance sometimes. This is what Teacher A had to say:

*“To consult teachers from other schools who are teaching the same subject so they discuss how one can present a certain lesson” (Teacher A),*

3. Furthermore, teachers from those schools that are performing well are approached for advice and guidance for teachers who need help.

#### **4.3.5. School based factors that affect learners' performance in NSSCO Biology in the Khomas Educational Region**

##### **i. Resources**

The interview revealed that lack of resources in schools affects learners' performance in Biology. There is a lack of resources such as laboratories and laboratory equipment as well as other teaching aids. Teachers use their classroom for practical work: In the interview, one teacher submitted that:

*“We don't have proper laboratories, we are using the classrooms. Sometimes, the equipment is also not there, you just do for example, the practical (work), with the little equipment that are available”* (Interviews, Teacher A).

The schools that have laboratories experience problems with lack of equipment and chemicals in the laboratories and some equipment in the laboratory are broken down. HOD B explained that the equipment in the laboratory do not work properly for example, there are cases of taps and gas pipes leakages which constitute risk factors. These create difficulty for the teacher and learners to use the laboratories.

The schools' lack of resources has effects on teaching and learning. One of the teachers stated:

*“There are certain things that are being presented theoretically due to the fact that we don't have the resources for projecting the information and that affects the understanding of the kids because, it is just like we are forcing them to memorize without them using a bit of practical understanding to*

*enable the learners recall or retrieve the information they have learnt”*

(Interview, Teacher B).

The interview also revealed that there is lack of other resources such as references books for Biology. According to one of the teachers interviewed, the textbooks they have contain insufficient or out dated information.

## **ii. The Biology Syllabus**

The interviews revealed that the lengthy Biology syllabus affects the learners’ performance in NSSCO Biology. The result of the study also reveals that the long Biology content of the syllabus hinders learning of Biology. This is what HOD A had to say:

*The lengthy syllabus content of Biology also hinders the proper learning of the facts as the learners may find it difficult to memorize them given that they also have other subjects to study during the examination.*

It was indicated that as a result of the long syllabus content, it becomes difficult to complete the syllabus within the given time scheduled on the timetable.

## **iii. Classroom environment**

The interviews revealed that the Biology classroom environment does affect the Grade 12 learners’ performance in Biology. The classrooms are not inviting or motivating learners to learn. During the interview this is what Teacher B had to say:

*“The environment look dull and it is just like a gathering room where you just enter, do what you have to do and off you go. There is nothing interesting in that environment and this tends to psychologically affect capabilities of the brain”.* (Interview, Teacher B).

The learning environment should promote learning. It is the responsibility of the subject teachers to make their classroom inviting to learn.

**iv. Commitment from the school management**

The interview reveals that commitment from the school management affects the performance of learners in NSSCO Biology. They need to do class visit so that they can monitor the work of teachers. This is what one HOD had to say:

*“Commitment of management... head of department is supposed to monitor the progress of the teachers and department and how they teach because those teachers also need assistance somewhere, somehow in the process of teaching” (HOD A).*

**v. Overcrowded classroom**

The high number of learners to teacher ratio (43 per teacher) also affects the teachers' efficiency. The teachers find it difficult to attend to the individual learners who may need more attention. This is what one HOD had to say:

*“A teacher is forced to have more than 40 learners in a class (Biology), and one will not pay attention to each and every learner. For instance, my former Grade 12 learners were 43 in a class. It is a very big headache for the teacher to cover the syllabus, explain to enable the learners understand, and again attend to the practical (work); and the time is so limited” (Interview, HOD B).*

Due to the large number of learners in the class, the teacher is unable to give enough attention to the individual learners.

#### **4.3.6 Strategies used by the Biology teachers and Science HODs to handle the school-based factors in order to improve academic performance in NSSCO level Biology in the study area**

The interviews with teachers and HODs found that the following strategies were used by teachers and HODs in an attempt to improve the academic performance of learners in NSSCO level Biology in the Khomas Educational Region.

1. The study found that the Biology teachers of some schools having more laboratory chemicals assist others with critical needs. As a result, teachers look for assistance from the nearby school or other schools in the same cluster.
2. The interview also reveals that some Biology teachers and science HODs in the Khomas Educational Region improvise on the limited resources that are available and sometimes, they device their own teaching materials.
3. The interview reveals that in order to deal with the long Biology syllabus, the teachers resort to teaching afternoon classes and also during school holidays. The parents and guardians of the learners are sensitized about the benefits of the extra classes and urged to encourage their children to attend.

Furthermore, the Ministry of Education, Arts and Culture also organise some holiday classes for the learners, and the teachers make sure that their learners attend such classes.

#### **4.4 Discussion of the results**

The purpose of the current study was to identify learner-based, teacher-based and school-based factors affecting academic performance of Grade 12 learners in NSSCO level Biology in the Khomas Educational Region. The following is the

discussion of the identified factors and how the Biology teachers handle them in order to improve the learners' academic performance in NSSCO level Biology.

#### **4.4.1 Learner-based factors that affect Grade 12 learners' academic performance in NSSCO level Biology in the Khomas Educational Region**

The study participants were of the view that learners' lack of discipline is one of the learners-based factors affecting Grade 12 learners' academic performance in NSSCO level Biology in the study area. The data from the questionnaires revealed that learners bring and use cell phones at school and they are also disruptive during lessons. Such learners' indiscipline could have negative effect on their academic performances and hence, NSSCO level Biology. This result corroborates the report of Nyoroge and Nyabuto (2014) which indicated that indiscipline leads to poor academic performance. In this study, it was revealed that learners were disobedient to teachers, learners fail to do homework and they do not take their studies seriously. These are critical learners' behavioural problems that may lead to poor performance because a learner who does not respect the teachers is likely to avoid doing the class activities which is critical to their learning. Jackson (2009) also established that lack of learner discipline leads to poor performance. The author reported of learners who were uncontrollable and did not follow instructions in class. In addition, learners ignored work assigned to them and they did not show interest in their school work (Lebata & Mudau, 2014). However, Nyoroge and Nyabuto (2014) reported that insufficient learning materials, poor teacher-learner relationship as well as ignoring learners' complaints are some of the contributing factors to learners' indiscipline in school.

The study participants also indicated that lack of motivation from the learners affect academic performance in NSSCO level Biology. Abdurrahman and Garba (2014) also found that motivation has an effect on learners' performance. The authors articulated that learners who are highly motivated perform better than those who are lowly motivated (Abdurrahman & Garba, 2014). Learners in this study indicated that they require more teacher supervision to do their classwork, do not take their studies serious and they do not compete for best marks.

In this study, it was also indicated by the participants that the learners have poor study habit. The study participants indicated that learners studied mostly from the prescribed textbooks that they are provided with and they do not review the work done in the class. This finding concurs with the study by Ajayi (2012) who reported that learners' poor study habits and inadequate preparation for examination affect performance in Biology. Anwar (2013) also found that a high degree of relationship existed between academic performance and study habits of senior secondary learners. The author explained that learners with good study habits perform higher compared to those who have poor study habits (Anwar, 2013). It is important for learners to develop good study habits which includes readings from wide range of books because it may enhance better understanding of the subject matter which is good for academic performance.

The study participants also expressed that the Grade 12 learners in Khomas Educational Region lack commitment to school work. For example, learners come to school with cell-phones and use them during school hours. Yaghambe and Tshabangu (2013) had also reported lack of commitment to studies as a common practice among learners which affects performance. This lack of commitment can affect performance because learners spend less time doing their school work and less

time studying. When learners lose focus on the school work, it may lead to poor academic performance.

Furthermore, the participants also revealed that lack of skills by learners on how to answer questions affects their academic performance. For example, it was found that learners do not write neatly which makes it difficult for the markers to follow what some learners wrote and this leads to reduction or loss of marks. In addition, learners fail to do the mathematics part in the question paper, for instance, plotting graphs. This finding is supported by Lebata and Mudau (2014) who also found that learners have phobia for mathematics and they fail to give answers from the graphs given in the question papers during the examination.

#### **4.4.2 Teacher-based factors that affect Grade 12 learners' academic performance in NSSCO level Biology in Khomas Educational Region**

The study participants expressed that teachers' unknown expectations, high workload, lack of teachers' support, teachers' competency and teaching methods affect learners' academic performance in the study area.

Teachers' failure to indicate their expectations about their learners' performance affects Grade 12 learners' academic performance in NSSCO level Biology. In a similar study, Kimani, Kara and Njagi (2013) had also reported that setting performance targets affects learners' academic performance. For example, teachers who want their learners to get better marks do put in extra efforts and motivate their learners to work hard towards achieving their set target.

The high workload of the Biology teachers as noted in this study by the participants affects Grade 12 learners' academic performance in the study area. This finding concurs with that of Kimani et al. (2013) who also found that teachers' workload



affects academic achievement of secondary school learners. When teachers have more lessons to teach, they affect the teaching and learning process (Kimani et al., 2013). Teachers who are overloaded with lessons tend to rush over work in order to complete the syllabus and this process affects the quality of teaching and learning because the teachers will just teach the contents without giving high regard to learners' comprehension. Zimba, Mufune, Likando and February (2013), also found that when teachers were given heavy administrative work, it prevented them from effectively undertaking their teaching duties.

In addition, the participants expressed that lack of teachers' support in the teaching of Biology in Khomas Educational Region could affect teachers' confidence in teaching certain topics where they have limited knowledge. Teachers need a platform where they can share ideas on how to present Biology topics in their lessons. When teachers receive job performance support, it leads to teachers' effectiveness and also benefits the learners.

Furthermore, the study participants revealed that certain teaching methods used by NSSCO Biology teachers affect Grade 12 learners' academic performance in NSSCO level Biology. According to Akinfe et al. (2012), teaching methodology does promote learners' academic performance in Biology. Kimani et al. (2013) also indicated that instructional practices do make a difference in learners' performances. Using methods that involve learners actively in Biology lessons such as exposing learners to real life situations could increase learning. Taking out learners for excursions in places like Namibia Diaries will allow learners to have a deep understanding of some Biology concepts for example, enzymes and its uses in real

life. This will help in memory retention. Besides, the teachers believed that the learners can learn, and need to put more effort in their school work.

The study participants also expressed that the teachers' classroom practices affect academic performance of learners. For example, teachers rushed through when teaching the topics in order to complete the syllabus. Kimani et al. (2013) noted that classroom instructional practices do make a difference in learners' academic performance. For example, teachers asking follow up questions and allowing learners to ask questions help to engage the learners actively in the lessons.

#### **4.4.3 School-based factors that affect Grade 12 learners' academic performance in NSSCO level Biology in the Khomas Educational Region**

The current study participants has indicated that lack of teaching resources, long Biology syllabus, classroom environment, lack of commitment from the school management and overcrowded classes constitute the school-based factors affecting academic performance of learners in NSSCO level Biology in the study area.

The lack of teaching resources as revealed by the study participants affect Grade 12 learners' academic performance in NSSCO level Biology in the study area. This is supported in separate studies by Namupala (2013) and Stephanus (2008) where the authors reported that lack of teaching resources is a factor that affects learners' academic performance. Result from the questionnaire indicated that there are insufficient textbooks, insufficient laboratory equipment, as well as dysfunctional laboratories. Zimba,et al. (2013) reported that the lack of teaching aids in schools is a concern. This has an effect on learners' academic performance because teachers will not teach effectively. Schools with adequate resources perform better than those with inadequate resources (Mudulia, 2012).

Similar to the study's revelation that the large content of Biology syllabus also affects learners' academic performance in NSSCO level Biology in the study area, Dillion (2008) as cited in Lebata and Mudau (2014) also noted that Biology syllabus is overloaded with facts and that it is long. Kimani et al (2013) stated that the time that teachers took to complete the syllabus has an effect on academic achievement in secondary schools. Etsy (2005) as cited in Kimani et al. (2013) also found that teachers' inability to complete the syllabi contributes to low academic performance among learners. It is therefore, important that the Biology syllabus content is covered before the learners start examination because when the syllabus is covered, it gives learners confidence in the examination knowing that they have learned the content (Mukhwana, 2013).

On the finding that overcrowded classrooms affects learners' academic performance in NSSCO level Biology in the study area, Namupala (2013) and Stephanus (2008) has also separately reported over crowdedness in classrooms as a factor that affect learners' academic performance. Classes that are overcrowded leads to teachers making use of teacher-centred approach such as the lecture method which do not actively involve learners in the lessons (Dabo, 2015). It has been reported that teachers' provision of individualized attention to weak learners has an effect on academic achievement in secondary schools (Kimani et al., 2013). Epri, (2016) also observed that overcrowded classrooms lead to teachers unable to apply learner centred teaching methods where the individual learners may get better attention from the teacher. As a result, several learners do not actively participate in lessons and this affects their academic performance.

Furthermore, the lack of commitment from the school management as expressed by the study participants affect learners' academic performance in NSSCO level

Biology in the study area and it has also been reported elsewhere. For example, in a study on the factors affecting Grade 11 learners' performance in Mathematics as perceived by learners, teachers and principals in selected secondary schools in the Omusati education region, Stephanus (2008) found that some of the supervisors fail to perform their duty of conducting class visits. It was also reported that where the supervisors visit classes, they fail to give constructive feedback to the teachers which could help to improve teaching and classroom management (Stephanus, 2008). Leithwood, Louis, Anderson and Walstrom (2004) noted that of all the factors that contribute to what learners learn at school, leadership is second in strength only to classroom instruction. Providing instructional guidance is an important leadership practice which the school leadership should employ (Leithwood et al., 2004). Through class visits, the Principals and HODs will be able to assess teachers' works and provide professional development where necessary which in the long run will contribute positively to learners performance in Biology. This study also revealed that the school management helps in maintaining discipline in school, although school rules are not displayed in classrooms. However, it is important that school rules are displayed where the learners can see them and know the code of conduct expected of them while in the school.

There were however, some school-based factors expressed by the study participants which affect the learners' academic performance positively in the study area. For example, there is provision of learners' support services where underperforming learners are given learning counselling and good performing learners are given prizes. The school management also provided classrooms for learners to study after school. The study also found that learners' attendance of lessons was good. This concurs with Zimba et al. (2013) who reported that teachers did not experience a

higher degree of absenteeism in their classes. Given the advantage of learners' good school attendance, it should help in increasing learners performances where the other militating factors are adequately addressed.

#### **4.4.4 Strategies used by the Biology teachers and Science HODs to handle the factors in order to improve Grade 12 learners' academic performance in NSSCO level Biology in the Khomas Educational Region**

The study participants expressed that the common strategies used by the Biology teachers and science HODs to handle the learner-based factors affecting Grade 12 learners' academic performance in NSSCO level Biology in the study area include giving motivational talks, providing learning counselling services, and applying school policies to deal with indiscipline behaviours. According to Christiana (2009), learners need to be motivated in order to do better in their academic pursuit and it is the teachers and principals' responsibility to motivate the learners. Generally, learners need to see reasons why they are in school and why they are studying Biology in particular. In addition, the study has shown that in dealing with teacher-based factors, there is networking among the Biology teachers from different schools where the teachers shared ideas and get help from one another.

The participants were also of the view that the strategies used to deal with the school-based factors included, schools networking within the same clusters in order to share resources, organising after school classes, and improvising of the limited materials to support teaching and learning. This was also found by Lebata and Mudau (2014) who reported that in order to improve performance in Biology, teachers gave remedial classes, improvising and developing cluster system as well as use team teaching.

## **Chapter Five**

### **Summary, Conclusion and Recommendations**

#### **5.1 Introduction**

This chapter presents a summary, conclusion and recommendations based on the findings of the study.

#### **5.2 Summary of the study**

The research study investigated the factors that affect Grade 12 learners' academic performance in NSSCO level Biology in the Khomas Educational Region, Namibia.

The following research questions guided the study: 1) What are the learner-based, teacher-based and school-based factors affecting Grade 12 learners' performance in NSSCO level Biology in the Khomas Educational Region? 2) How do the Biology teachers handle these factors in order to improve Grade 12 learners' performance in the NSSCO level Biology in the Khomas Educational Region?

The research study was carried out in 15 senior secondary schools in the Khomas Educational Region. The sample included 450 Grade 12 learners studying NSSCO level Biology, 15 Biology teachers teaching the Grade 12 learners and 15 Science Heads of Department (HODs). These samples were selected using the random sampling method. Meanwhile, for the follow up interviews, two HODs and two Biology teachers were purposively selected based on their teaching experience (that is, they should have taught Grade 12 Biology for two and more years). The study used Questionnaires and Interview schedules to collect data. The quantitative data were analysed using descriptive statistics and presented as frequencies and percentages of the respondents while the qualitative data was analysed using the content analysis method and presented based on the themes that emerged.

Ethical conditions were considered before, during and after the collection of the data. For example, upon receipt of the ethical clearance letter and Letter of permission from the University of Namibia to carry out the research study, further permission to carry out the research study was sought from the Ministry of Education and obtained. These include permission from the permanent secretary and the director of education of the Khomas Educational Region. Permissions were also obtained from the principals of the senior secondary schools of which Grade 12 Biology learners, Biology teachers, and science HODs formed the study samples. The participants were informed of the purpose of the study and that their identities will be held anonymous and the information collected is also held confidential by keeping it away in a safe place. The participants were also informed that their participation in the study is voluntary and assured of their right to withdraw from the study at any point they wish to.

### **5.3 Summary of findings of the study**

The following is a summary of the major findings of the research study.

#### **5.3.1 Learners-based factors**

The study participants were of the opinion that the following affects academic performance of Grade 12 learners in NSSCO Biology:

- a) The learners' lack of discipline- the learners in the selected schools were disobedient to teachers, they fail to do homework, and they do not take their school works seriously.
- b) The Learners lack of commitment to their school works. For example, they bring and use cell phones during lessons instead of focusing on the school work.

c) The learners lack of skills on how to answer examination questions. For example, their written works are untidy and this results in reduction or no mark at all during examination.

### **5.3.2 Teacher-based factors**

The study participants expressed that the following affects academic performance of Grade 12 learners in NSSCO Biology:

a) Biology teachers' failure to make known of their expectations of learners' performances:

b) The Biology teachers are overloaded with work and this affects their effectiveness.

c) There is lack of support for the Biology teachers. Teachers needed more platforms to discuss Biology subject content.

d) The Biology teachers lack competency in certain topics of the NSSCO Biology syllabus content.

e) Certain teaching methodology used by the Biology teachers affects academic performance of learners in grade 12 NSSCO Biology. The teachers mostly used teacher-centred teaching method and do not expose Biology learners to real life situations. More teaching aids are needed for presenting Biology lesson.

### **5.3.3 School-based factors:**

The study participants also expressed that:

a) Insufficient teaching resources affect academic performance of Grade 12 learners in the study area.

b) The Biology syllabus content is too large for the teacher to conveniently cover before the NSSCO level examination and this affects learners' performances.



- c) The Biology classroom environment is not conducive to learning. There is lack of teaching aids on the wall, which makes the environment less attractive to learning.
- d) The study also found the problem of overcrowded classrooms and this can affect teachings and hence, academic performance of the Grade 12 learners.
- e) There is lack of commitment from the school management. They needed to do more class visits as well as provide teachers with teaching materials.

#### **5.3.4 Strategies employed to deal with the factors in order to improve Grade 12 learners' academic performance in NSSCO level Biology**

The study has revealed that the following strategies were used by Biology teachers and HODs in an attempt to improve Grade 12 learners' academic performance in NSSCO level Biology:

- a) The parents/guardians of learners who are not performing well or are misbehaving are invited to discuss the performance or attitude of the learner concerned with a view to addressing the shortcomings
- b) The teachers apply school policies to deal with learners' indiscipline problems
- c) The teachers talk to the learners to encourage and motivate them towards their study.
- d) The teachers utilize school cluster system where they can network and get assistance from their colleagues in other schools e.g for resources.
- e) The teachers do conduct afternoon classes for Biology in order to complete the Biology syllabus content.

#### **5.4 Conclusion**

The results of this study revealed that there are learner-based, teacher-based and school-based factors that affect the academic performance of Grade 12 learners in

NSSCO level Biology in the Khomas Educational Region. The learner-based factors affecting their performances in NSSCO Biology include learners' indiscipline, lack of commitment to school work, and lack of skills in answering questions. The learners need to change their behaviour and show commitment to the subject in order to improve their performances. The teacher-based factors affecting NSSCO Biology learners' performances include teachers' failure to set their expectations of learners' performance, teachers' poor competencies in teaching some topics in the Biology syllabus, and the teacher-centred teaching methods employed. More commitment from the teachers' side may improve the learners' academic performance in NSSCO Biology. In addition, the school-based factors affecting NSSCO Biology learners' performances are lack of resources such as the laboratories and laboratory equipment, lengthy Biology syllabus content, overcrowded classrooms and poor classroom environment as well as lack of commitment from the schools management. The schools' management need to provide their schools with the necessary support in order to improve the learners' performance in NSSCO.

Although, both the Biology teachers and science HODs indicated that they employed various strategies to manage the identified factors in order to improve the learners' academic performance in NSSCO Biology, there are other helpful measures that could still be explored. Therefore, both the learners, teachers and school management should review their operations in view of the current militating factors so that more energy and resources are spent on providing high quality teaching and learning which could lead to high academic performance of learners in NSSCO Biology.

### **5.5 Recommendations:**

Based on the results of the study, the researcher recommends the following:

#### **5.4.1 Learners:**

1. Learners' discipline- Principals and teachers should make sure that school rules are displayed in the classrooms and adhered to.
2. The learners should be encouraged to participate actively in the afternoon and holiday classes put in place to cover the workload of the NSSCO Biology syllabus.
3. The learners should be guided on how to answer questions in the examination.

#### **5.4.2 Teacher:**

1. There is need for the Biology teachers to attend capacity building workshops to improve their skills on the topics they could not teach competently.

#### **5.4.3 School:**

1. There is need to reduce the number of learners in the NSSCO Biology classes so that the teachers can adequately assist them and attend to their learning needs.
2. There is need to also reduce the Biology teachers' workload to enable them cope with the long syllabus' contents.
3. School management should explore external interventions in the provision of useful teaching and learning resources.

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## Appendix A



### ETHICAL CLEARANCE CERTIFICATE

**Ethical Clearance Reference Number: SEC/FOE/71/2014**

**Date: 27 October, 2014**

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:** FACTORS AFFECTING GRADE 12 LEARNERS' ACADEMIC PERFORMANCE IN THE NAMIBIA SENIOR SECONDARY CERTIFICATE ORDINARY LEVEL BIOLOGY IN THE KHOMAS EDUCATIONAL REGION, NAMIBIA

**Nature/Level of Project:** MASTERS

**Principal Researcher:** Nancy K. Muyoyeta (Student No: 9996567)

**Host Department & Faculty:** Department Mathematics, Science and Sports Education, Education

**Supervisors :** Dr. J. Abah (Main) (Co) Mr. D. Denuga

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.

A handwritten signature in black ink, appearing to read "I. Mapaura".

Prof. I. Mapaura  
UNAM Research Coordinator  
ON BEHALF OF UREC

## Appendix B

Tel: (+264 65) 253 422 / 251 930  
Fax: (+264 65) 253 934  
Website: www.unam.na



Private Bag 10796  
Windhoek, Katima Mulilo  
NAMIBIA

Inspiring minds & shaping the future

**KATIMA MULILO CAMPUS**

DEPARTMENT OF MATHEMATICS, SCIENCE AND SPORT EDUCATION

28<sup>th</sup> October, 2014

TO WHOM IT MAY CONCERN

**RE: RESEARCH PERMISSION LETTER**

This letter serves to inform that the student: Nancy K. Muyoyeta (Student number: 9996567) is a registered student in the Department of Mathematics, Science and Sport Education at the University of Namibia. Her research proposal was reviewed and successfully met the University of Namibia requirements.

1. The purpose of this letter is to kindly notify you that the student has been granted permission to carry out postgraduate studies research. The School of Post-graduate Studies has approved the research to be carried out by the student for purposes of fulfilling the requirements of the degree being pursued.
2. The proposal adheres to ethical principles.

Thank you so much in advance and many regards.

Yours truly,

Name of Main Supervisor: Dr. J. Abah

Signed: \_\_\_\_\_

Dr. C. N.S. Shalmemanya

Signed: \_\_\_\_\_

Director, School of Postgraduate Studies  
Tel: 2063523  
E-mail: [cshalmemanya@unam.na](mailto:cshalmemanya@unam.na)

## Appendix C



REPUBLIC OF NAMIBIA

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### MINISTRY OF EDUCATION

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Enquiries:	Mr C. Muchila	Private Bag 13186,
E-mail:	Cavin.Muchila@moe.gov.na	WINDHOEK
Tel:	+264 61 2933297	Namibia
Fax:	+264 61 2933922	

File no: 11/1/1

**Date: 04 February 2015**

**To:** Ms Nancy K. Muyoyeta  
P. O Box 65042  
Katutura, Windhoek

**Dear:** Ms Muyoyeta

**SUBJECT: PERMISSION TO CONDUCT A RESEARCH STUDY IN KHOMAS REGION**

Your correspondence regarding the subject above, seeking permission to conduct a research study in the schools of the Khomas Region has reference.

Kindly be informed that the Ministry does not have any objection to your request to conduct a research study at identified schools in the region concerned.

You are, however, kindly advised to contact the Regional Council Office, Directorate of Education, for authorisation to go into the schools and for proper information coordination.

Also take note that the research activities should not interfere with the normal school programmes. Participation by either teachers or learners should be on a voluntary basis. Should you involve minors in your research activities, consent for participation should first be obtained from the parents/guardians of the minor(s).

By copy of this letter the Regional Education Director is made aware of your request.

Sincerely yours

  
.....  
Mr. Alfred Ilukena  
**PERMANENT SECRETARY**  
cc: Director of Education: Khomas



All official correspondence must be addressed to the Permanent Secretary

## Appendix D

Ms Nancy K. Muyoyeta  
P.O Box 65042, Katutura  
Cell No. 0812125389  
30 January 2015

The Permanent Secretary  
Ministry of Education  
Private Bag 13186  
Windhoek  
Republic of Namibia

### **Request For Permission To Conduct Research In Senior Secondary Schools**

Dear Sir

I am a student from the University of Namibia, studying towards a Master of Education (Science Education) degree. As part of the requirement for the completion of the Master of Education (Science Education) Degree, students are required to conduct research. Thus, I intend to research on the following topic: **Factors affecting grade 12 learners' academic performance in NSSCO Biology in the Khomas Educational Region.**

I am therefore hereby request permission from your office to conduct research in the Senior Secondary Schools in Khomas Educational Region.

Please find attached a copy of the Ethical clearance letter, as well as a letter of permission to conduct research from the University of Namibia.

Thank you for your consideration in this matter.

Yours sincerely

Nancy K. Muyoyeta

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## Appendix E



REPUBLIC OF NAMIBIA

**KHOMAS REGIONAL COUNCIL  
DIRECTORATE OF EDUCATION**

Tel: [09 264 61] 293 9411

Fax: [09 264 61] 231 367/248 251

File No: 12/3/10/1

Private Bag 13236

WINDHOEK

16 February 2015

Ms Nancy K. Muyoyeta  
P.O. Box 65042  
Katutura

### REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN KHOMAS SENIOR SECONDARY SCHOOLS

Your letter dated 10 February 2015 on the above topic is hereby acknowledged.

Your request to do research in the Senior Secondary Schools in Khomas Region about "Factors affecting Grade 12 learners' academic performance in NSSCO Biology" is approved with the following conditions:

- ❖ The Principals of the selected schools to be visited must be contacted in advance and agreement should be reached between you and the principal.
- ❖ The school programme should not be interrupted.
- ❖ Learners/Teachers who will take part in this exercise will do so voluntarily.
- ❖ Khomas Education Directorate should be provided with a final copy of your findings.

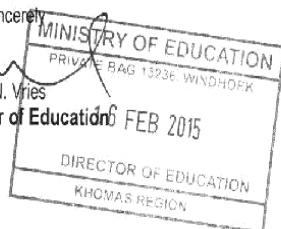
You are advised to approach the Principal and School Governing Body of Private Institutions for appropriate approval.

I wish you success in your research.

Yours sincerely,

Gerard N. Vries

Director of Education





## Appendix F

Ms Nancy K. Muyoyeta

P.O Box 65042

Katutura

10 February 2015

The Director

Khomas Regional Council

Directorate of Education

Private Bag 13236

Windhoek

### **Request For Permission To Conduct A Research In Khomas Senior Secondary Schools**

Dear Sir

I am a student from the University of Namibia, studying towards a Master of Education (Science Education). As part of the requirement for the completion of the Master of Education (Science Education) Degree, students are required to conduct a research study. I intend to research on the following topic: **Factors affecting grade 12 learners' academic performance in NSSCO Biology in the Khomas Educational Region.**

I hereby request permission from your office to conduct a research study in the Senior Secondary Schools in the Khomas Educational Region. Meanwhile, permission to conduct a research study has been approved by the Education Permanent Secretary.

Please find attached the following copies: An approval letter from the Education Permanent Secretary, an Ethical clearance letter, as well as a letter of permission to conduct a research study from the University of Namibia.

Thank you for your consideration in this matter.

Yours sincerely,

Nancy K. Muyoyeta

\_\_\_\_\_

/ cell no: 0812125389

## Appendix G

### CONSENT LETTER

**Title of the Research Project:**

FACTORS AFFECTING GRADE 12 LEARNERS' ACADEMIC PERFORMANCE IN THE NAMIBIA SENIOR SECONDARY CERTIFICATE ORDINARY (NSSCO) LEVEL BIOLOGY IN THE KHOMAS EDUCATION REGION, NAMIBIA

**Name, position and contact address of Researcher:**

Nancy K. MUYOYETA, Master of Education (Science Education) (9996567) student at University of Namibia, Cell: 0812125389

**Participant:**

1. I confirm that I have understood the information given to me and had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason.
3. I agree to take part in the above study.
4. I agree to the interview being audio recorded.
5. I agree that my identity will be kept anonymous.

\_\_\_\_\_

Name of Participant

Date

Signature

\_\_\_\_\_

Name of Researcher

Date

Signature

## Appendix H

### Questionnaire

#### Survey Questionnaire (*HODs, Teachers and Learners*)

The purpose of this research study is to determine the extent to which school-related factors, teacher-related and learner-related factors affect learners' academic performance in Namibia Senior Secondary Certificate Ordinary (NSSCO) level Biology and to try and find strategies on how to deal with such factors in order to improve the learners' performance.

The information that you will provide will only be used for the research purposes. The information will be kept confidentially in a safe place, therefore, please be as honest as possible

#### THE FACTORS AFFECTING LEARNERS' PERFORMANCE QUESTIONNAIRE for HODs, TEACHERS AND LEARNERS

##### A. BACKGROUND INFORMATION:

Put a cross (X) in the correct box:

1. Gender: a) Male [     ]    b) Female [     ]
2. Position in School: a) HOD [     ]    b) Teaching staff [     ]    c) Learner [     ]
3. Teaching experience in Biology: a) 0 – 1 yr [     ]    b) 2 - 3 yrs [     ]  
c) 4 and more yr [     ]

##### B. LEARNERS RELATED FACTORS:

To what extent do you agree or disagree with the following statements. SD=Strongly Disagree; D=Disagree; U=Undecided; A=Agree; SA=Strongly Agree. **Indicate with a cross (X) in the appropriate space.**

<i>A. Learners' Motivation</i>					
Statement	S D	D	U D	A	S A
1. Learners need constant teacher's supervision to do the class work.					
2. Learners study Biology beyond what they learn in the class.					
3. Learners compete for best marks in the tests.					
4. Learners actively participate in Biology lessons.					
5. Learners are confident that they will pass Biology.					
6. Learners are not serious with their studies.					
<i>B. Study habits</i>					
7. Learners take notes/summaries during the lessons.					
8. Learners only use the prescribed Biology textbooks to study.					
9. Learners visit the library to do their assignments.					
10. Learners use past examination papers to study Biology.					
11. Learners attend the holiday classes organised.					
12. Learners review work done in the class everyday					
<i>C. Attendance</i>					
13. Learners come to school but skip Biology lessons.					
14. Learners who missed Biology lessons are disciplined accordingly.					
15. Learners missed Biology lessons with valid reasons.					
16. Learners arrive late for Biology lessons.					
17. Learners who are weak report for remedial classes.					
18. Learners do not turn up for holiday classes.					
<i>D. Discipline</i>					
19. Learners actively participate in Biology lessons.					
20. Learners use cellphones at school.					
21. Learners are disobedient to the teacher.					

22. Learners fail to complete assignment/homework given.					
23. Learners are disruptive during Biology lessons.					
24. Learners cooperate during groupwork in Biology lessons.					

### C. TEACHER- RELATED FACTORS

To what extent do you agree or disagree with the following statements. SD=Strongly Disagree; D=Disagree; U=Undecided; A=Agree; SA=Strongly Agree. **Indicate with a cross (X) in the appropriate space.**

<i>A. Lesson Attendance</i>					
Statements	S D	D	U D	A	S A
1. The teacher is absent at least once every week.					
2. The teacher comes late to the lesson at least once a week.					
3. Other school work makes the teacher to miss a whole Biology lessons.					
4. The teacher leaves the lesson to attend to other school related work.					
5. The teacher's attendance of lessons sets a good example to the learners.					
6. The teacher's attendance of after-school classes is satisfactory.					
<i>B. Motivation</i>					
7. The teacher believes that all learners can learn.					
8. The teacher usually encourages learners to learn.					
9. The teacher marks learners' tests/homework within a short period of time.					
10. The teacher puts extra effort in his/her work.					
11. Teacher presents lessons with confidence.					

12. The Biology classroom is visually attractive with materials on the wall.					
<i>C. Instructional strategies and methods used</i>					
13. Teaching materials are used to explain Biology content.					
14. The teacher asks questions to check on learners' understanding.					
15. Some topics are rushed through to complete the syllabus.					
16. More time is spent by teacher talking while the learners sit and listen.					
17. Learners work cooperatively in groups.					
18. Adequate assessment tasks e.g tests, are given to the learners.					
<i>D. Classroom interactions</i>					
19. The teacher creates time to listen to learners' ideas.					
20. Learners are afraid to ask questions in class.					
21. The teacher is friendly with the learners.					
22. The teacher treats learners with respect.					
23. Learners help each other to learn.					
24. Learners laugh at others when they ask questions.					

### C. SCHOOL- BASED FACTORS

To what extent do you agree or disagree with the following statements. SD=Strongly Disagree; D=Disagree; U=Undecided; A=Agree; SA=Strongly Agree. **Indicate with a cross (X) in the appropriate space.**

<i>A. Availability of resources</i>					
Statements	SD	D	UD	A	SA
1. The school has enough Biology textbooks for each learner.					

2. The school has sufficient laboratory equipment.					
3. The school has a functional science laboratory.					
4. The classroom for Biology is overcrowded.					
5. There is lack of Biology references books for learners and teachers.					
6. The school has a qualified Biology teacher.					
<i>B. Learners' support available</i>					
7. Classrooms are available for learners to study after school.					
8. Learners are called for counselling for not performing as expected.					
9. The school offers remedial classes for learners who are underperforming.					
10. The school reward learners who perform well in school.					
11. The school has a career and guidance day.					
12. The teacher has time to assist individual learners after school.					
<i>C. Management and Supervision</i>					
13. There is inadequate supervision of teachers' work by the supervisors.					
14. The HODs conducts class visits at least once in a term.					
15. The school management checks learners' workbooks (exercise books).					
16. Learners who do not attend Biology classes are followed up.					
17. The management do nothing with the learners who do not perform well.					
18. The parents are called in when learners do not perform as expected.					

<i>D. School discipline</i>					
19. In this school there are clear school rules and regulations.					
20. Rules and regulations are displayed in every classroom.					
21. Learners who misbehave are dealt with fairly and consistently.					
22. The Principal and HODs help in maintaining discipline in the school.					
23. The principal and teachers do not care about learners' indiscipline.					
24. The school properties are vandalised.					

**Thank you**



## Appendix I

### Interview Schedule for Biology teachers and Science HODs

#### Questions

##### Introduction

- 1) How long have you been teaching Biology?

##### Learner factors

- 2) In your experience as a (*Biology teacher*)/ (*Biology HOD*) what factors (as related to learners) negatively affect learners' academic performance in grade 12 NSSCO level Biology in Khomas educational region?
- 3) Explain how such factors affect learners' academic performance negatively?
- 4) How do you as a teacher deal with such factors as mentioned earlier in Question 2 in order to improve performance?

##### Teacher factors

- 5) Name and explain the factors (as related to the teachers) that negatively affect the academic performance of grade 12 learners in NSSCO level Biology in Khomas Educational Region?
- 6) How do you deal with such factors?

##### School factors

- 7) Furthermore, what factors (as related to the school) negatively affect grade12 learners' academic performance in NSSCO Biology?
- 8) As a Biology teacher how do you deal with such factors as mention in Question 7?

##### Conclusion

- 9) Last but not least, What would you suggest or recommend be done by **a) the learners, b) teachers and c) the school management** that would help improve grade 12 learners' academic performance in NSSCO level Biology in Khomas Education region?
- 10) Finally, is there anything that you would like to say or add?

**Thank You for your time**

## Appendix J

### Interview transcript for Teacher A

Researcher: Thank you for availing your time for this interview and I would like to start with the interview. E ee, the first question is: How long have you been teaching Biology in Khomas Education Region?

Teacher A: I have been teaching Biology for three years now think eee

Researcher: In your experience as a (*Biology teacher*) what factors (as related to learners) negatively affect their performance in grade 12 NSSCO level Biology in Khomas education region?

Teacher A: eeee I think eee the factors are very broad, one of them may be lack of commitment from the learners and also from the parents, because sometimes learners are coming to school and you just notice that they have not even gone through what you discussed the previous day. So somehow it shows that parents are somehow not involved in the their learners education, But learners themselves they also do not show much commitment because at times you give homeworks and then this homework they come back to school without doing this homework. And the other factors there are too many destructions, learners have access to cellphones, social networks and the most of their time is spend on this activities and therefore giving less time to the school work.

Researcher: Do they come to school with these devices?

Teacher A: Yes they do, and we experience really a lot of problems when it comes to these devices, because you ll catch a learner for example using a cell phone in the classroom or texting or perhaps even during break they are listening to music or they

are on social networks communicating with other people during the school hours when they were supposed to focus their concentration on the school activities.

Researcher: Okay, So coming to commitment, how do teachers and you as Biology teacher deal with this factor of learners lacking commitment? As a teacher, what are you doing about it?

Teacher A: Mostly what I do is to encourage them, motivate them ee mostly through speaking to them and just telling them the consequences of not being committed and I also give them work in an attempt to keep them busy and focused on the subject. But as I said sometimes this work is not being done at all unless if you do it together in the classroom.

Researcher: mmm Okay, What about the devices that they bring at school, especially during break time or they use them during classes, when you catch such a learner, what do you do?

Teacher A: We have the cellphone policy in place, and it states that if a learner is caught with these devices not only cellphones, but any other, ipads and other stuffs if the learner is caught using this during school hours then the teacher must confiscate it and then it will be kept in the principal's office in the safe and the learner can only get it at the end of the term. But it has not been so effective because there was an incidence whereby one of the learner's cellphone got lost between the teacher and the office and the that discouraged both the teacher and the teachers they are discouraged to confiscate the cellphones due to that incidence and the learners are also reluctant to hand in these devices because of the fear that it will get lost, though it is really a puzzle which we do not really know how we can overcome.

Researcher: Okay, mmm, I think we have touched most of the questions here at learner factors and you have mentioned the factors and how you as a teacher you are dealing with them so lets move to the teacher factors that can affect performance negatively.

Teacher A: Okay, so generally, especially teachers in the science field we are overloaded we have so many periods one may teach from grade eight (8) through out to grade twelve and the content of the subject is also a lot. I will attribute to this overloading to that it somehow it also affects the performance of the grade twelve learners because when the teacher is overloaded he or she cannot concentrate on the important matters. Sometimes they can even rush just to finish the syllabus to complete the syllabus and not necessarily putting in a lot of effort for learners to understand the content and that they will be able to answer the questions when asked in tests or the examination so that may result in the learner being negatively affected. The other thing maybe also the number of learners we are dealing with. Our classrooms are overcrowded to the point that we you don't really give much needed attention to individuals.

Researcher: What is that number you are talking about? On average?

Teacher A: We are talking about 35 to 38 learners per class. So, ya, that can really negatively affect the performance of learners because each learner is an individual and they need individual attention, but given the content and the number of learners its it is really being hindered, that it cannot be done successfully.

Researcher: mm, Is there any other teacher factor apart from overload?

Teacher A: Yes mmm, teacher's competency in the subject or in a certain topic of the subject can also affect performance of learners because a teacher might be very good

in one topic but not in the other and sometimes when you ask for assistance like from a colleague and this colleague is also having his extra load to do or to carry out, there is no much help.

Researcher: Coming to overload, is there anything that the teachers are doing when it comes to overloading of content or periods? Is there anything that teachers are doing? Or what can teachers do in that matter?

Teacher A: I really don't know what teachers can do because all you are given is your classes and periods that you have and there was also a concern I mean there is this concern of teacher ratio and so one cannot talk about recruiting an additional teacher, because you will be told that a teacher- learner ratio should be like that or maybe it is low. So I cannot really say what we can do about that.

Researcher: Coming to the competency suppose one has a problem with a certain topic, Is there anything that the school management can do about it or does?

Teacher A: Yes, the school management sometimes advice the teachers to consult other teachers from other schools who are teaching the same subject so that they can be assisted in a way that the teacher can go over to the other teacher and they discuss how one can present such a lesson, identifying the problem areas and then finding the solutions. The other thing also which can be done is calling in an expert in the subject. We have the clusters and we are always being told or advised to consult teachers in the clusters, but sometimes they are calling in the experts like those schools that are performing in the subject, they call in that subject teacher to just come and help the learners, but usually this as I said due to a lot of commitments teachers are having, most of the time it does not really work out.

Researcher: In your experience as a Biology teacher, is there any topic that you find challenging when it comes to teaching? Any specific topic?

Teacher A: Yes, I always have difficulty with the topic on genetics, ya, somehow there are parts which I understand and there are parts where you get a question you also get puzzled you cannot answer the question directly as a teacher.

Researcher: Okay, I understand. Let us move on to school factors. What factors as related to the school is negatively affecting grade twelve learners academic performance in Biology?

Teacher A: I would say proper facilities like a laboratory like we don't have a proper laboratories, we are using the classrooms. Sometimes the equipments are also not there, you just do for example with the practicals, we just do with the little which we have. Sometimes we try to improvise here and there but it is not that effective. The other thing maybe exposure. Learners are not exposed to things for example, we have this topic for example of how micro organisms can be used in food industries. I think learners need to be exposed to for example to even to be taken to Namibia Breweries to see how they are using this yeast in alcohol production or how they are using this bacteria in yoghurt production so they don't have that exposure so that they see in reality how things are being done, because when they see they won't forget and they will understand it better.

Researcher: So how to see lack of laboratory affecting performance? How does it affect learners' performance?

Teacher A: As I have mentioned, we have practicals to do and they are writing at the end of the year or I mean during every examination they are writing practical paper and if they are not exposed to this then it means they will have difficulty in

answering the questions and that may lead to failure. They can memorize but is not effective as if they were exposed to the practicals in reality.

Researcher: Is there any other school factor that you see affecting learners' performance.

Teacher A: May be just the interventions from the HODs and principals apart from the subject teacher. Somehow I think they can come in, in advising the teachers. How she can do things or where to improve. Those type of things.

Researcher: Okay, So what are teachers doing, because we have just mentioned lack of laboratory that means that lack of resources is a problem. What are you doing as a teacher when it comes to resources?

Teacher A: Some resources we create ourselves. I try to engage learners giving them a project where they have come up with a specific resource which we can use in the classroom and sometimes the teacher have to just go an extra mile to buy things because most of the time there is no funds which you can get immediately and buy what you want at that time, and you have to wait and wait until this money is availed so that you can buy chemicals or just an animal for example last time we had to view the lungs of a cow. So sometimes when the funds are not available you just use your own money and perhaps claim later. Sometimes if it is little money you don't even claim, you know its to the benefit of the Namibian child. Those are few things the teacher does.

Researcher: Is there money budgeted for Biology practicals?



Teacher A: Yea, every year, every department hands in their budget; they come up with the budget and submit it. Just approximately, but it is for the department, like for the science department and not necessarily Biology specifically.

Researcher: Last but not least, what would you suggest or recommend be done by the learners in order to improve academic performance?

Teacher A: Number one, the learners just need to make their education a priority and top priority, because what I see they are engaged in many things that education receives their least attention but if they make it a priority and other things comes later, they will succeed. And just having that enthusiasm and will to succeed. Because For example Biology is really a lot and the content is huge and one needs to work really hard, put in a lot of effort in order to cover this content. It is not something that you just do as long as you do you need to understand and you need to reason and many of our learners cannot really reason or express, go beyond what is in black and white, and they really need to do much to come up.

Researcher: What about the teachers?

Teacher A: Yes, teachers also have to do much. They have to prepare a lot, thoroughly, because nowadays there are lots of like videos on internet, surf teaching aids which one can access and that can help a person understand a certain topic. There are lots of things as I mentioned earlier you can also consult other teachers and sometimes this excuses of course people are overloaded they have lots of things to do but if you are really willing to help, you can find time maybe those 30 minutes or 20 minutes of your time to help out when you are called out to assist here and there.

Researcher: So we just have to go extra mile?

Teacher A: And to prepare thoroughly.

Respondent: Is there anything that the school management should do or you recommend or suggest for the school management in order to help improve learners' performance in Biology?

Teacher A: Yes, for example in terms of resource, the school management can approach some business entities for example to sponsor maybe the teaching aids or ya, or build a laboratory. That can be done with the help of outsiders if the school does not have such money to do that.

Researcher: Finally, Is there anything that you would like to say or add that was not mention and you would like us to know?

Teacher A: Perhaps just to mention that we all need to work together. For example, the teachers, the principals, the whole management of the school and the parents and then the learners must also bring in their part. So everybody just have to do their part in order to improve and to make sure the results of our grade twelve improves. So, everybody have to do their part. That's all.

Researcher: Thank you Ma'am for availing your time for this interview.

Teacher A: You are welcome.

The End

## Appendix K

### Interview transcript for Teacher B

Researcher: Thank you for availing your time for this interview. Let us start with the interview. First question is, for how long have you been teaching Biology?

Teacher B: For seven years now, exactly this year 2015

Researcher: In your experience as a Biology teacher what factors as related to the learners negatively affect learners' academic performance in grade 12 NSSCO level Biology in Khomas region

Teacher B: In my own experience as a Biology teacher, I have come across a few problems that I will describe as problems in terms of the availability of resources because I believe that Biology also is a kind of a practical subject. Whatever learners do they need to practice but though we have materials here and there but necessary equipment that we need the type of facilities that we have in terms of presenting our lessons is too theoretical. Kids need to see, learners need to see, some of topics need to be seen, they are more understandable when learners are more involved practically so I have seen that it is one of the thing that have affected even my performance with my subject personally. The lack of this type of material that are more tangible which can support in terms of the practical understanding of the theory that we present to them on a daily basis.

Researcher: Is there any other factor as related to learners? You know learner factors?

Teacher B: Maybe I would say other factor is also the lack of the parental involvement because certain subjects require a bit of motivation from home. Because

they are known in the society that like Biology is one of the subject known in the society that it is a very difficult subject so if it is one sided like if it is only the teacher that is motivating the kids without the involvement of the parents, I think that can hinder their ability to perform to their maximum ability. So I think the other factor, to my point of view, parental involvement, because it really do help a lot when kids are well motivated from home and are well resourced with certain extra resources that they may need so with that we can try to improve here and there.

Researcher: How do you as a teacher deal with this factor, for example lack of parental involvement in their studies?

Teacher B: So far what we do is we try to involve parents by means of calling them in if perhaps one or the child performs poorly all what we do is let them know of the performance of the child and then at least share our view over the result of performing as such which is telling them that we need their support in that regard. We do what is known as teacher-parent consultation each and every end of term or beginning of term, just to share with the parents as to the way how their kids are performing at school. We are trying by involving parents through meetings, to update them of the performance of the kids in terms of the subjects that we are offering at our school.

Researcher: Okay, about the resources, you referred to resources earlier as related to learners. How is that?

Teacher B: On the resources what I have seen in the couple of years back because we only received a bit of materials last year. Now in the past you will find that you want to teach kids about a certain topic and you find you find yourself just presenting it theoretically because there are no apparatus to be used for you to present it in a

practical way. So, those kinds of factors ended up affecting the performance of the kids. At this point of time we received few materials but this are more based on experiments, but there are topics that you need to show kids even how cell mitosis take place or let me say cell division takes place. They need to see a video of such process taking place, how cells divide or even reproduction, how cells unite or fertilization taking place. This certain things presenting them theoretically due to the fact that we don't have these type of resources for projecting this information affects the understanding of the kids because it is just like we are just forcing them to memorize without them using a little bit of practical understanding to be able to recall or retrieve this information they have learnt. So, lack of resources such as those has affected us in many ways.

Researcher: Let us move to teacher factors. Would you please name and explain some of the factors that are related to the teacher that negatively affect the academic performance of learners?

Teacher B: On teachers I will also name a few. It is more less like the learners. As teachers, I believe teachers need a bit of motivation. and For a teacher to be able to deliver the right message to the children, you need the right resources so, this is one of the factors that have affected the teaching part of the subject, because I remember last year we put in request on buying several resources, teacher resources that which we need to use to improve teaching in our classroom and today as we speak we have not received anything. So there are certain resources such as books that would like to buy which are more improved and advanced if I may say or having a lot of information or necessary information that you need to give to children but without those resources you try and depend on one type of resources which might not be enough or sufficient and on that also puts a lot of too much workload on us, because

for every little thing that you present due to lack of information you'll need to go out and make copies which is another manual work that is put on us. So I think still on the teacher factor, lack of these resources, because for a good prepared lesson you need very good resources or materials. And also the other factor that I would like to mention is the motivation. Teachers also need to be motivated. For a teacher to come to a class, you know, happy and ready to present a lesson, there must be some motivation. And this is the role of the management to be able to motivate the teachers, not in any way of monetary but different ways of motivation or even assistance in terms of meetings or certain workshops where teachers can be given even enough light in their subject and this is one thing I have seen in Khomas region which is mostly affected because Subject advisers don't even come forward to assist in that regard. Teachers just keep on going with the little they know by themselves. No meetings, no trainings are held so teachers are able to share information here and there. But the motivation part of it is the fact that there is nothing of such a nature of helping teachers in a way they can present their lessons.

Researcher: Okay. Would you describe for me a motivated learner, e e teacher I mean? A teacher who is motivated.

Teacher B: In my own way I would say, a motivated teacher is a teacher who is ready to inspire other people, a motivated teacher is a teacher that does not see any stumbling block in the way and a motivated teacher would be a teacher is ready to tackle any single problem type of problem that is in his or her way. And I will also say motivated teacher is a teacher that is hungry for results.

Researcher: Okay thank you, coming to motivation, some of the teachers may not be motivated, so as a teacher, how can you deal with that?

Teacher B: It is difficult to get to that point if I may start there for a teacher to be at level of not motivated, or is lack of motivated or not motivated or at all

Researcher: Lacking motivation

Teacher B: Lacking motivation, I think for those teachers that lack motivation, already we should be expecting trouble because if the teacher is not motivated they will come to class with that I don't care attitude. This is the type of teachers that tarnish the teaching profession as into a money-making job, where you just come in the morning and you do all what you have to do and or sit and you tell kids to do what they have to do and then you go back. So its not supposed to be like that. For a motivated teacher, you look at the teaching job as something that have to deal with inspiring the little mind. Not just looking at them and off you move on. So If there is lack of motivation then there is serious damages that might come forth.

Researcher: So, How do the school and am referring to the school management doing in that matter? How do the school motivate teachers?

Teacher B: I would say the school is trying, because we came up with a system of rewarding teachers. Those teachers that tend to perform in the top ten they get an award, they get a certificate and a bit of remuneration there, monetary type of award and which I think if it keeps on going it's a way to build motivation. And Motivation is not all about money as I said it is something to do with just somebody coming to appreciate what you are doing. Just that thing, is a driving factor that will keeps you going. If someone comes and recognise the hard work that you are putting in and the effort that you are putting in, that for me is more than any form of motivation. But the school and management so far has come up with such a strategy of awarding the

certificates and the monetary to teachers that are performing in the top ten that is now across external and internal examination. So, there is something in place.

Researcher: Okay, Lets move to school factors. What factors as related to school negatively affect grade 12 learners' academic performance in the NSSCO level Biology?

Teacher B: Based on the school, I would say disciplinary problems as one of the factors. Disciplinary problems, because if there is a serious thing that can damage the performance of the school is how well the children are disciplined. Because discipline as we say comes from within and that is something that is going to help our little children to be able to respect their subject, to be able to respect their education. Now on lacking that which I have seen is one of the factors that is seriously affecting our school. I have seen it over a couple of years that it has tormented our performance due to the type of learners that we are having. Learners that do not follow orders and learner that do not know what time to study, learners that do not take serious their exam or even their preparatory mock exam. So, that really on itself can damage the performance of the school, in my own view. Which is now the discipline. And also, I would say probably maybe the conduciveness of the environment is not conduce enough to be able to stimulate this performing habit in our learners and the environment itself, the classroom environment itself is not conducive for the purpose of improving performance, in my own view.

Researcher: Can you explain further on that.

Teacher B: Yes to elaborate further on that on that one I would say we lack a lot resources in our classrooms which is more into advancing our teaching or even the teaching and learning process itself because you go to other schools you will see that



they are well installed with projectors, monitors and everything. And these are things that improves the conduciveness of the classroom, the environment of the classroom itself. And also you go to certain schools there is no more this thing of chalkboards, they use whiteboards. This are things that make the environment itself to look different, so that part also, even the even , though makes the environment look dull its just like a gathering room where you just enter do what you have to do and off you go, there is no interesting in that environment. So it tends to psychologically affect capabilities of the brain.

Researcher: Okay. Is there any other school factor that you would like to mention?

Teacher B: I would say probably lack of competition. Because if there is competition within the school or among teachers since teachers are part of the school, I think that also can improve the performance of the school, Because where there is competition there is hunger for the result. But that is one thing that is not at our school. There is too much this thing of isolation. You just do what you have to do on your own. There is no competition and there is nothing like If he got A's, twenty A's, I need to beat that and get 30 A's. There is nothing like that at our school. Lack of competition is one of the factors that is bringing our results down. Unlike the first few years when I came here when the school was performing mostly in the top ten. There was quite a lot of competitions among teachers.

Researcher: So meaning that if there is no competition among teachers, so it affects learners?

Teacher B: Definitely it affects learners. Because competitiveness, this competitiveness between teachers can transfer to the learners. How competitive we are can even be seen by our kids because of the efforts we are putting in, because if I want to beat the

other teacher teaching the same subject as mine then I need to put more extra efforts. And the same thing is happening on the other teacher X as well. If X teacher is putting more extra effort by so doing definitely the results will go high. So the competitiveness that is among teachers can easily be transferred to the learners. And learners will benefit from that at the end of the day.

Researcher: Okay So, how do you deal with resources at your school, I mean lack of resources?

Teacher B: It's a very big challenge. It is very very big challenge that even in terms of books, you find that there are times that kids will not have enough books. And the e ee

Researcher: What type of books?

Teacher B: The modules that we use. You will find that there are times that kids may not have enough books because these are modules that we are using. And this one thing that I have been saying a lot also that this Biology modules are good type of resources to have but they are no longer much useful due to little information that they contain. So that is also a struggle on its own because even our book room is not well equipped with this certain books that we might need. The library also is not well equipped with these books or any form of resources that we might need that goes along to the laboratory facilities also. Good things are there but not everything that might cater for our needs at the moment. So resources wise we are still a little bit lacking in many ways.

Researcher: How do you make your class to be conducive for learning?

Teacher B: That's now where we try to go out of our way. We use posters if there is something that you need to illustrate to the learners to be able to see it, perhaps it is not in the books we use posters, we draw, we enlarge the diagrams on it, display it nicely, colourful to the kids just to get that to attract the interest into it. And always when presenting a lesson you try to go a little bit to real life situation to bring them on board for them to understand that this thing that we are talking about is just not subject based it is part of real life. By bringing certain factors from life outside school also make them engaged. Bringing certain pictures that portrays colourful pictures or diagrams of what the lesson is all about also keeps them engaged and also try to see to it that you present a well prepared lesson to them which might not bore them also keeps them engaged. So, by doing all this few little things keeps them there for them not to start looking or seeing or thinking other things beyond the subject. So you try to make the lesson more interesting by the type of aids that you prepare in the lesson, attractive, more attractive and more interesting to the eyes and also educational and the examples that are given interesting and educational more real life based, just to keep them engaged.

Researcher: Okay. Further, you mentioned earlier the discipline issue/problems, so what are you doing in your class to make sure you don't encounter such discipline.

Teacher B: Okay. That is, as Biologist we have this belief of evolving. Over time you evolve into a certain thing. So what I have seen as a way to curb discipline problems in my class is to talk to these kids in a way that they don't really hear from other classes. All what I do each and every day when they come to my class there are certain ground rules that I just installed to them. You don't come to class and then expect a teacher to tell you to keep quiet. You are coming to class for the purpose of teaching and learning. I just make them to understand as to the purpose as to why

they walked all the way from where they are to my class. Their understanding that has helped me a lot. And when in class, I managed to keep them focused in a way that whenever we are teaching, there is only one person that should be talking unless there is a question that is being asked, unless there is any participatory portion of time being given. So, they have mastered that ground rules and have managed to keep it strongly as such. So it have helped me a bit. There are few other that I have done, that is like talking to them more into like a parent, more advisory, more like counselling, touching to the most sensitive part that makes kids behave the way they are, because sometimes we tend to give a blind eye to certain areas that makes kids behave the way they are. As a teachers you need to identify or you need to be aware that these are different types of kids that are being put together with unique problems, different background and all sorts of problems that they might have. So touching that, becoming part of their lives make them understand you, make them accommodate you in their lives and I have really achieved that. I talk to them about their personal lifestyles and I talk to them about their future to come because mostly I deal with the grade 11 and 12 who are little bit matured in the school. So when you bring that picture to them of what life is lying ahead of them if they start messing it up here and making them understand that in actual sense what they are trying to do now is what will be their future. If you are trying to mess up now don't expect a well built future, that's exactly what is going to come. A well built life starts now. So talking to them real life situation has helped me able to have them on my side to avoid this disciplinary problem

Researcher: Okay. Right, last but not least, what would you suggest or recommend be done by the a) the learners, b) teachers and c) the school management that would

help improve grade 12 learners' academic performance. Lets us start with the learners. Suggestions

Teacher B: With the learners, my suggestion will be just an improvement on the discipline, because a disciplined child knows what is wrong and right. So, for wrong and right that means that type of child will know what time to study and what time to play. That is a driving factor also to performance. Managing time well is something I will attach to discipline for the learners. And for teachers I would really give a suggestion that I know is lacking at our school which is the competitiveness among the teachers, because I strongly believe if I don't want to be the teacher seen with a lot of Us, then that is competition already. If I don't want to be seen at the end of the year that it is this teacher with a lot of Us, already that is competition. So for me I feel that, my own suggestion will be competitiveness among teachers also will help. And for the school it is just the involvement of the entire management in assisting teachers in or maybe organising training or workshops that can improve the understanding of teachers in their subject line so that at least it can better the performance of the school.

Researcher: Okay, finally, Is there anything you would like to say or add on, maybe we at it left it out?

Teacher B: Maybe just to add a few would be eee Biology is so deceiving to a lot of our kids. They look at it as one of the most difficult subject, in actual sense it is one of the easiest subject because it is a subject that talking about your own being. It is a subject that talks about what is around you. So my view over that type of perception is something that is coming from home. It is the way how we are making these kids to believe which is the same way as how mathematics is looked at. It is the

way how we are bringing our kids. We are bringing in a way of looking at things as difficult, which I think is one of the factors that bring some of the limitations in our children. Rather, to tell them, if you were to give an image to the kids that this is one of the easiest thing, that's exactly what they will get, but if there are some mixed feeling into some certain subject, definitely they will also grow up knowing that this is difficult and this is not. I feel the way how we look at certain subject also is a contributing factor to the performance of our kids.

Researcher: Have you noticed of any topic that the learners have always perceived as difficult?

Teacher B: Yes, that's the nervous system and its one of the topic they just, no matter how much you drill and drill, they just feel like they are not getting it and it is the easiest one because that is what they do daily. It is what happens daily. We come across sharp objects, scary things, hot objects and cold things and so on and our body have to react. But them now trying to understand that one is one of the topic that I have seen just gets so difficult to get through, which is that nervous system.

Researcher: What about the teacher? Is there any topic that one feels that this is not the topic that you are best at?

Teacher B: To us teachers it is just, what I have seen according to my own experience is the most easiest topic become one of the topic that you do not want to teach, because they become like boring, you just want to pass through it. but now that tend to be the ones that the learners don't understand because you think its easy but its just easy to you and difficult to the learners. That's what I have seen with Biology. The easiest topics are the ones that I can say even for myself that I am fault

at not explaining in more detail because you think its easy but its easy to you but not to the learners.

Researcher: Thank you sir. Thank you for your time

Teacher B: Thank you madam.

The End

## Appendix L

### Interview transcript for HOD A

Researcher: Thank you for availing your time for this interview. I would like us to start with the interview. First question, for how long have you been the HOD for science which includes Biology?

HOD A: I have been Head Department for three years.

Researcher: Okay. Further, in your experience as a Biology HOD, what factors as related to learners negatively affect learners' academic performance in grade 12 NSSCO level Biology in Khomas education region?

HOD A: The main ones, I think they are only two that I identified so far. First one is learners' commitment, second one is the syllabus, the length of the syllabus, if I may put it that way.

Researcher: Okay, is that related to the learners? the syllabus?

HOD A: Yes,

Researcher: ya, Can you explain how such factors are affecting the performance

HOD A: First of all, its learners' commitment its affecting learners performance in Biology given the fact that if learners are not committed for instance they are not coming to school, they are missing lessons, they are bunking lessons, they are not doing their homework as a result they will not pass because teacher will not wait for kids that are not coming to school, they just proceed with those ones that are coming to school. And if the majority are not coming to school, then they will fail the exam because they will understand it better ones the teacher explain to them.



Researcher: What about the syllabus that you mentioned?

HOD A: The syllabus, I think the syllabus, the problem is that the syllabus of Biology is too long for the learners. I think the, mind you the learners have other five subjects that they have to study plus Biology. So as result, since the syllabus is too long, learners have to maybe master certain part of the syllabus then because they have to consider other subjects as well. So I think maybe the syllabus can be reviewed or something like that or then this might yield the performance of learners.

Researcher: As an HOD what are you doing or what strategy do you have, when it comes to learners' lack of commitment?

HOD A: What we are doing at the school level, we call in the parents of those ones bunking classes and those ones that are not doing their assignments, just to talk to parents so that parents can do their part and motivate those kids so at least we can work together as a team for them to yield good results.

Researcher: Okay. Alright lets move to teacher factors. Name and explain the factors that negatively affect the academic performance of learners in grade 12 Biology.

HOD A: Okay, the teachers' factors, its, number one, its interpretation of the syllabus. What do I mean by this is that there are some colleagues who cannot interpret the syllabus or cannot interpret the objectives the way they are supposed to be taught to the learners. So, if for instance the teacher failed to interpret a certain objective to the learners, obviously the learners, obviously the objective of the syllabus will not be reached as a result when the questions will comes in the exam, related to that specific objective, the kids will fail because it was not properly interpreted to them. Then the second one its knowledge about a specific topic. This one is most related to the objectives that I have mentioned. You will find that there

are colleagues who do not understand a specific topics. They might understand but just to a certain extent, but cannot explain it well to the learners to understand it better. As a result some of them might even go to the extent of skipping some of the things because they do not understand it but then it will be assessed in the final exam. So if the questions happened to be asked related to that topic then the kids will not perform as they are supposed to perform. Okay, and the other thing, I think is the use of scientific words, Biological terms if I may put it that way. Biology is a science subject and when teachers are teaching Biology, they must stick to those scientific words because during markings, the markers are always looking for those scientific terms. And they are not there you use explain something in your own words using your own English but as long as those scientific words are not there, then it will not be marked correct. So, it is also a problem.

Researcher: Okay, Anything further on that?

HOD A: Am amam,

Researcher: Alright, now having mentioned those factors, as an HOD what can you do about it or what are you doing about that?

HOD A: Okay, what I normally do once I visit a colleague because I normally do class visits twice per term. So once I realise that the teacher has a problem in a specific area I call assistance from the regional office that is now the educational officer responsible for the Biology subject. That's what I normally do. And I also ask teachers if they have problems on specific and maybe they need training or workshop so that we can even come forward then I will rehearse with the regional office.

Researcher: Alright. Lets move to the school related factors. What factors as related to the school negatively affect the performance of grade 12 Biology?

HOD A: Okay, There are only two factors that am gonna think of. First one is resources and then the second one is the commitment from the management side of the school. Resources, what do I mean by resources? Sometimes the school might fail to avail funds to buy chemicals that are needed to do experiments. And you know, some kids they learn very well through experiments, so now if there is a shortage of such chemicals then the teacher cannot carry out such experiments. And that might affect those who learn best by seen how things are done. So that's one of the factors that I can think of. Then the other one the commitment of management: what do I mean by this is that for instance if the head of department is failing to Head of Department is supposed to monitor the progress of the teachers and department, how they teach because those teachers also need assistance somewhere somehow in the process of teaching.

Researcher: So, Do teachers come forward to ask for assistance from HODs?

HOD A: Normally they don't do that. Normally they don't do that. I think its mostly the head of department who is supposed to, but sometimes they can come forward in case for instance what I said they want to buy certain chemicals and they feel like they need to do that experiment they can come forward and ask for assistance. And sometimes you as head of department you can forward such information to the principal and if nothing is done it's a problem.

Researcher: Alright, okay, so coming to the strategies in dealing with these factors, how do you go about it when it comes to resources as HOD?

HOD A: E ee As a head of department what I normally advise my teachers is to go, in case we did not get the funds from the school to buy those chemicals, I always

advise them to go and get the materials from nearby schools and from their friends who are teaching the same subject in different schools. That's what we normally do.

Researcher: Okay. Thank you. Last but not least, what would you suggest or recommend be done by the learners, by the teachers and school management that would help improve grade 12 learners academic performance in NSSCO level Biology in Khomas Education region? Let us start with the learners. What would you suggest?

HOD A: I would suggest that the learners must be committed. They must be always at school, if for instance maybe a specific teacher want to do like afternoon lessons they must just like try to make sure they come to school so that at least the teacher will be able to cover the syllabus on time, like what I heard is that the syllabus for Biology is too long. So they must just always make sure they are always at school when asked to do so.

Researcher: Okay, coming to the content of Biology being too much, what are the school doing about it in order to cover the content.

HOD A: Just like what I indicated that our school, we always organise afternoon lessons but now the problem is that now the learners themselves that are not showing up sometimes. So, and the school is trying, as a school we are trying our level best because we are going extra mile organising those afternoon lessons but sometimes the kids are not showing up. Maybe the parents must also be involved just to ensure that the kids come to school even if it is in the afternoon. Then it's a challenge to some of the kids because there are those kids that are, remember those kids are coming from different background. Some of them may not have enough money to

come in the afternoon or sometimes they might not come because of hunger and so on stuff like that.

Researcher: Okay. Lets move to suggestions for teachers that will help improve.

HOD A: Teachers, what they must do, they must just try to be honest when they are teaching Biology. Number one, if there is a topic that they don't understand they must not, they must feel free to come to the head of the department so that at least I will contact the regional office then they will be given workshops or training about that specific topic. That is number one. Then second one, they must just try and stick to those scientific words that are indicated in the syllabus when they are teaching and then number two they must try to focus to those key words. There are some key words in Biology that at least must be understood by the learners. For instance if the question says describe, explain, list, they need to know those words they are very important.

Researcher: Okay. Alright. Coming to the school. School management.

HOD A: School management, that is now our part, so us what we must do number one, we must ensure that we do class visits like as I have mentioned so that we will be able to find out the weaknesses of those teachers as far as teaching Biology is concerned so that you can see where we can help. Although some of us as head of department even if I don't teach Biology, so what I can do at least I can even ask, if I cannot ask regional office because the regional office is not a solution. There are nearby school or there are schools that are performing well in Biology, so call in those colleagues so that they can assist the teachers under you department so that at least they will improve their results in Biology.

Researcher: Okay. Finally, is there anything that you would like to say or add that you feel we did not include it here that would of help to this study?

HOD A: Mmmm maybe just to add one point as far as the syllabus is concerned. Cant the curriculum developers review the syllabus for grade 12 because I feel its too long for the learners, because the thing is that it might also affect the performance of other subjects because you find that when the exam is approaching, instead of the kid to treat all the subjects equally like concentrate on all subjects they will just focus mostly on Biology because they think it is too long. As a result, they may focus on Biology as I already said it is too long and they will end up failing that subject where they put more emphasis on and then they will fail the other one because they did not give enough attention.

Researcher: Okay. Alright, thank you sir for your time.

HOD A: You are welcome ma'am.

Researcher: We are done with the interview.

The End.

## **Appendix M**

### **Interview transcript for HOD B**

Researcher: How long have you been a Science HOD? I mean Biology

HOD B: I've been an HOD for Science for four years.

Researcher: In your experience as a Science or Biology HOD, what factors as related to the learners negatively affect learners' academic performance in Grade 12 NSSCO level Biology in Khomas education region?

HOD B: Factors that affect learners: One of the common one is the numerical part, when you are given the question and you have to analyse and draw a graph, those is one of them mostly affecting the learners. As you know Maths is not a friendly subject, and the other thing is Biology maybe just to say it in general it's a subject where you need everything that you do should be precise. So, it is time consuming. IF I learners factors. Am trying to say here, the learners like to do rough work while in Biology you must be accurate. In for instance, most of them you will find them drawing Biological drawings with the ink or you know those things that will avoid them getting marks that they are supposed to be getting. Yea, those are the common ones.

Researcher: So with the numbers, you mentioned about numbers can you explain further on that?

HOD B: Let us look at the paper, the practical, the alternative to practical paper where you are given the situation with the numbers. You need to calculate maybe the average or you need to draw some graphs and need to do the conclusions, so this can

only be done properly if somebody is well prepared to handle numeracy. So the numerical part, that paper is mostly affected.

Researcher: And the rough work that the learners do, how does that affect the learners' performance?

HOD B: The rough work, you know, if you are dealing for instance the Biological drawings, you need to do with the calculations, the magnifications, all these things. So, there are also rules that the marker should follow, that the line should be normal and not faulty and all these things. If the works are not accurate and they are not neat, they will lose marks at almost each and every point of the question. And this will affect their gradings at the end of the day.

Researcher: You mentioned those two factors. So, as an HOD how do you deal with such factors so that you can improve performance in your school?

HOD B: Am in a lucky position because my Biology teachers most of them the second subject is Mathematics. So they are teaching Mathematics and Biology at the same time. So its even easy for them because normally I relate, I tell my Maths teachers to do their part to teach that part of graphs and the numerical analysis as early as possible before the Biology content comes to that extent.

Researcher: What about the rough work?

HOD B: The rough work is also, you know, the rough work is mostly drawings and this starts, the graphs. This can be tackled; the maths teacher all they can do is by letting them draw more graphs. Otherwise, I will have to tell my Biology teachers to just come up with more lessons on drawings and how to, just to show them the criteria of marking such topics so that they will sensitised.



Researcher: Let us move to teacher factors. Could you please name the factors that negatively affect academic performance in Biology as related to teachers?

HOD B: Let me get this one right. We are only dealing with ordinary level, right?

Researcher: Yes only ordinary level.

HOD B: Okay. The teachers' factors especially in Khomas region as am speaking generally most schools do have laboratories but are not well equipped. Not even at the standard. If I have to give my situations, I got, my labs were upgraded a year before last year and just before being handed to the school everything was leaking. I could not use the gas to burn as fast as possible so the laboratory part needs a very big improvement from the Ministry. That's the very big concern and the other thing also, we are facing this thing of, you know, the teacher –learner ratio is no longer existing because of lack of teachers and maybe lack of schools, not enough schools. So a teacher is forced to have more than 40 learners in a class Biology, and one will not pay attention to each and every learner. For instance my former grade 12 learners were 43 in a class. It is a very big headache for the teacher to cover and to explain and show again the practicals and the time is so limited. Those are the two main ones that I can think of right now.

Researcher: How do you deal with such factors, the lab not, let us start with the lab not well equipped, as an HOD.

HOD B: With the labs: What normally what I do, I link up with nearby schools, clustering so that I because what you normally do not have is what they have. So, I link up with the schools and we collaborate and help each other. If I want to do this topic and let say they have the like Jan Jonker they have good structure of modelling like the circulatory system and all these things I arrange in that a way that my

learners this week after school they go there and cover with their learners also my teachers so that both benefits and since that on the chemical part am having a lot of chemicals. When they need that they can come to my school and then the teacher share and also gather the learners. So that's the only way, or otherwise I use the chance when during the examinations there is an order that just come for the examinations so that's the one I exploit. I tell them straight that I need more of this and that and that.

Researcher: Ordering of chemicals?

HOD B: Yes chemicals for exam. We are given I think is N\$5 000, limit on Biology by the Ministry. But mine can go as far as N\$19 000 and go and explain. I always explain and they give me what I want. So that's what I do.

Researcher: So There is support from the regional office?

HOD B: The support is there but am not sure whether most people are getting the same support because if you stand up and ask, they will give you. But not all of us are going there. Yea that is why am always getting the support. Support is there.

Researcher: How do teachers deal with big classes?

HOD B: The big classrooms?

Researcher: Yes

HOD B: This is the unfortunate part. what we do, like I start with the time-tabling. The time-tabling I allocate two teachers so that at least two or three teachers so that at least that time I have two or three teachers for Biology and the learners split and that only if you have enough number of teachers in the school. Otherwise what I

have been doing all these years you just have to compromise on the Saturdays and the after schools so that you are done with these. You can call in a certain group or otherwise just call them in all of them and you do a certain practical. Yea, mostly more Saturdays and when I am drawing up the compensatory teaching (afternoon school) I allocate more, most of the lessons to Biology for the week.

Researcher: Why? (ie allocate more lessons for Biology)

HOD B: Because its, Biology it is something that cannot be taught like mathematics. it is content needs more time as simple as it needs more time and it is working.

Researcher: Okay, do learners turn up for after school classes?

HOD B: Yes the learners turn but in every group there will always be one of those two or three that do not turn up. But I ve seen the moment you make an effort and alert the parents they will support you. Even in the holidays they will support you.

Researcher: Okay. Next question, its on school related factors. Can you mention those factors that are related to the school that have an effect on the learners' performance?

HOD B: School factors?

Researcher: Yes.

HOD B: The factors that, because most of the factors we can do nothing unless the ministry acts. But let us look at them. The school related factors, you know, the field of studies is something that you cannot control. But there are so many learners that are so good in Biology but they are doing poorly sometimes poorly in Mathematics, so these learners are forced to go to the field of, let us say economics or wherever

they are doing better because we do not have that flexibility between the field like the choices to have the extra although a learner can have an extra second subject. So Field of studies also, okay is also one of the challenges, you cannot really get all the best learners that you want. That's one thing. The other thing is only that I do not have one of my documents, when you are doing the timetabling, the timetabling does not really allow, it treats most of the subjects equally but there are subjects that need more time. So it does not really allow teachers to do more especially on Biology. I have seen, there are schools, private schools they have a lab assistant somebody a teacher just there you just refer your learners to go as fast as possible. Yours is just to teach. These are the things maybe if we could help the Ministry to improve.

Researcher: So you think Biology needs more time on the timetable?

HOD B: Biology needs more time on the timetable. Because you don't just teach facts you explain and prove the facts and give the counter examples.

Researcher: Is the explanations that need to be done or is it the content that is too much?

HOD B: First the content is just a lot. Because if you compare let us say Mathematics and Biology at the grade 11 and 12 level, a teacher who is teaching at a moderate pace in Mathematics might finish already in April Grade 12 the syllabus is done but Biology you will be very lucky to finish in August. Because there is also this could be the gap maybe, am seeing that Life Science content is changed to more of Biology content. There is a gap a bit there from grade 10 to 11. So learners are not really well aware of what is going on in Biology. So you need to explain more and bring them to their level.

Researcher: The background?

HOD B: The background is not adequate.

Researcher: Okay.

HOD B: The other one is the teachers. You know it is very rare to have a teacher with experience nowadays, because like for the past four years I had three teachers, four teachers for Biology. A teacher that I have is his first year although is doing very well. So the teachers are going here and there.

Researcher: They come and go?

HOD B: They come and go. It is not their fault. But we are in a developing country where by these vocational training centres and so they are so upgrading and grabbing our teachers from the system. Biology and science teachers they are going every year. You hardly keep somebody. So that is a very big one.

Researcher: So how does that affect:

HOD B: This can affect the continuity. This learners they are just in grade 11 and then, it affects them so much to have a teacher in grade 11 and again another teacher and if this one leaves again another teaching style different teaching style. They are not so one to deal with these changes. So it affects them totally.

Researcher: So meaning that the teacher that teaches the kids in grade 11 have to go with them to grade 12?

HOD B: Ya that is my system. You take your learners then other one, If I have two Biology teachers the other one starts down again, eleven this year you are grade 12 . But if this teacher happens to go then we will be forced to put a new teacher again and again same teaching. And also I think also the qualified teacher also because

most of the time I've people that did, I don't know exactly if it is Biochem or pure science that are teaching because you hardly find a Biology person by qualification.

Researcher: Okay, so the teachers that you get are not qualified teachers?

HOD B: They qualified but they are not qualified teachers.

Researcher: Okay, how do you deal with such factors as the one you have just mentioned the one of teachers coming and going in order to improve performance in Biology?

HOD B: With the rapid change of teachers, coming and going you can hardly do something. So what you can do here is to keep a close check, control what is happening. So you monitor what is, you monitor the pace of the learner, let me say the scheme of work so that shall there be any shortcomings like a teacher have to leave then you know the next person will have exactly what is covered and how, and how he or she should continue from the next person. And again here, one is forced to have more class visits just to see what is happening, check the learners' books and also because there are times where am forced to take over and teach in the afternoons also.

Researcher: You taught Biology?

HOD B: I taught Biology for five years.

Researcher: Oh. okay.

HOD B: So one is forced to come in and just to fill that gap for the learners not lose much.

Researcher: Let us move on to the last but not least. What would you suggest or recommend be done by the learners, by the teachers and school management in order to improve grade 12 learners academic performance in NSSCO level Biology in Khomas region. So let us start with learners. What would you suggest to be done by learners so that they can improve?

HOD B: With the learners: Am okay, the learners it is, this are the direct people that are involved. The learners all they need to do is, you know, they are also a lot of after school cares the one from the ministry so this is the learners just have to do their part. Nowadays it is not sufficient just to come for class and go home. You need an extra care. So I would suggest the learners should look for that extra care like after school or holiday classes all those things to supplement what they are getting.

Researcher: So when you mean, when you say it is by the Ministry, does the Ministry organise those after school lessons?

HOD B: Ya, the Ministry, like in every year they have what is called the top achiever class. What they do is they ask, give us each school must give 10 or 15 or 20 learners depending on the number of Biology learners you have. So, normally they ask all the levels, they can ask the ones that performed or the one in the middle or the top performers. Here normally what you do what I do because this is the information that I always ask permission to over use. Not all schools are responding so I go to them if you ask me five can I bring fifteen? If my learners are responding then they will go. So this is, they need to attend to each and every opportunity that is presented to them. For the Ministry is also trying its level best.

Researcher: Okay. What happens at those top achievers classes? And how do they get the teachers?

HOD B: The Ministry is having the records of the teachers and their performances, so what they do they select teachers to teach and not just to teach to show learners the best way to understand you know, to tutor so they select the best tutors, teachers and they check which ones are available and they allocate the timetable, this week they are at Hochland High, next week they are at Windhoek High and the other week they are at Gymnasium. So this is how they rotate, so that not only people from this side of town are suffering with transport. So they rotate like that and it goes on first term second term, it is unfortunate the third term is very short so it is only the first and second term. But this is mostly for grade 12. They are the one that are done with the syllabus. And again the holiday schools, the top achievers are mostly for the best learners. The holiday school is for those that are below and they are showing a sign of improving so those ones they are going two weeks to a certain school issuing their names they ask whether they need a hostel and they allocated there. The teachers apply and they are screened to get the best teacher as possible to teach that holiday because they are being compensated. So these are the opportunities that learners grab with both hands.

Researcher: Right, so that is the suggestion for learners. So what about teachers? What do you suggest be done by the teachers so as to improve performance?

HOD B: Um, the teachers, the best way to improve performance is to link up. Schools have clusters but clustering it is not active in the Khomas region. Ya for various reasons. Well some people are saying the best one remain the best and things like that, they want to share their best practices. All those things but it is happening it is only does not take management members it takes a teacher to communicate to another teacher and ask for permission and to link up and this is a very good practice that can improve results. The second one: You know we have learners in fact most



learners are above average. It is only that they need different attention. Slow learners you need to maybe to put more practicals or you need to take them to a counselling we have every school have a life skills teacher. Or you need that kind of support to tell the parents you must have been in contact with the parents to support because for instance what we do we have a timetable for every Friday test. And they know. Not just that but there are subjects that parents knows in this subject every week my child is writing a test and every Friday the parent is asking for the test and they have your number they are calling to ask how is my child doing. So this is, even when the child sees that there is so much involvement and interactions between my parents and my teacher it will imply positivity in the learner and the kind of motivation that is needed.

Researcher: What about the school management?

HOD B: The school management: I am so fortunate to be, to have a principal who is a science teacher because I have heard here and there the mechanism of cutting cost, especially Biology it is one of the subjects that needs a lot of, everything you need to buy, onions you need to buy, this and this and this, so not all management will understand how active a Biology teacher should enter, how demanding that can be. Because going to an excursion where maybe water purification or somewhere is something that they will not know the value but it adds so much value. So the management they need to be supporting their teachers especially the Biology teachers and they need to open up all the how do you say all the opportunities all the possibilities for the teacher to make sure even to come and get all this educational software. You know it helps so much. It makes it easy for the learners to understand and just to link up here and there to create that platform for the parents to come in, because most of parents have so much to offer but the platform is not there. And

other vein, the management also they are the one to make sure their laboratories are in place. So they are actually the very big tap to the whatever is needed to the Biology. They need to be in big support.

Researcher: Finally, anything that you would like to add which is maybe was left out which may be important to this study?

HOD B: Um, additional information. Maybe not really because we have covered quite a lot but one will recommend these researches that are being conducted to be a platform where they are being submitted and implemented because people in power are normally not the ones with the information and might not be aware of how much information is at hand. So these are the recommendation maybe that can be done just to improve results because they say whatever you do is for the wellbeing of the Namibian child. That is basically what I can add.

Researcher: Okay sir, thank you for your time.

HOD B: You are welcome.