

Challenges Affecting Grade 12 Learners Performance in O'Level Biology in //Kharas Region, Namibia

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Abstract

The continued poor performances of grade 12 learners in Namibia Senior Secondary Certificate Ordinary level (NSSCO) Biology in the //Kharas region of Namibia has become a major public concern. Thus, this study investigated the challenges affecting Grade 12 learners' performance in NSSCO Biology in the //Kharas Region, Namibia. Two categories of the sample, consisting of 140 grade 12 learners and 12 Biology teachers were selected using the simple random sampling method to complete learners and teachers' questionnaires respectively. Furthermore, a sub-sample of 12 learners and 7 teachers who completed the questionnaires was purposively selected to participate in the follow-up interview. Descriptive statistics (percentage) and thematic analysis method were used to analyze the quantitative and qualitative data respectively. The study found that lack of relevant teaching and learning materials, learners' indiscipline, lack of motivation, lack of laboratory facilities, teachers' high workload, and teachers' poor subject content knowledge constitute the major challenges affecting grade 12 learners' performance in NSSCO Biology in the study area. In order to address these challenges, the participants suggested the following measures: introducing holiday classes to cover excess workload and help slow learners; giving motivational speeches to encourage the learners; organizing periodic training workshops for the teachers; engaging subject advisors to guide teachers with subject content knowledge; and tackling learners' indiscipline.

Keywords

Academic Performance, NSSCO Biology, Teacher Challenge, Learner Challenge, //Kharas Region

1. Introduction

Science embraces every attempt made by humans to explore, interpret and manage the natural world (Garuba, Agweda, & Abumere, 2012). According to Anderman, Sinatra and Gray (2012), science education is very crucial for human developments, because we are confronted with massive scientific challenges such as escalating HIV/AIDS pandemic, global climate change, world hunger, space exploration, as well as the development and execution of alternative sources of energy. In agreement with this assertion, the Ministry of Education (MoE) (2014) reveals that the Namibian society is also confronted with similar scientific risks and challenges. As the pace of scientific research accelerates, the average citizens are increasingly faced with having to grapple with matters of science in their everyday life (Marincola, 2006). Thus, it is imperative that the human beings are engaged in science issues which have impacts on their lives in order to best thrive in the modern society (Marincola, 2006).

Reportedly, the natural sciences are one of the main drivers of the transformation of today's society and the world (MoE, 2010). However, several factors may affect learners' good academic achievement in sciences. Ajayi (2012) reported that the learners themselves, teachers, government commitment, parents'/guardians' attitudes, and school's management can variously contribute to learners' poor academic performances. The performance of learners in the NSSCO Biology examination in the //Kharas region of Namibia has been quite unimpressive. According to the MoE's recent reports, the percentage of learners that obtained E, F, G, and U symbols in NSSCO Biology in the //Kharas region are: 2012 90%, 2013 83%, 2014 85%, 2015 84%, 2016 86% and 2018 70% (Ministry of Education, 2019). In the NSSCO grading, the following symbols and weighting points are used to evaluate learners' qualification: A - 7, B - 6, C - 5, D - 4, E - 3, F - 2, G - 1 and U - 0. Thus, learners who obtained mainly the E to U categories of symbols as is currently the case in NSSCO Biology in the //Kharas region hardly secure a place of admission into the Universities in Namibia where a minimum of 25 points is needed in five subjects for a candidate to be qualified for admission into any science degree programs that require Biology as a pre-requisite e.g. Faculty of Science, Faculty of Agriculture and Natural Resources and Faculty of Health Science.

Schreuder and Coetzee (2008) reveal that "Career survival in the 21st century requires inter alia, commitment to skills development, self knowledge and perpetual learning" (p. 85). This is a major concern not only for the 21st century but for the future. According to Achor, Agogo and Orokpo (2011), learners' failure in science examinations does not only pose a threat to science teaching and learning but also to technological developments both present and in future in various countries and thus, called on government to address the challenges in science education. Therefore, considering the continued poor performances of grade 12 learners in NSSCO Biology in the //Kharas Region, this study was conducted as a part of master thesis and addressed the following two objectives:

1) To identify the challenges affecting Grade 12 learners' performance in NSSCO Biology in the //Kharas Region.

2) To establish the participants' views on measures that could be used to overcome the identified challenges.

The findings of this study would provide research-based data that could be used to develop helpful remediation measures to address the identified challenges in the study area and any other area with similar characteristics.

2. Theoretical Framework

This study is based on the propositions of the Conditions-Based Theory (CBT) (Ragan, Smith, & Curda, 2008) which states that: 1) Acquisition of the different learning outcome category requires different internal conditions; 2) Different internal processes are supported by identifiably different instructional support (p. 386-387). These propositions relate to the current study because the poor performances of Grade 12 learners in NSSCO Biology in the //Kharas Region may be influenced by various internal conditions such as teacher qualifications, classroom and school environment (working conditions); learners' attitude, ability to learn and disciplinary behaviour among other challenges as faced by teachers and learners in the teaching and learning environments respectively. In Biology, the content has a variety of learning outcomes that requires knowledge retrieval and practical skills. Hence, identifying the challenges and different possible supports through research evidences are critical in order to design appropriate teaching and learning strategies that could improve the learners' performance in NSSCO Biology in the study area.

3. Methodology

3.1. Research Design

This study used the mixed methods research design which employed both qualitative and quantitative research approaches. The quantitative approach used scaled close-ended survey questionnaires to obtain data on the challenges faced by NSSCO Biology teachers and learners which affect grade 12 learners' performance in the subject. On the other hand, the qualitative approached used face to face follow-up interview to further collect indebt data on the research problem and views of the participants on what measures could be used to mitigate the challenges affecting Grade 12 learners' performance in NSSCO Biology in the study area.

3.2. Sample and Sampling

A sample consisting of 140 grade 12 NSSCO Biology learners and 12 Biology teachers were selected using the simple random method in seven out of nine senior secondary schools in the //Kharas Region to complete learners and teachers' questionnaires respectively. Furthermore, a sub-sample of seven teachers (consisting one per school) was selected using the purposive sampling method to

participate in the follow up interviews. The seven teachers were selected based on the following criteria:

- 1) Biology teachers who have the highest number of years of Biology teaching experience in the schools.
- 2) Biology teachers who were willing to participate in the follow up interviews.
- 3) Biology teachers who were teaching NSSCO Biology at Grade 12 level in the study area.
- 4) Biology teachers who participated in completing the questionnaires of the study.

Additionally, the purposive sampling method was also used to select a sub-sample of 14 learners (consisting of 2 learners: a male and a female from each school) to participate in the follow-up interviews. The learners were selected using the following criteria:

- 1) Biology learners who were willing to participate in the study.
- 2) Biology learners who were in Grade 12 doing NSSCO Biology as one of the examination subjects at senior secondary schools in Namibia.

Both the teachers and learners' sub-samples were considered to be information-rich with respect to the challenges affecting the learners' performance in NSSCO Biology and hence, could suggest possible solutions on how to overcome the challenges.

3.3. Data Collection

The researchers personally administered both the teachers and learners' close-ended survey questionnaires to the respective participants (Biology teachers and NSSCO Biology learners). After completion, the researchers collected the questionnaires on the third day. The teachers' questionnaire collected data on relevant background information of the participants as well as the challenges faced by teachers in teaching Grade 12 NSSCO Biology. The learners' questionnaire collected data on the challenges faced by Grade 12 NSSCO Biology in learning the subject. All the 140 learners and 12 teachers completed and returned the questionnaires respectively.

After preliminary analysis of the questionnaires, follow-up face to face interviews were conducted with the subsample of the participants. The interview collected in-depth information on the challenges affecting Grade 12 learners' performance in NSSCO Biology in the study area and the participants' views on measures that could be used to overcome the identified challenges.

3.4. Data Analysis

The quantitative data generated from the close-ended survey questionnaires were analyzed using descriptive statistics while the qualitative data from the follow up interviews were analyzed using the thematic analysis method. The analyzed data and themes generated were then presented according to the research objectives.

4. Results and Discussions

4.1. Background Information of the Biology Teachers

A total of 12 Biology teachers participated in the study. **Figure 1** below shows the highest academic qualifications of the participants (Biology teachers). The figure revealed that majority (9) of the participants had a 4-year Bachelor of Education (Honours) degree (with Biology as major) while among the remaining three participants, one of them had a 3-year Basic Education Teacher Diploma (BETD) and a 1-year Advanced Certificate in Education (ACE), one had 2-year Master in Education (Technology & Society) [M. Ed - Technology & Society], and one had a 3-year Bachelor of Technology (Educational Management) [B. Tech - Educational Management]. This finding suggests that majority of the participants possessed the required academic qualification to teach NSSCO Biology in the study area. In Namibia, the teacher education programs of the University of Namibia and similar institutions in the country require a minimum of 4-year (full-time) training duration for Senior Secondary Teachers' Certificate in a particular school subject specialization. Thus, if every other working condition is appropriate in the study area, majority of the study participants would be able to deliver effective teaching that could help NSSCO Biology learners to perform well in their Grade 12 exit examination. However, the teachers with qualifications in BETD and ACE, M. Ed - Technology & Society and B. Tech - Educational Management respectively are not qualified to teach Biology at Senior Secondary School level in the study area as these qualifications are not related to Biology. In particular, the Basic Education Teacher Diploma and Advanced Certificate in Education are training qualifications for teachers at Primary and/or Junior secondary school levels in Namibia.

Figure 2 below shows the participants' years of experiences in teaching Biology at Senior Secondary School level. The figure revealed that majority (7) of the participants had 0 to 2 years of Biology teaching experiences, two participants had 5 to 6 years of Biology teaching experiences, another two participants had 11 to 12 years of Biology teaching experiences, while one participant had 15 to 16 years of Biology teaching experiences.

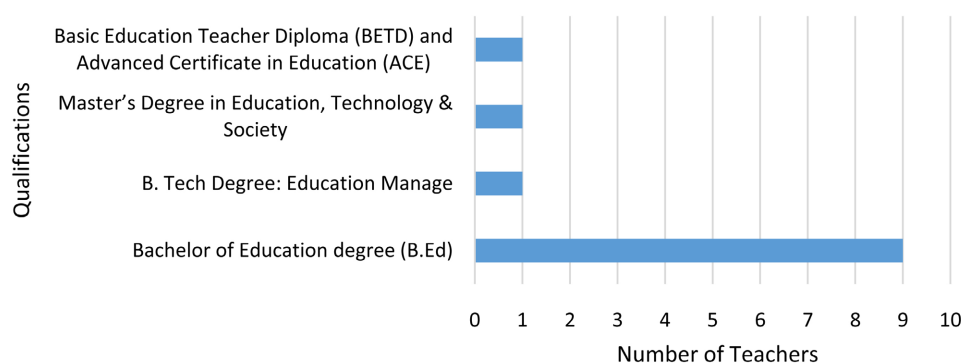


Figure 1. Highest educational qualifications of the participants (Biology teachers).

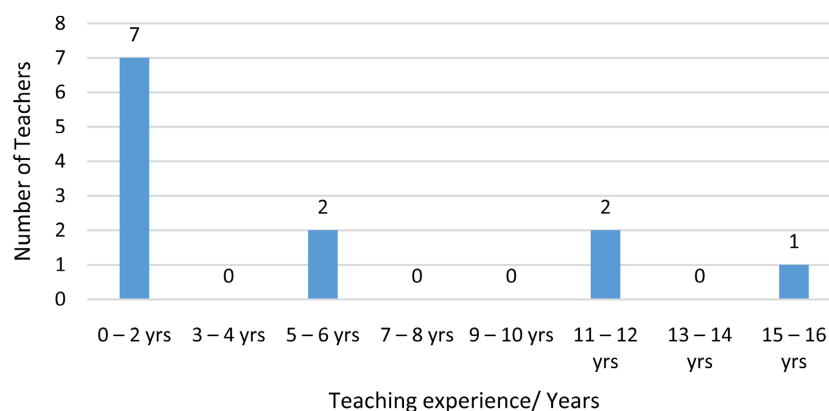


Figure 2. The teachers' years of experience in teaching biology.

The limited years of Biology teaching experiences by majority of the participants could limit their pedagogical content knowledge and this has implication for how the teachers can teach Biology content using variety of teaching methods capable of enhancing learners' understanding and performance. Dial (2008) in his study on the effect of teacher experience and teacher degree levels on student achievement in mathematics and communication arts cited The Center for Public Education's report which held that teaching experience is positively correlated with higher student achievement even though findings about its meaning vary. According the author, while some studies find that years of teaching experience are a consistent predictor of higher test scores, others showed negative effects when a high proportion of inexperienced teachers are present in a school, in terms of higher drop-out rates and lower achievement scores (Dial, 2008). Thus, despite majority of the participants possessing the required teaching qualification for NSSCO Biology in the study area, the vast majority who had limited years of Biology teaching experiences may affect the learners' performance in the Grade 12 exit examination.

4.2. Challenges Faced by Teachers in Teaching Grade 12 NSSCO Biology

4.2.1. Teaching Methods Used

The findings (Figure 3) suggest that the teachers employed various teaching methods when teaching the Biology lessons namely, lecture method, problem-based method, group work, discussion, and practical based teaching methods. As shown in the figure, eight out of twelve teachers agreed and two teachers strongly agreed that they often used the lecture-method when teaching Biology. It was also found that eight out of twelve teachers agreed and three teachers strongly agreed while one teachers disagreed that the discussion method is also used when teaching Biology. Figure 3 also shows that five out of twelve teachers disagree while six of them agreed with the statement that "I use group work method often". Nine out of twelve teachers agreed on the use of the practical based teaching method while two of them strongly agreed and one teachers disagreed with the statement.

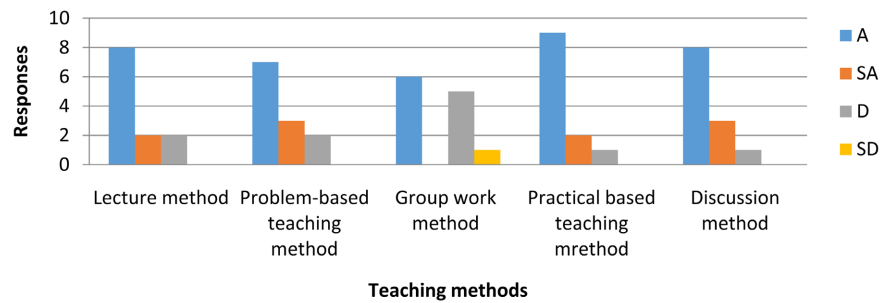


Figure 3. Teaching methods employed by NSSCO Biology teachers in the study area.

The Grade 12 NSSCO Biology learners' responses on the teaching methods used by the teachers when teaching the subject are as shown in **Figure 4**. The results obtained showed that the majority of the learners agreed that the teachers used mainly lecture methods and discussion methods followed by the problem-based teaching methods while they strongly disagree that the teachers use practical-based and group work teaching methods.

Findings from the interviews held with the seven Biology teachers revealed that four teachers indicated that they used group work often in teaching Biology, five out of seven teachers indicated that they used problem-based teaching method often and six out of seven teachers indicated that they used practical work seldom. These findings suggest that majority of the teachers hardly employ the practical-based teaching method during instruction, hence contradicting the information provided in the teachers' questionnaire responses which indicated that they used problem-based and practical-based teaching as opposed to group work teaching method. Thus, the majority of the teachers seem not to expose learners to practical works. The alternative to practical examination paper contributes 30% of the total mark in NSSCO Biology. Thus, learners are expected to be engaged in practical work often for them to perform well in the examination. Hence, the lack of proper engagement of learners in the practical-based activities might lead to learners' poor academic performance in NSSCO Biology in the study area.

Based on the second postulate of the Conditions-Based Theory; that is, "different internal processes are supported by identifiably different instructional support" (Ragan et al., 2008), the teachers were asked to share experiences on their specific internal (individual school) processes that informed the choice of the instructional methods which they used and these were their responses:

Teacher B said:

We don't have enough equipment like chemicals and apparatus to do practicals always and mostly, we only get them at the end of the year and then, we only used them for higher level practical examination.

Teacher C said:

I am using group work, to promote interrelation among the learners and it improves their results. So, we just don't carry out any practical work.

Teacher D said:

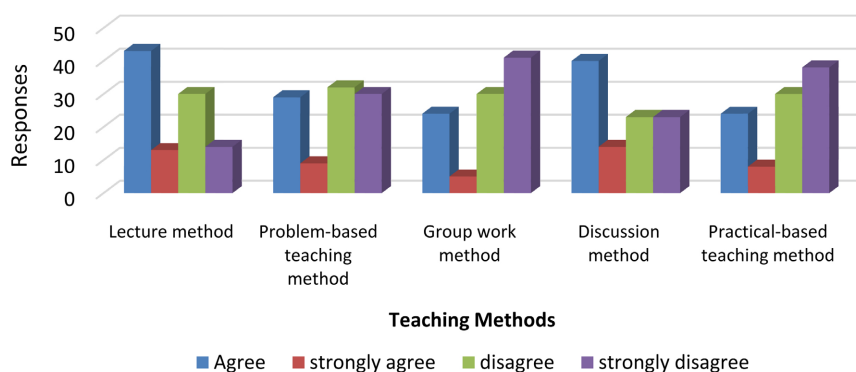


Figure 4. Learners' responses on the teaching methods employed by the teachers.

We do not have all the necessary materials for practical work in our school and sometimes, we have to go to the Teachers' Resource Centre (TRC) which at times also don't have those material. So, we do nothing and the school cannot buy the items because they have to be provided from Medical Laboratory or somewhere else.

Teacher F said:

I use group work seldom as it takes up too much time and the outcome does not so much worth it. Group work is affected by time and also classroom management, it is very difficult to manage the learners, they become very noisy and also the fact that there are some learners that will just be seated there waiting for the gifted/smart ones to do something.

These responses suggest that the teachers seem to be experiencing identifiable internal (individual school) challenges that might inform their choice of different instructional methods. However, the instructional method used in teaching any particular lesson should be appropriate for achieving the exit learning objectives and attaining the competencies the learners are expected to acquire. Thus, in science subjects such as the NSSCO Biology, the importance of using practical-based teaching method cannot be over-emphasized as practical works help to engage learners in deep learning, develop important skills, and understand the process of scientific investigation. Unfortunately, the practical-based teaching method was not widely used by the teachers in the study area as attributed to different internal challenges they (teachers) identified.

4.2.2. Teachers' Commitments towards Teaching NSSCO Biology

Figure 5 below indicates the participants' (teachers) responses on the commitment of teachers towards teaching Biology. The results showed that majority of the participating teachers were in agreement on attending lessons on time (7/12 teachers), finishing the syllabus before examination (8/12 teachers) and doing revision of the lessons taught before every final examination (8/12 teachers). However, it was found that few teachers (4/12 teachers) were in disagreement with finishing the syllabus in time, marking learners' work in time and providing feedback to learners in time while some teachers (3/12 teachers) disagreed with

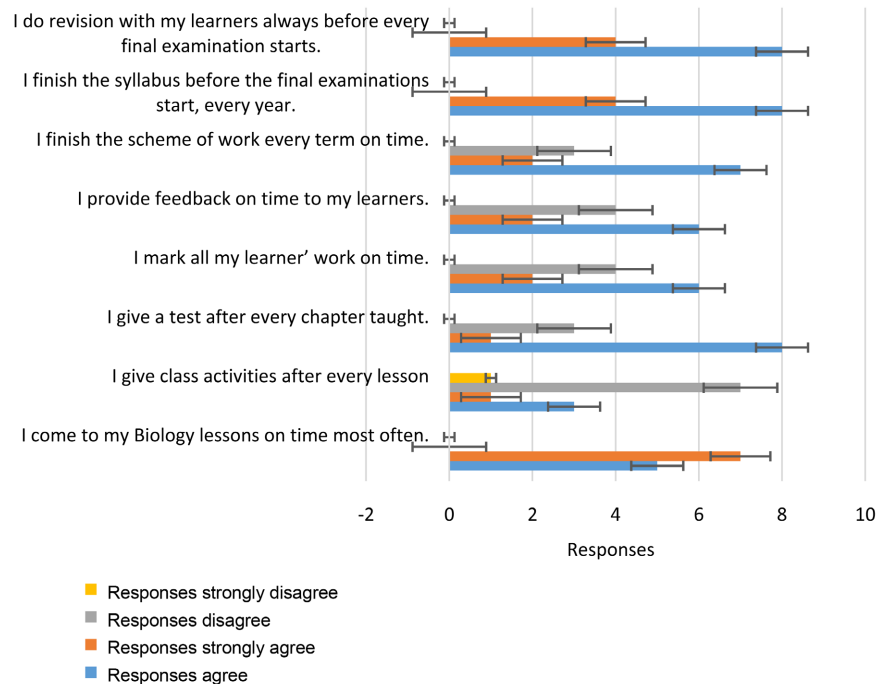


Figure 5. Teachers' responses on their commitments towards teaching NSSCO biology.

the statement on completing the scheme of work on time. The majority (8/12 teachers) of the teachers also disagreed with the statement that they give class activities or homework regularly. The results further showed that majority (8/12 teachers) of the teachers are in agreement that they gave tests after every chapter taught and marked all their learners' work in time.

Figure 6 below shows the responses from learners about the commitment of their teachers towards teaching them (learners) Biology. The results show that majority of the learners disagreed with the statements that teachers give class activities, tests, marking learners work, giving feedback on time, completing the scheme of work and syllabus on time. Thus, the information provided by learners greatly contradicted the information provided by teachers.

During the follow up interview, the teachers were asked if they complete the NSSCO Biology syllabus and scheme of work in time, and they gave the following responses:

Teacher A said:

No, I usually go the extra mile, by giving extra classes and sometimes, I teach over the weekends to finish the syllabus.

Teacher C said:

Yes, I do finish, like currently I'm done and we are busy with revision due to the reason that the subject in the timetable was efficiently allocated.

Teacher D said:

Yes, I am able to finish my syllabus on time, because I teach afternoon classes and Saturday classes. I also do presentations especially in the last few topics, and this is easier because they are related to Geography and Development studies.

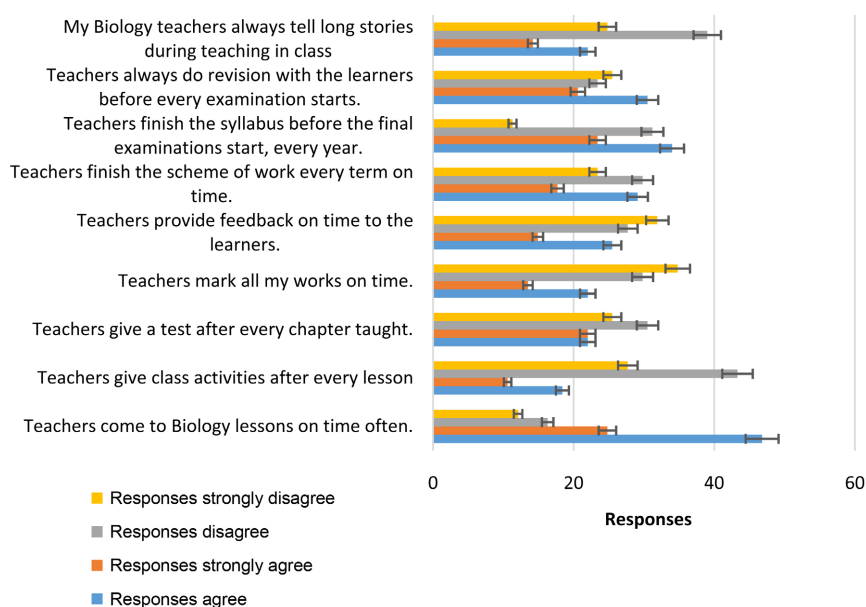


Figure 6. Learners' responses on teachers' commitment towards NSSCO Biology in the study area.

Teacher G said:

No, because the content is too much and it requires more attention for learners to get the best. The time frame is also very short, if you rush to finish, then yes, you will finish.

The responses provided by teachers in the interviews suggest that the majority of them are experiencing challenges of completing the syllabus in time. The teachers who seem to finish the syllabus in time have arranged extra classes such as teaching on Saturdays and having afternoon classes to complete the syllabus. According to the first postulate the Conditions-Based Theory, "acquisition of the different learning outcome category requires different internal conditions" (Ragan et al., 2008). This means that the teachers' extra efforts towards finishing the scheme of work is an internal affair initiated by them (teachers) as a direct response to the poor learning outcome (poor performance of grade 12 learners in NSSCO Biology) in the study area. Teacher's commitment could be in terms giving quality classroom activities, home work, and test to learners regularly to engage them and providing timely and constructive feedbacks, working hard to finish the scheme of work and doing revisions before examination, and being punctual to class at all times to motivate the learners.

When the teachers were asked if they give class activities and feedback to learners, they have the following to say:

Teacher A said:

I always give learners at least two written activities per week, due to the number of learners which is huge, if I have to mark, I can't give homework every day. Sometimes, if I give homework every day, I have to use the peer marking method and I give feedback every time whether I mark myself or they peer-mark themselves.

Teacher F said:

I give classroom activities every day, but I give feedback sometimes because they don't even do the work and you feel like what's the use of giving feedback.

The above information provided by teachers seem to reveal that even though some teachers do give class activities and provide feedbacks to learners, they seem to have challenges of giving activities everyday as well as marking and providing effective feedback. Some teachers seem to complain about big classes - overcrowded classrooms which have become a visible problem in some Namibian secondary schools. In Namibia, the Ministry of Education, Arts and Culture recommended 1:30 teacher - learner ratio in secondary schools.

4.2.3. Availability of Resources for NSSCO Biology

Figure 7 below shows the teachers' responses on the availability of resources for teaching and learning NSSCO Biology in the study area. The results show that majority (10/12 teachers) of the teachers are in agreement that resources such as textbooks and past exam papers are adequately available for teaching and learning NSSCO Biology in the study area. In addition, the teachers (10/12 teachers) indicated that there are available Biology laboratories for teaching NSSCO Biology practical. However, only 3/12 of the teachers agreed that there are laboratory equipment and resources e.g. chemicals, test tubes, measuring cylinders in their Biology Laboratories. On the learners having their own Biology textbook to support their independent study, 9/12 teachers indicated that learners have their NSSCO Biology textbooks for study.

When the teachers were asked about how they conduct NSSCO Biology practical with the laboratory resources available to them, they provided the following information:

Teacher B said:

I try to do the practical work in groups at least or maybe just one practical for a certain class but not really individual learner using a practical set up.

Teacher D said:

In situation where we do not have the materials to use for a particular practical, I encourage the learners to just learn the theory, so that if it comes in examination, then they have to translate that theory into practice. So in the examination, they will be provided with the materials.

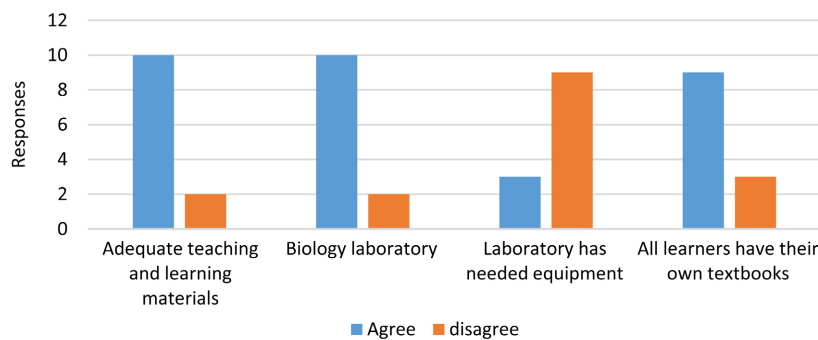


Figure 7. Availability of NSSCO biology resources in the study area.

Teacher F said:

Yes, the learners like practical work very much, they don't even want it to end when we are doing practicals but we don't do it more often because we don't have resources as well as the laboratory.

The above responses by the teachers seem to reveal that they experience challenge with the lack of resources and hence, they only teach theory to enable learners carry out the practical activities when resources become available.

4.2.4. Teachers-Learner Interactions in the Classroom

Figure 8 below shows information about teacher-learner interactions in classroom in the study area. All the participating teachers (12/12) were in agreement with the statement that they allowed learners to pose questions during instruction, supported learners' cognitive development, and to develop their skills and maintain interest. In addition, 11/12 of the teachers indicated that they gave opportunities to learners to evaluate their own work, and allowed peer teaching (9/12 teachers). It seems that the teachers do not have challenges with their teaching methods which could contribute to the learners' poor academic performance in NSSCO Biology in the study area. Effective learning does not occur in isolation but it involves engagement with others. A total of 140 learners were also involved in completing a questionnaire in order to obtain the learners' views about the teacher-learner interactions in their NSSCO Biology classes.

Figure 9 below shows the information provided by the learners about teacher-learner interactions in the classroom.

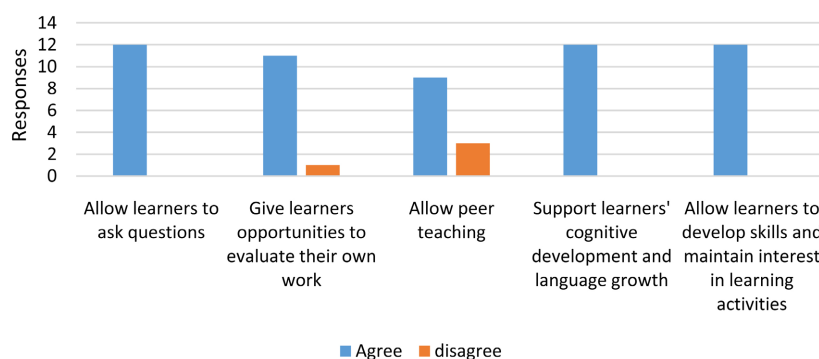


Figure 8. Teacher-learner interactions in the classroom.

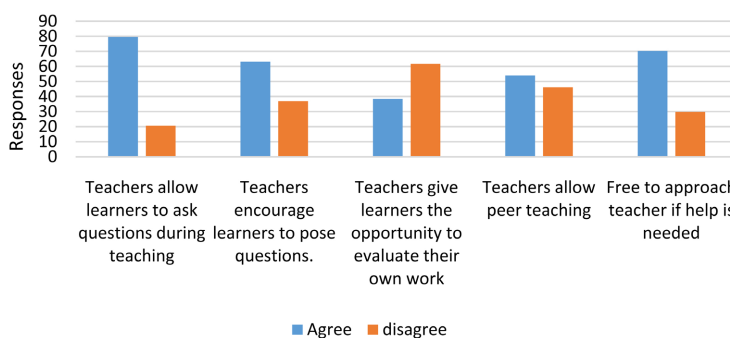


Figure 9. Learners' response on their interaction with teachers in the classrooms.

The results (Figure 9) revealed that majority (79.5%) of the participants (learners) were in agreement that teachers allowed them to pose questions, and encouraged them to feel free and approach the teacher if they need help (70.2%). These findings are also in line with the teachers' responses on similar statements above. However, a considerable number of the learners (61.7%) were in disagreement that teachers gave them opportunities to evaluate their own work which contradicts the teachers' response to the same statement above.

4.3. Challenges Faced by Grade 12 NSSCO Biology Learners

4.3.1. Learners' Attitudes towards Learning NSSCO Biology

Figure 10 below shows information provided by learners on their attitude towards NSSCO Biology.

It can be seen from the results (Figure 10) that most of the learners are in agreement that they are willing to learn (68.1% learners), do not pay attention in the classroom (58.8% learners), and do not take the subject seriously (52.5% learners). A greater number of the participants (learners) were in disagreement that they are discipline in class (55.3% learners), have poor Biology background knowledge (61.0%), and seem to believe that Biology is difficult (61.7%).

In the follow up interview with the subsample of 14 NSSCO Biology learners, they were asked to give personal views about their attitudes towards learning Biology and the following information were obtained:

Learner A said:

Our attitude towards this Biology depends on the topic which we are doing. Some topics are not quite favourable or they are not quite entertaining to learn, but there are those that are interesting for example, the reproductive system. In that topic, everybody wants to participate and want to learn but when you get to topics like the nitrogen cycle not quite...

Learner C said:

No, the learners showed negative attitude. The way they are going on in the class, making noise and not showing interest when the teacher is presenting but only wait for the time when the teacher will make a pronunciation mistake, then they will laugh.

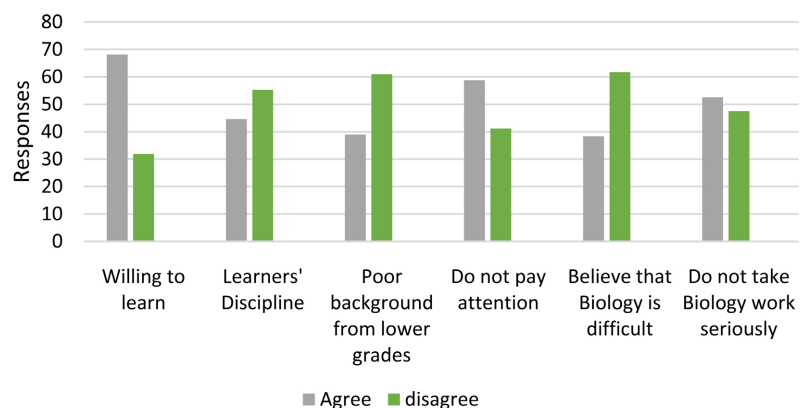


Figure 10. The learners' views of their attitude towards NSSCO biology.

Another Learner F said:

No, because they show lack of interest in the subject itself and they show as if they do not have energy for Biology. If there was a funnier way of learning Biology, they would have shown interest but right now they do not have interest at all.

From the above interview excerpt, one can deduce that the learners are faced with the following challenges: topics that are not interesting to learners, teaching methods that do not make the topics interesting to learners, learners' indiscipline during instruction such as making noise while instructions are progressing.

4.3.2. Assistance the Learners Receive from Their Biology Teachers

Figure 11 below shows the NSSCO Biology learners' views on the support that they received from their teachers. Teachers' support to learners involves ensuring that the teaching aids that learners receive are clear and can be linked to the concept being taught. Also, teachers should ensure that feedback is provided to allow the learners to learn from past mistakes, when presented with similar questions in the examination. The results obtained revealed that majority of the learners (53.0%) were in agreement that the teachers provided them (learners) with short and well planned notes. However, majority of the learners are in disagreement with the statements such as teachers make sure that all learners have prescribed textbooks (55%), teachers provide clear instructions and guidance for activities and homework (57%), teachers make sure all class activities and homework are linked to basic competencies (57%), teachers provide appropriate

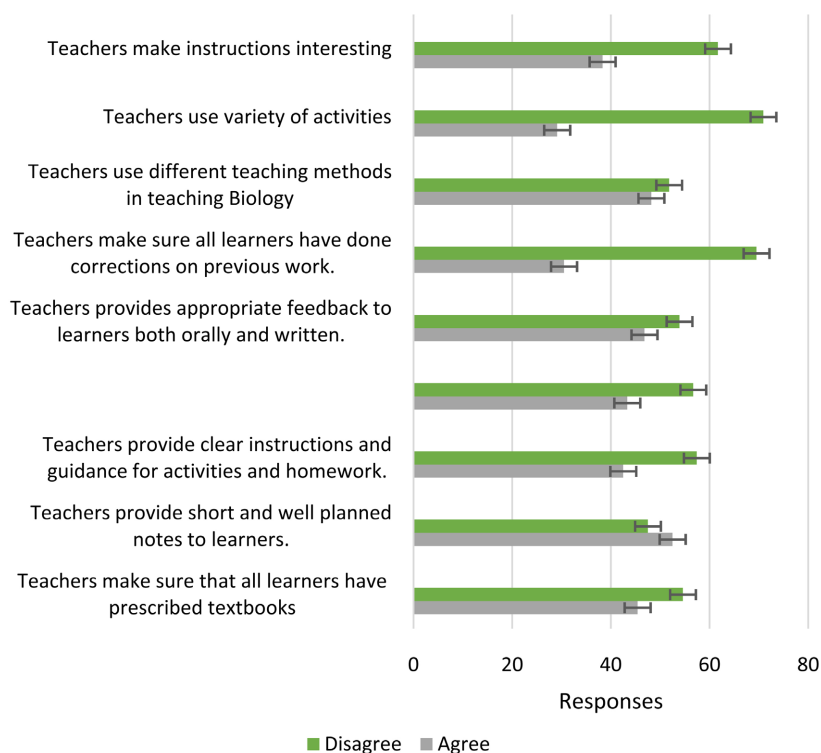


Figure 11. The learners' views on the assistance they received from Biology teachers.

feedback to learners both orally and written (54%), teachers make sure all learners have done corrections on previous work (70%), teachers use different teaching methods in teaching Biology (52%), teachers use variety of activities to help them understand the topics better (71%), and Teachers make lesson presentations interesting (62%).

4.4. What Do the NSSCO Biology Teachers Perceive as Possible Solutions to Overcome the Challenges They Experience?

The responses of the teachers from the interviews indicated the following suggestions that could be put in place to improve learners' academic performance:

- Motivation of teachers and learners by experts in the form of workshop or career fairs.
- Organising regular holiday/spring schools to give teachers more time to cover the syllabus on time and do revision before examination.
- Regular assistance from school inspectors and advisory teachers to set up scheme of work and to provide ways of how to complete the scheme of work in good time.
- Provision of facilities to improve the teaching strategies, for example; using modern technologies during lesson presentation.
- MoE to improve the guidance and counselling systems at all government schools.
- Improving the use of past examination papers and examiners' reports to expose learners to ways of examination assessment.

5. Discussions on the Findings

The purpose of the current study was to identify challenges affecting Grade 12 learners' academic examination performance in Namibia Senior Secondary Certificate Ordinary Level Biology in the //Kharas region, Namibia. The current study has shown that the teaching methods employed, teachers' commitment, teaching and learning resources, learners' attitude towards learning and assistance that learners get from teachers are some of the challenges affecting the learners' academic examination performance.

The study found out that the majority of Biology teachers who participated in the study had less than three years' experience of teaching the subject and that could be a limiting factor in their pedagogical content knowledge of teaching Biology. This could affect the teachers' potential to offer certain learning support that a highly experienced teacher could ordinarily provide to assist learners with learning challenges. The less experience in years of teaching by majority of the teachers could also be a contributing factor to the lack of varied pedagogical knowledge of teaching the subject. The teachers have challenges with employing a variety of teaching methods when teaching the NSSCO Biology in the study area. Although the majority of the participating teachers were aware of the variety of teaching methods which could impact meaningfully in the teaching and

learning of Biology, they hardly employ such methods during lesson presentations. The teachers mostly utilized lecture method, peer teaching and group discussion and but rarely use problem-based and practical-based teaching methods during classroom instructions. Practical work in science is crucial for promoting learners' analytical skills and knowledge retention which are important for good performances in examinations such as the NSSCO Biology.

The study also found that majority of the learners indicated their disagreement that the teachers always give class activities including tests, mark learners work and give timely feedback as well as, complete the scheme of work and syllabus on time. These findings suggest teachers' low commitment in assisting learners to effectively learn the NSSCO Biology in the study area. Without teachers' serious commitment to assist learners in their academic matters, learners will tend to perform poorly in examinations as espoused by Hollins (2011) that quality education can be achieved when teachers are prepared and committed to prepare learners for examinations, thus, promoting good academic performance.

Among the well-known challenges affecting the NSSCO Biology learners in the study area are the availability of well-equipped laboratories and text books. As noted by Rammala (2009), the lack of teaching and learning resources at schools could be one of the contributing factors to learners' poor academic performance. Aladejana and Aderibigbe (2007), David (2014) and Jackson (2009) in their separate submission concur that the quality of laboratory environment could be a challenge to the academic performance of learners.

The study further revealed that a considerable number of learners (61.7%) were in disagreement that teachers gave them opportunities to evaluate their own work which contradicts what the teachers provided. The act of giving opportunities to learners to evaluate their own work is a way of surrendering some powers of the teacher to learner. As opined by Lang (2001), teacher who gives over some of their power and authority to the learners to allow them to freely participate and be actively involved in the teaching and learning process will enhance academic performance.

It seems that the majority of NSSCO Biology learners in the area are facing various challenges (internal conditions) in learning the subject. As alluded to by Ragan, Smith, & Curda (2008), The internal conditions in the context of this study include the lack of teaching and learning resources, teachers' poor pedagogical skills, learners' poor attitude, and learners' disciplinary behaviour that seem to impinge on learners' academic performance.

The follow up interview with learners also revealed that they were faced with the following challenges: topics that are not interesting to learners, teaching methods that do not make the topics interesting to learners, learners who misbehaved during classroom instruction such as making noise. These phenomena are also alluded by Jackson (2009) that:

“... lack of learner discipline contributes to poor performance because some learners are ill disciplined, uncontrollable, and difficult to work with in class,

some deliberately ignore instructions from teachers, while some leave the class during lessons, come to school late or disappear before school close.” (p. 275)

Additionally, in a study on exploring the factors affecting performance in Biology 5090 at selected high schools in Lesotho, [Lebata and Mudau \(2014\)](#) reported that learners who disregard the work assigned to them and who show little interest in their school work tend to perform academically poor in examination. Among the possible suggestion provided by the study participants on how to overcome the challenges affecting the learners’ performance in NSSCO Biology in the study area are: motivation of teachers and learners by experts in the form of workshop or career fairs; hosting regular holiday/spring schools and involving various teachers in teaching to increase learners interest, [Borna \(2015\)](#) concurs that this allows learners to get motivated if a new teacher will employ the subject in a different manner; regular assistance from school inspectors and advisory/subject teachers, [Lebata and Mudau \(2014\)](#) agree that teachers need assistance as Biology is taught differently in different schools; improve the teaching strategies; Ministry of Education to improve the guidance and counselling systems and improving the use of past examination papers and examiners’ reports.

6. Implication to Research and Practice

The current study provides baseline data on the challenges affecting academic performance of Grade 12 learners in NSSCO Biology in the //Kharas Region of Namibia. Apart from the teacher and learner challenges investigated in this study, there might be other challenges which may be related to school management as well as home background of the learners. Considering that the NSSCO is one of the two exit national examinations (the other being National Senior Secondary Certificate Higher level [NSSCH]) taken by learners in Namibia, which are pre-requisite for tertiary institutions’ admission in the country, it is important that future research in the study area should investigate the effects of school management and learners’ home background on the academic performance of Grade 12 learners in NSSCO Biology with a view to developing holistic mitigation measures. Furthermore, the study highlights the need for the Ministry of Education to address the challenges of lack of NSSCO Biology teaching and learning materials, and the learners’ indiscipline in the study area as these have far-reaching implications on both teaching and learning outcomes.

7. Conclusion

The study found that challenges affecting Grade 12 learners’ academic performance in Namibia Senior Secondary Certificate Ordinary Level Biology in the //Kharas Region of Namibia include the teaching methods used by the teachers, teachers’ commitment, lack of teaching and learning resources, learners’ negative attitude towards learning and poor assistance that learners got from teachers among others. Although, the participants suggested a number of measure which

they felt could be applied to mitigate the learners' challenges in the NSSCO Biology, we strongly recommend that priority should be given to the provision of teaching and learning resources in the schools as well as organising capacity building workshops to train the less experienced teachers on teaching NSSCO Biology contents using varied different teaching methods that could make the subject interesting to the learners.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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