Preparedness on the implementation of the new Grade 8 Life Science curriculum in Oshikoto region, Namibia: Teachers' perspectives

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Abstract
This article investigated the teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum in the Oshikoto region, Namibia. It utilized a qualitative approach, following a narrative case study design, where semi-structured interviews, observations, and document analysis were conducted with Junior Secondary School teachers. Six teachers were purposefully selected. The data were thematically analysed. The main finding revealed that Life Science teachers were insufficiently prepared to implement the new Life Science curriculum for Grade 8. The paper concluded that Life Science teachers demonstrated a positive perception towards the implementation of the new curriculum notwithstanding their insufficient preparedness to implement the new curriculum. The paper recommends that teachers should be provided with appropriate textbooks for both learners and teachers, trained, supported and engaged in debates regarding the implementation of new curriculum. Teachers' involvement and consultation during planning and development should be considered as a crucial factor.

Keywords: *curriculum reforms, teachers' preparedness, curriculum for Life Science Grade 8, curriculum design*

Introduction

Since 1990, some Southern African countries like South Africa and Namibia have taken initiatives to reform part of their curricula in order to produce learners who should be able to compete within the changing world (Adu & Ngibe, 2014). Three major curricula developments were observed in the Namibian education system in the following years after Namibia's independence in 1990, namely; (a) a total transformation from the year 1990 to 1996; (b) curriculum improvement and localisation from the year 1997 to 2010; and (c) building curriculum and providing alternative curriculum from the year 2010 to 2016 (Iipinge & Hako, 2017). During the third Cabinet meeting, the Namibian government approved the curriculum reforms for Basic Education and the implementation of new curriculum as from 2016 (Ministry of Education, Arts and Culture, 2016). The introduction of the new curriculum was received with mixed feelings by various teachers. For instance, some principals welcomed the new curriculum while others felt that teachers and pupils, especially at the Grade 8 level might struggle to achieve the indicated standards (Shapwanale, 2017).

The above-mentioned major curricula reforms gave rise to the birth of several education policies and new structures in the Namibian education system such as the language policy, Information and Communications Technology (ICT) policy, learner-centred and Education and Training Sector Improvement Programme (ETSIP) (Ministry of Education, Arts and Culture, 2016). The four goals of education were also introduced which were access, equity, quality and democracy in 1993 (Ministry of Education, 1993). To better understand the implementation of the new curricula, this narrative case study research was conducted to investigate the teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum.

Statement of the problem

When the new Namibian curriculum for Grade 8 Life Science was recently adopted, the teachers appeared to be insufficiently prepared for its implementation. The teachers were faced with challenges such as inadequate content knowledge, lack of teaching resources and lack of laboratories and chemicals. Such challenges might lead to frustration and stress among teachers, as they would often struggle to present lessons effectively (Iipinge & Hako, 2017). Flores (2011) states that teachers in Portugal were stressed and frustrated during implementation of new curriculum as they were not supported and trained. Similarly, Zindi (2018) also points out that teachers in

Zimbabwe generally harbour negative and unconstructive feelings about the new curriculum and these feelings negatively impacted their involvement in and commitment to implement reform. It is important to note that teachers are central to any curriculum reform as they possess the knowledge, experience and competence from their everyday teaching (Alsubaie, 2016). Thus, curriculum reform implementation cannot be completed without teachers' involvement. It is therefore imperative to understand teachers' perspectives regarding the implementation of the new Grade 8 Life Science curriculum in Namibia.

Conceptual framework

The study was informed by Hilda Taba's Model of curriculum development and implementation (Taba, 1962). Taba's model advocates for a grassroots approach to curriculum development and implementation. This means that teachers should participate in developing a curriculum rather than the higher authorities alienated from the classroom and its peculiarities (Taba, 1962). Taba believes that if teachers participate in curriculum development, it would be easier for them to understand it, and they would be ready and more prepared to transmit essential knowledge to the learners. Taba's model further stipulates that it is a waste of resources to develop curriculum material if adequate training is not provided to the facilitator (teacher). If one follows the concept of Taba's model, it is thus critical that Life Science teachers should be involved in the development of the revised curriculum. The study used this model to understand teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum in the Namibian context.

Methodology

The study was conducted in 3 public schools in Oshikoto region, Namibia. A total of six Life Science teachers who were purposefully selected participated in the study. The qualitative research approach was used employing a narrative case study. The data were collected through semi-structured interviews, non-participant observations and document analysis. Semi-structured interviews allowed the researchers to obtain in-depth data from the participants about teachers' preparedness on the implementation of the new Grade 8 Life Science curriculum. Through interviews, the study was able to probe and obtain important and additional data while on the other hand, teachers were able to express their lived experiences on the implementation of the new curriculum for Life Science for Grade 8. With regards to non-participatory observations, we were able to observe the classroom teaching and learning in twelve lessons in order to obtain precise information on how teaching was performed while implementing the new Grade 8 Life Science curriculum. Document analysis was found to be crucial because it allowed us to gain information that might not be available through the use of other research methods. Documents such as the old and new curriculum for Grade 8 Life Science and syllabus, were analysed as part of data collection. The researchers obtained ethical clearance from the University of Namibia's ethics committee and obtained permission from the Executive Director of the Ministry of Education, Arts and Culture to conduct research in selected schools in Oshikoto region. Principals of the targeted schools were contacted for permission, and teachers and Heads of Department were informed about the study's purpose. Participants were informed that their information and identities would be kept confidential, and they had the right to withdraw if they felt uncomfortable continuing.

Findings

Teachers' perceptions on their involvement in curriculum design

The teachers indicated that they were not involved in the process of designing Grade 8 Life Science revised curriculum. Teacher B responded that: "…*myself I was not approached; I have no idea if the curriculum developers have involved other teachers during the development of the new curriculum*". Similarly, HoD C said: "*The majority of teachers, more especially teachers in rural schools were not contacted to find out what changes need to be done".* On the contrary, Teacher A noted that instead of teachers who teach Life Science*, "As far as I am concerned, Life Science teachers were not involved, rather they have involved Biology teachers who are national markers".*

Three of the six teachers who participated in this study had a positive feeling about the introduction and implementation of the new curriculum for Life Science while some had fears about the changes. The three teachers pointed out that they felt good about

the changes, as Namibia would be on par with other countries. For example, Teacher A said that: *"This is a good move…I feel good about the introduction and implementation of the new curriculum for Life Science… I have a hope that some of these changes may bring improvement in the teaching and learning process".* In addition, Teacher C expressed the view that, "*I am in support of the new curriculum…it includes… and explains clearly the teaching methods that contribute to the teaching and learning of Life Science*". Similarly, HoD C said that "*The revised curriculum is a good initiative from the government…lifting up the level of education in our country*".

On the contrary, HoD A and HoD B, pointed out that they had fears of the unknown about the introduction of the new curriculum for Life Science Grade 8. They specifically stated that they did not know what they should do, and they had noticed the confusion among the learners. For example, HoD A pointed out that "*For me, I have fear, I am afraid…yes, I had fear when the new curriculum was introduced since I did not know what exactly will happen afterward".* Similarly, HoD B reasoned as follows, "*I wonder if the planning division of the Ministry of Education was ready with the introduction and implementation of the new curriculum…I am seeing poor planning…We are still struggling".*

The participants mentioned negative factors such as inadequate content knowledge, lack of teaching resources and the lack of laboratories and chemicals. These, in their view, were challenges that impede the implementation of the new curriculum. Teacher C revealed that: *"I struggled to prepare my first lesson from the scientific processes theme… which made me to feel uncomfortable during the teaching and learning process…mmm, that is what I regard as little knowledge on the topic".* In the same sentiment Teacher A, said: *"It was a bit confusing…unclear…very challenging, since I had a hard time teaching the scientific processes content in my class, though I was prepared".* In addition to Teacher C and A, HoD A said that *"When the new curriculum was introduced, the teachers struggled with preparing and presenting the scientific processes topic".*

From our observations, we noted that some teachers struggled with presenting some topics such as *plant as living things, passage of substance, and others*. This also included presenting activities to the learners which were in line with the prescribed curriculum. All the six participating teachers pointed out that they were provided with materials such as syllabi, schemes of work, year plans and the assessment plans to support the implementation of the new curriculum. However, all six participating teachers indicated that the lack of appropriate textbooks, models, and visual aids made it difficult for the teachers to implement the new curriculum. Teacher A stated that: *"We don't have enough textbooks at our school. As far as I am concerned no school in our circuit has received more than five textbooks for Life Science. However, each school was expected to buy its own textbooks…the budget is not enough to buy books…nevertheless, the school managed to get five textbooks…One can imagine that I have 70 learners sharing those five textbooks. This is very difficult for my learners and myself."*

Teacher B echoed the same sentiments that*: "One of our biggest challenges is that we don't have enough textbooks at our school…this is hindering the implementation of the new curriculum".* Further, HoD C noted that, *"We are faced with the challenge of lack of the teaching materials such models, videos, visual aids and other teaching materials that teachers can use to demonstrate their lessons".* The teachers explained that the lack of ink cartridges and printing paper made it difficult to make copies from the available textbook. Teacher B suggested that; *"I do understand and seeing what is happening in our school classrooms…since we do not have enough textbooks…We (teachers)…must prepare notes for the learners by writing on the chalkboard and making copies…what else can we do? But we have a big challenge of making copies*". HoD B also pointed out that *"there were insufficient textbooks for both teachers and learners to implement the new Life Science Grade 8 curriculum."*

The participants indicated that the lack of laboratories and chemicals made it difficult to implement the new curriculum. Further, the participants indicated that the chemicals they had at their respective schools had expired and they could not use them. HoD A had this to say; *"We have one laboratory at our school which we share with the Physical Science teachers, but there are no chemicals and there are times when our lessons crash".* On the contrary, Teacher B pointed out that *"Our*

school does not have a lab…no chemicals…sometimes we purchase the chemicals…but we don't have a place to store them. This is very dangerous for us and our learners…because not all of the chemicals were supposed to be exposed". Similarly, Teacher C lamented this: *"As we are talking, there is no laboratory at our school…the chemicals that we have are expired…sometimes, the chemicals provided by the region only support the teaching of other subjects like Physical Science"* . HoD C suggested that *"I feel, it could be better if all schools should have laboratories, necessary apparatus and sufficient chemicals".*

The fundamental differences between the old and new curriculum

Four of the six participated teacher pointed out that the content of the new curriculum was well organised and the layout of the content was well arranged in terms of knowledge transition from lower to upper grades, compared to the old curriculum. The teachers further revealed that the new curriculum focuses more on the Life Science, unlike the old curriculum which was more Agriculture focused. For example, Teacher C pointed out that; *"the fact is…the content of the new curriculum gives a link between Life Science and Biology…unlike the old curriculum…the new curriculum is best…it prepares the learners for Grade 10 Biology…they will already have a good base and introduction to Biology, that's why I like it…*". Teacher B added that, *"The new curriculum explains well the health of education and living organism unlike the old curriculum…and the difference between the two curriculums is that the old curriculum was too shallow compared to the new curriculum".*

From the document analysis that we conducted, it emerged that the content in the old curriculum is short, less practical, less demanding while the new curriculum content contains lots of information, set at a more advanced level, complicated, too difficult and more competencies had been added. This was also confirmed by HoD A who narrated that; *"…the new curriculum is packed…the content for Grade 8 needs to be reduce... some topics need to be shifted to Grade 9…the content is too much for our learners…looking at their ages, they look not mature to handle all the content in the new curriculum*". Document analysis also revealed that in the old curriculum the learning outcomes were expected to be acquired by the time of completion of Grade 10. Whilst in the new curriculum; Life Science is taught up to Grade 9 and replaced by Biology in Grade 10. On the assessment criteria, it was clearly detected that there was a slight change in the grading system of the two curricula. The old curriculum graded learners with A - 80% being the highest and U - 0-19% being the lowest. It was observed that in the new curriculum, the learners are graded the same as in the latter, but the difference was that the lowest grade had now been shifted from 0-39% implying a U symbol.

The study findings also revealed that the new curriculum provided a clear guidance on how to award grades to the learners unlike in the old curriculum. Teacher C noted that; *"…the assessment criteria for the new curriculum is clearer and more detailed than the old one…we just need to be focused and serious".* As a result of clear guidance in the new curriculum, the participants indicated that they expected learners' performance to improve in the new curriculum. Teacher A mentioned that "*the new curriculum improved learners' ability to perform better*". HoD B added that *"…to me…the new curriculum is straightforward…I expect learners to perform better as the competencies are clearly stipulated."* Our study further revealed that teachers were struggling to assess and conduct practical activities as prescribed by the new curriculum. Teacher B said *"We don't know how to assess and conduct practical activities on some of the topics…and also the required practicals are too much". HoD C* stated that "*…teachers simply assess for the sake of assessing…but they don't really have ideas of what to do and how to do it".*

Teachers' preparations on the implementation of the new curriculum

The participants indicated that they had received training workshops offered at the circuit on the implementation of the new curriculum, but felt it was insufficient. Teacher B outlined: "*Yes, the training was insufficient… it ran for a short lived and was rushed and not everything was explained and after all…not all teachers got a chance to attend the workshop."* Teacher C recommended that, *"at least people from the regional office should train all the Life Science teachers on how to teach new topics of the new curriculum and how to conduct experiments*." HoD B observed that: *"Not all Life Science*

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

All the participants acknowledged that they received support from the regional office through educational officers, and colleagues from the circuit office, however the support was unsatisfactory. Teacher A complained that *"Yes, we received the assistance from our colleagues within and outside the school as well as from advisory teachers…however, this support is not enough…reason being that both teachers and advisory teachers do not have knowledge of how to teach all the topics and…do not have sufficient information on the new curriculum*". In addition, HoD B explained "*I know, we have advisory teachers (education officers) who are very supportive…but we should also understand that…the assistance we get from advisory teachers (education officer) and Rossing Foundation is insufficient due to the timeframe…therefore, assistance is needed".*

Discussions, conclusions and recommendations

The study findings revealed that the Life Science teachers were not happy with the way the implementation of the new curriculum was introduced, noting that it was rushed. This negatively affected the implementation of the new curriculum as teachers were mostly stressed out most of the time. Supporting this view from a different context, Ramparsad (2001) observed that teachers, especially for Grade 1, were not happy during the implementation of the 2005 curriculum in South Africa, as the implementation phase was rushed, and the facilitators had inadequate time to train teachers to meet the stipulated national deadlines. In the same view, Hoadley and Jansen (2009) stated that the training that the South African teachers received was given in a short period of time and the focus was more on the policy document, instead of curriculum implementation. It is against this background that for an effective implementation of the new curriculum to occur, it is crucial that the Grade 8 Life Science teachers should adequately be trained to be prepared for the implementation of the new curriculum.

The implementation of the new curriculum was faced with many challenges including factors such as inadequate teachers' content knowledge, lack of teaching resources and lack of laboratory space and equipment and chemicals. Notwithstanding that, all the teachers who participated in the study had a teaching qualification, the study revealed that the Life Science teachers had little knowledge on some of the themes and topics of new curriculum, especially the scientific process. Similar sentiments were also shared by Cui and Zhu (2014) who stated that teachers especially those from small towns and rural areas in China experienced difficulties when implementing curriculum which was reformed in 1999 due to insufficient content knowledge. These findings are similar to those of the present study in that our study also revealed that the support teachers needed for the implementation of the new curriculum was insufficient. The only teaching resources which were provided by the Ministry of Education were the syllabi, schemes of work, year plans, and a few textbooks with different titles as resources to implement the new curriculum. This in our view, contributed to ineffective teaching and learning process of the new curriculum. The same incident was also observed by Suyanto (2017) who found that schools in Indonesia were not ready to implement the new curriculum due to minimum availability of textbooks for both teachers and learners. This was the same situation that the Namibian teachers were confronted with. The study findings also revealed that Life Science Grade 8 teachers in the Oshikoto region were challenged with the lack of laboratory space, equipment, chemicals, models and visual aids to implement the new curriculum. These challenges contributed to stress and confusion among teachers during the implementation of new curriculum. Nyanda (2011) who conducted a study in Indonesia, shared a similar sentiment that Indonesian teachers encountered difficulties in the teaching of science caused by the absence of well-equipped laboratories.

Through document analysis, we discovered that the content of the new curriculum was well organised and the layout was well arranged in terms of knowledge transition from lower to upper grades unlike in the old curriculum. We observed that the content of new the curriculum contained a lot of information, which was more practical and

more complex compared to that of the old curriculum. For the effective implementation of curriculum reform, we argue that it is important to ensure that teachers are provided with adequate knowledge that will help them to better understand the content of the new curriculum. In terms of learning outcome, the study findings revealed that the old curriculum's learning outcomes were expected to be acquired in Grade 10 whilst that of the new curriculum are expected to be acquired at the end of Junior Secondary Phase, which ends in Grade 9. This was also confirmed by Iipinge and Hako (2017) that the Junior Secondary Certificate was moved from being attained after completing Grade 10 and shifted to Grade 11. The findings also indicated that the old curriculum assessed learners on how they had attained the basic competencies while the new curriculum assessed how they have mastered specific objectives. Following this background, the Life Science teachers indicated that they experienced difficulties in assessing learners in certain topics and practical activities. In support of that, Josua (2015) and Moen (2006) stressed that the assessment of learners is important in the process of any curriculum reform and for teachers to be able to conduct assessments, they require knowledge and skill. Teachers should therefore be provided with clear guidance on how to conduct assessments for effective implementation of the new curriculum. Our study also found out that learners performed poorly in the new curriculum for Life Science Grade 8. In a similar situation, Tshiredo (2013) reported that the learners' performance in Mathematics and Science declined during the implementation of the Curriculum in South Africa.

We argue that this study does not only highlight the challenges that act as an impediment to the implementation of a new curriculum but also the positive perceptions. What this study does is the contribution to the educational policy debate in Namibia in terms of preparation, training, support and availability of teaching resources for the implementation of the new curriculum for Life Science. We concluded that teachers had different views regarding whether they were prepared or not to implement the new curriculum. Some felt that they were insufficiently prepared to implement the new curriculum while a few felt that the training received was sufficient. Moreover, the majority of teachers interviewed felt that the introduction of the new curriculum was a good initiative from the Namibian government to improve its education system. Hence, they possessed a positive perception towards its implementation.

We are convinced that teachers have a significant role to play in the curriculum process; hence they need to be well prepared for curriculum reforms. Therefore, there is a need for the Ministry of Education through the regional offices and school management system to avail appropriate textbooks for teachers and learners as well as models, visuals and posters to support the implementation of the new curriculum. The schools need to be furnished with working laboratory equipment, apparatus and other necessary equipment. In addition, the Ministry of Education and education planners at the National Institute for Educational Development (NIED) must consult and involve teachers during the creation of any new future curricula and ensure that teachers, learners and parents are informed about the changes and that they understood them to avoid rejection of the new curriculum. Through this involvement, they become part of the curriculum agenda.

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