Challenges Facing Selected Life Sciences Lecturers in Decolonizing their Curriculum

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Abstract

This empirical study investigates the following research question: *What are the challenges facing selected Life science lecturers in decolonising their curriculum?* Methodologically, the study adopted a phenomenological approach in which a total of three Life sciences lecturers were purposively selected to participate in the study. One-on-one semi-structured virtual interviews and field notes were the only sources of data construction to elicit descriptions of the teachers' experiences when they teach. Theoretically, the study integrated Bhabha's model of the 3rd space with the political and economic forces controlling formal education that creates boundaries and limitations for lecturers to teach freely. This integrated framework was developed to glean insight into the lecturers' pedagogical practices. The findings show that although all three lecturers adopted culturally responsive pedagogies situated in Bhabha's 3rd space, which they believe were effective in decolonising their content, they continue to rely heavily on Western knowledge to validate the cultural phenomena.

Keywords: Decolonisation Life Sciences, Lecturers, Phenomenology, University Curriculum

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Introduction

Drawing on the scholarly work of various researchers from South Africa, Africa, Canada, India, China, Japan, and many others in the rest of the world, there is consensus in the literature, across all disciplines, that the decolonisation of curricula (in both schools and universities) is a noble cause that must be pursued consistently (Aikenhead 1996; Jegede 1999; Prah 2004; Ogunniyi & Ogawa 2008; Le Grange 2016; Koopman 2019; Hungwe & Ndofiredi 2022). Although we (the authors of this paper) are aware that the concept of decolonisation has multiple meanings on which there is not yet consensus, our understanding of the term incorporates three different yet integrated phenomena:

(i) Africanisation;
(ii) the inclusion of indigenous knowledge; and
(iii) the reinstitution of *ubuntu* as a new form of humanity in (South) Africa.

Therefore, the decolonisation of science education means the need to revisit the way teachers and lecturers in Africa and abroad teach science to their learners and students, as an appeal that indigenous knowledge should not be ignored in the science classroom. Therefore, in agreement with Prah (2004), we feel a more regressive stance is needed to ensure not only the inclusion of indigenous knowledge on a superficial level, but to provide rich explanations and descriptions of cultural phenomena and rituals. Prah (2004:105) argues that 'African culture should occupy a central position in the overall social activity of Africans'. In agreement with Prah (2004), Musitha and Mafukata (2018) encourage academics to stop undervaluing 'African intellectual scholarship, culture and literature' in their programmes in an attempt to assist in decolonising university curricula.

In (South) Africa Meshach Ogunniyi has dedicated his life's work to promote the inclusion and integration of indigenous knowledge into the school science curriculum. Over the last decade Ogunniyi and his associates at the University of the Western Cape designed, developed and quantitatively tested various argumentation-based instructional approaches as decolonising strategies for school science. Some of these pedagogical strategies include the Dialogical Argumentation Instructional Model (see Ogunniyi & Dewu

2014; Iwuanyanwu & Ogunniyi 2020), the Argumentation-Based Instructional Model (Gebru & Ogunniyi 2017) as well as the Contiguity Argumentation Theory (Ogunniyi 2007). These decolonising pedagogical approaches encourage discussion and inquiry in the classroom. With regards to curriculum transformation, in a 2008 paper he (M.B Ogunniyi) co-authored with a Japanese science education scholar, M. Ogawa, they argue for a complete shift from a Western science curriculum to an indigenous knowledge curriculum in school science (Ogunniyi & Ogawa 2008). In a response to their paper, Le Grange (2008) argued for a less conservative approach, suggesting a decentering of Western knowledge and the inclusion of more indigenous knowledge into our science curricula, in schools and universities. Koopman (2018: 2019), on the other hand, advocates for finding common ground, in which Western science should be domesticated to fit the African context, whilst giving equal status to indigenous knowledge in school science programmes. It is for this reason that he argues that Western knowledge and indigenous knowledge should be taught as complementary bodies of knowledge.

Different universal theories and philosophical principles emerged from these empirical studies. For example, Aikenhead (1996) proposed his cognitive border-crossing theory to explain how indigenous children deal with cognitive conflict when introduced to Western science. Jegede (1999) extended this theory and proposed the collateral learning theory explaining how students resolve the conflict. While Ogunniyi (2011) proposed the harmonious dualism theory to explain what happens in the mind of students when introduced to conflicting ideas in the science classroom. After developing a deeper understanding of the dichotomy between Western science and indigenous knowledge harmonious dualism were modified to 'Amalgamated Cosmology Theory' (ACT) (Ogunniyi 2011: 544). The ACT highlights the dynamic cognitive structure of the relationship between Western Science and indigenous knowledge as a type of commonality of thought that makes the hybridity of knowledge possible. Owing to space constraints we are not going to explain these theories in detail. So for full detail see references suggested (Ogunniyi 2011).

Within the proliferation of these published works, most decolonial science education scholars agree that although Western science add huge value to our human existence, for example the billions of lives saved over the years, its potentially destructive powers are frighteningly beyond doubt.

In other words, one of our roles as science teacher educators is to use our classrooms as learning spaces to preserve the future as we instil in our students the value and importance of indigenous ways of life. Thus, we can no longer teach science as abstract concepts, laws and theories that are far removed from the everyday lived realities of the student. Instead what is needed in our teacher education programmes is to prepare the cohort of science teachers of the future who will be responsible for educating future generations to be prepared for such challenges. Thus, our future priorities as science teacher educators should be to promote ideas around the role of science in preserving the future of the planet and its inhabitants. Seeing that modern-day human actions, activities and interventions are often seen as problematic to nature the role that indigenous knowledge could potentially play is important in achieving this goal of preserving the future. By decolonising knowledge in our lecture theatres students could develop a closer connectedness to nature which in turn could result in the positive return of an ancient belief, that man and nature are deeply connected and dependent on each other.

This brings us to the aim of this study, which is to answer the following main research question, *What are the challenges facing life sciences lecturers in decolonising their subject knowledge?*

Next, we shift the focus to the theoretical framing of the paper, which is integrated with a succinct literature review.

Theoretical Framework and Literature Review

To understand the pedagogical practices of the teacher, this study will integrate the impact of the political, economic and social orders driving curriculum with Bhabha's (1994) notion of the 3rd space. Figure 1.1 below, illustrates Bhabha's model of the 3rd space, his thinking about how science teachers interested in integrating indigenous knowledge into their lessons should approach the respective science topics.

The *first space* in the diagram refers to the cultural knowledge or cultural capital a teacher/ student holds about the world and science that they bring to the science classroom. This is the knowledge handed down to them from their cultural traditions [experiential past], and it is deeply engrained or connected to their identity (thinking, acting and ways of being). This is also the knowledge that the teacher/ student uses when navigating through every-

day engagements with those around them, as well as their active engagement with nature.

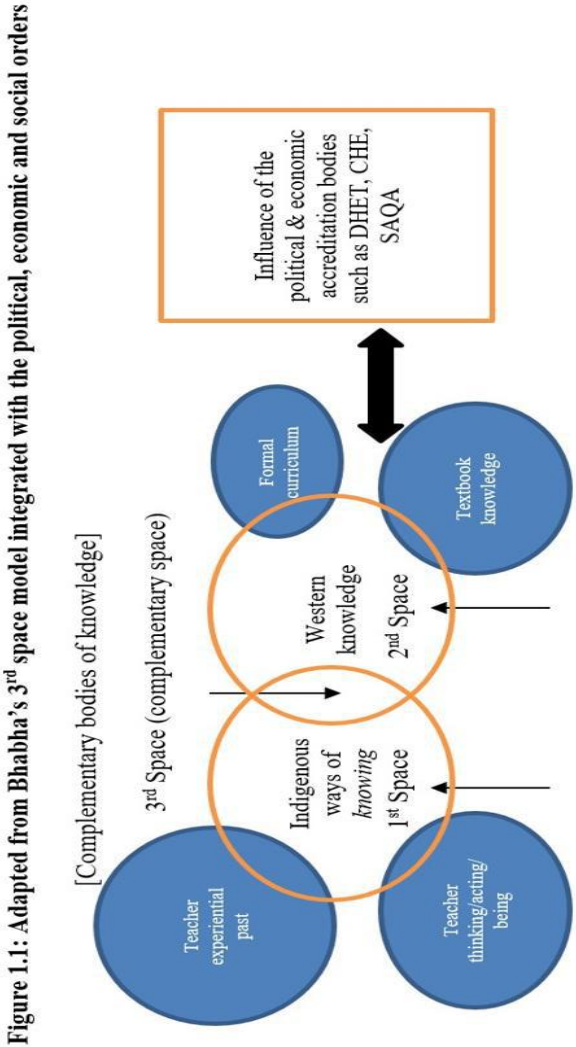

Figure 1.1: Adapted from Bhabha's 3rd space model integrated with the political, economic and social orders.

It is this first space, cultural knowledge, that Lebelo, Moloi and Chitumwa (2021) argue, should form part of the higher education curriculum landscape because it provides a community-based locally relevant knowledge to the students' development and training in universities.

The *second space* represents Western knowledge, the science promoted in curriculum documents as well as in textbooks.

Bhabha (1994) argues that for teachers to promote effective teaching and learning in indigenous communities, and to reduce cognitive perturbance, they must target the *third space* in the design and delivery of lessons. When a teacher approaches the classroom environment from the third space, Koopman (2018) emphasises, they move away from privileged, authoritative discourse and dominance, to provide indigenous students with improved access to Western science, while at the same time embracing those students' cultural outlook on the world, and validating their identity and that of the community from which they come. This approach also allows the student to deal with 'duality of thought' more intelligently, and to resolve the cognitive contention that goes on in his/her thought processes.

In the modern-day curriculum it is almost impossible to disconnect, the political and economic forces controlling formal education that are being ruled by dominant superpowers, such as government, multinational corporations, and international bodies. It is argued in the literature that these political and economic forces create boundaries and limitations for lecturers to teach freely, as a way of controlling the minds of students through the curriculum (Grande 2013). Koopman (2019) explains how global capitalism subordinated cultural knowledge as it reduces education to job training with little regard for cultural knowledge. According to Koopman and Koopman (2021) the neglect of cultural knowledges in school and university syllabi, as well as the inability of universities to transform their curricula, is because the modern-day African university has become a slave of corporate capitalism as they have to play an active role in the creation of a digital future. In other words, the leadership of the modern-day African university is under powerful political, social and economic pressure to drive this technological agenda at the expense of the promotion of indigenous knowledge. Thus, by integrating Bhabha's model of the 3rd space with the political and economic forces that are influenced by global capitalism as a function of the market economy can give deeper insight into what challenges life sciences lecturers face in decolonising their subject knowledge.

Research Design

This study adopted a Husserlian phenomenological research design for the data-construction process. This design requires researchers to allow the information about a phenomenon to flow from the lips of the research participant while suppressing any personal views and beliefs. Scholars such as Levering (2006) and Koopman and Koopman (2020) are of the view that phenomenology is the most appropriate methodology to use when we are reporting on other people's experiences. These scholars emphasise that when people narrate their stories, they also interpret their experiences in their minds whilst they are speaking.

In this study, the focus of the data-construction process is on soliciting information about the lecturers' lived experiences concerning the decolonising of their subject knowledge in the science classroom. More specifically, the study is interested in reporting on:

(i) what kind of pedagogical strategies they adopt in their attempts to decolonise their different science curricula; and

(ii) whether they think they are doing enough to decolonise their various subjects.

Research Participants

A total of three research participants were purposively selected for this study and included two male and one female academic. They ranged in age from 55 to 61 representing various nationalities and races, with between 2 and 14 years of experience as Life Sciences lecturers. Table 1.1 below captures the biographical details of the lecturers who participated in the study.

Table 1.1: Biographical details of research participants

Parti-cipants	Age	Nation-ality	Race	Subject	Gen-der	Qualifi-cations	Expe-rience
A	61	SA	C	Life Science	F	BSc, BEd (Hons), MEd	27 yrs 15 yrs

C	55	SA	B	Life Science	M	BSc, BEd (Hons), MSc, MEd, DEd	10 yrs
D	58	Nigerian	B	Life Science	M	BSc, PGCE, MSc	2 yrs

What was significant about all the research participants was that although all of them were born and raised in different indigenous communities, they are urbanised and 'Western' educated. The two South African participants selected for the study attended school during apartheid and were exposed to what was commonly known as the Verwoerdian Bantu Education. This means they were subjected to Fundamental Pedagogics with its predominantly Western epistemic architecture, a curriculum situated in the doctrine of Christian National Education underpinned by a behaviouristic philosophy. The Nigerian participant attended schools that adopted the British Cambridge system, with a strong Western epistemology and a behaviouristic philosophy.

Interviews

According to Koopman and Koopman (2018), the phenomenological interview allows the researcher to get inside the minds of people to capture, the research participants' naïve conceptions. From this perspective, Seidman (2013) further emphasises how the phenomenological interview allows the researcher to probe the thinking and sub-conscious awareness of the participants to elicit valuable information about their lives and how their historical past influences their current decision making. In phenomenological interviews, one of the guidelines that must be followed is bracketing (Husserl 1970; Hycner 1985). This involves separating oneself from the interviewee's responses and allowing the data to speak for itself. To elicit rich and thick descriptions of the lecturers' experiences, the researchers had to follow a number of steps:

- With respect to the main research questions, the researchers had to focus on what Husserl (1967: xix) calls going 'back to the things themselves'. This means they had to focus on key aspects such as how they feel about their role in decolonising knowledge, what strategies they adopt to decolonise the contents of their subject, and whether or not they think they are doing enough to decolonise the subject content knowledge;

- To gain insight into their perceptions concerning the above focus, we were interested in their pedagogical strategies. We were also interested in the training they received as pre-service science teachers and whether indigenous knowledge was part of their training;

- During the interview the researchers applied the principle of 'bracketing' the self, also referred to as the epochè, to block out any personal views and beliefs about decolonisation that could influence the research participant;

- This means the researchers had to remain within the horizons of the implicit meaning of the text (transcripts); explicate the phenomena holistically (the totality of situations, events and cultural values to which the participants orient themselves, and of which they are conscious); and

- To develop a deeper understanding of the participants' descriptions of their experience, the researchers adopted a Heideggerian approach to the data which allowed them to interpret the frames of reference (interpreting the knowledge the participants hold concerning the context within which they teach).

Field Notes

Field notes are secondary data-collection methods that are used because the human mind tends to forget quickly. The researcher's field notes are crucial to complement the data gathered from the interview. Detailed fieldnotes were made during each interview. We captured what happened during the interview (for example, facial expressions and body language) and provided

some explanations for why we think it happened. In other words, our focus was on the interviewee's mood, non-verbal cues or behaviour. In this study we followed Groenewald's (2004: 15) guidance on observational notes – 'what happened' notes. This involves the use of the senses to describe interview responses. To do so we studied the research participants' actions and behaviour during the interview, such as body language, length of pauses between answers, facial expressions and the tone with which they spoke

Data Explication Process

The data explication framework of this study is divided into Husserl's descripttive narrative and Bhabha's model of the 3rd space that is integrated with the political and economic spaces within which they work, as discussed in detail in the theoretical framework. The descriptive part focuses mainly on each participant's 'direct words and phrases' to zoom in on their subjective lived world as perceived in their consciousness through their own stories. To do this, we had to bracket the 'self' from all biases, preconceived ideas and assumptions. This required us to set aside all ideas that were already known to us about the phenomenon. Bhabha's model allowed us to engage with each participant's transcript at a much deeper layer than what was said by focusing on the meaning behind what was said. From this perspective, we searched for the embedded underlying meaning and the essences to yield meaningful insights into their consciousness (Lopez & Willis 2004).

Husserl's Descriptive Narrative – Getting to Know the Data

In the construction of the descriptive narrative, we were guided by the work of Hycner (1985), Devenish (2002) and Koopman (2013). This means we had to allow the information 'to speak for itself'. To do so, the data was delineated and increasingly pared down to form constituent profiles each with its finite number of natural meanings. This stage of data explicitation formed the basis of a rigorous process.

To arrive at a holistic understanding of each lecturer's actual experience of decolonisation, what kind of strategies they adopt to decolonise the content, and whether or not they think they have a responsibility to decolonise their content, we repeatedly listened to the recordings a few times, followed by the reading and re-reading of the transcripts to get a solid under-

standing of the data. As we listened to the recordings and read the transcripts, we adopted a phenomenological attitude in which we bracketed our personal views and knowledge about the decolonisation of the university curriculum. To see things from their perspective, we also had to suspend all biases and preconceived ideas about what we thought was said in the interviews.

After repeatedly listening to the recordings and constantly reading and re-reading each research participant's transcript, we developed a holistic understanding of their lifeworld concerning their responses to the interview questions. To develop a deeper understanding, we broke the whole transcript up into its constituent parts. These meanings of the parts are identifying units referred to as units of meaning. The units of meaning express distinct aspects of the participant's experiences concerning their role in decolonising the curriculum. According to Hycner (1985: 282), the parts or units of meaning include those words, phrases and non-verbal or para-linguistic communications which express a unique and coherent meaning … clearly differentiated from that which precedes and follows. To remain true to the Husserlian approach of returning to the things themselves, we did not interpret anything that was said. By doing so we allowed the lecturers to speak about the phenomena in their voices.

Clustering the Units of Meaning to Form Themes

The units of meaning described above became the stepping stones for the construction of the fundamental narrative of each participant. From the units of meaning in this study, we developed and defined the central theme (CT) without distorting the essential meaning conveyed by the natural units of meaning (NUM). In some cases, CTs were condensed when there was repetition, or when the NUM was not relevant to the research question. Each NUM was placed in a group and sequenced for the coherence of the data. After this was finalized, each NUM was coded on every transcript to construct the constituent profile of each participant. Each constituent profile was validated by an experienced phenomenologist. Minimal disagreements arose and differences were settled by consensus. After all parties reached agreement, we constructed the descriptive narrative based on the analysis of the constituent profile and returned it to each participant for further validation. After it was returned, we adjusted each query to the satisfaction of the participant.

Constructing the Interpretive Narrative

These themes and clusters of themes were further analysed for high-frequency words, emotive words, phrases and expressions that alluded to the main research question. We used non-verbal communication from the field notes to add meat to the bone of the skeletal NUM. All these words, phrases and sentences were highlighted and cross-referenced throughout the text. For example, if a phrase was repeated several times throughout the transcript, or if emotive words were used, this enabled the development of themes and sub-themes. This was a crucial stage of the analysis process as it allowed for the construction of interpretive themes. This formed the basis for the extended descriptions. It is important to note that each interpretive theme focused on the main objective of the study. All formulated meanings formed a distinctive theme which was both internally and externally convergent. After we finalised our themes, sub-themes and clusters of themes, we compared them with my peer (an experienced phenomenologist) and checked for the accuracy of the overall thematic map. After comparing notes, numerous clusters emerged, which were divided into three main themes. The analysis of each transcript for interpretive meaning was finalised in an exhaustive description. The entire structure was based on the structure of the phenomenon, i.e. the participants' perceptions, strategies and personal views of what they think they were doing in the classroom.

Trustworthiness

Trustworthiness of a phenomenological approach rests in the researcher's ability to allow us to hear the lecturer's inner voices in their own words. This means turning away from positivism and subjective idealism to render accurately and specifically their experiences of themselves and their active engagement with the process of decolonisation of the curriculum. In other words, we were seeking knowledge of the participants' self-as-knower-of-the-world which in terms of Merleau-Ponty's (1962) reasoning, this allowed us to glean insight into understanding their cultural gesticulation as the information obtained through their senses flowed from their bodies and was communicated through their voices. In addition, we allowed the participants to describe their experiences without interpreting their words as far as possible.

Ethical Considerations

After permission was obtained from the Education Faculty Ethics Committee at the university where the study was conducted, we drafted consent forms for all research participants to sign. Diener and Crandall define informed consent as 'the procedures in which individuals choose whether to participate in an investigation after being informed of facts that would be likely to influence their decisions' (1978: 57). For this study several aspects had to be explained to the participants to ensure their informed consent, namely, the purpose of the research project, procedures, reporting and dissemination of the research, right to withdraw from and re-join the project, rights and obligations concerning confidentiality and non-disclosure of the research, and outcomes. We used pseudonyms for all participants to protect their anonymity (Frankfort-Nachmias & Nachmias 1992).

Findings

Lecturer A: Descriptive Narrative

Educational Training

Lecturer A smilingly and proudly identified herself as a coloured female, who grew up in the rural areas of South Africa, in a place named X. This area, the place of her birth, she pointed out in modern day terminology can be viewed as a nature reserve reserved for coloured people only because looking back 'this is how I remember it today'. When asked if the cultural knowledge they were exposed to as children was incorporated into the school curriculum, she said:

> I entered school but this indigenous knowledge we learned growing up as children were completely ignored because it did not form part of the curriculum. In all formal sectors or structures (like church) the indigenous knowledge were frowned upon as where I came from was considered uneducated. You had to speak proper Afrikaans. It was regarded as inferior for the so called uneducated. Even when we came to Cape Town, the people here would laugh at you, asking what is this girl talking about? If you did not speak like them, they would make you feel you don't belong here, especially your accent. So, we did not speak our language. For example, when someone asked how

> was the food, I would say it was 'tgouboe' – very bland.

She continuously stated that she felt how her culture gave her a sense of belonging, but when she moved out of her hometown, her culture was taken away from her. Lecturer A also contended that this knowledge was not part of her training later as a university student and as a prospective teacher. When asked if she still values this knowledge, she said:

> I think I have lost all those knowledge. I picture it like a parabola. As I'm reflecting on where I grew up, peeking into my community in which I grew up I see it as a complete decline, so you kind of ignore it because of my formal education. But as I'm getting older these things come back to you. Because as I am meeting some of my childhood friends, when we meet we show a lot more appreciation of that knowledge compared to fifteen years ago. I think one realises as we grew older that which is indigenous that which we regarded as old-fashioned is actually who we are.

She also pointed out that in the modern-day indigenous knowledges are becoming more important. Therefore, said that 'we must include indigenous knowledge in the curriculum'.

Pedagogical Approaches

When asked to describe her pedagogical approach with respect to including indigenous knowledge into her science lectures, she said:

> I think I was scratching the surface here. I have read quite widely and realise the sea of literature on indigenous knowledge on the African continent. Thinking back what I should have done was to contextualise it; what I did not do in my practice is to teach my students the economic value of IK. For example, I could have taught them the economic importance of fynbos. Its medicinal value. This is something I did not do. The general conception is that IKS does not have any theory. There is no knowledge about this, because it was viewed as an inferior approach to medicine. But people using it have the knowledge and we should use this info get it from people

> and develop a theoretical framework to inform my students.

One of the main challenges in incorporating indigenous knowledge into her lesson she stated was the lack of theory as she continuously struggled to link the content to indigenous knowledge, because at the end of the day that is what is required when the learners write a test or an examination. This is because of the standardization of education in South Africa. She is convinced that the whole concept of decolonisation is something that we have to pay careful attention to in order to assist students in identity formation. It is for this reason that she said 'we have to transform the way we look at knowledge'. When asked to explain this statement, she continued 'with this I mean we must not ignore Western knowledge because IK on its own cannot stand alone; it's dependent on Western knowledge. Because of my training I start with IK because there are no concrete facts and from there to Western science'.

Effectiveness of the Approach

Lecturer A pointed out in the interview that she thinks she is not convinced that she is doing justice to incorporate IK in her lectures:

> The little that I have been doing I can almost say is minuscule. For example, when I'm doing biomes in South Africa and link it to our prescribed text even the textbook does not have enough information. So I have to go look for journal articles on its economic value, such as job creation, medicinal uses, threatening of the vegetation, tourism and so forth. This takes time but I do think that what I'm doing is not as effective because it only stirs the student's interest but I think I can do more. So what I do is I tell them to contextualise in terms of the South African situation and if it has something to do with IKS I'll encourage them to bring it in. When I'm done with my PhD because I'm reading up on IKS, and I'm back in the classroom I'll make students aware that the curriculum that we are following might not be authentic enough.

In other words, although Lecturer A contextualises her content within the indigenous knowledge frameworks, she finds it difficult to move beyond the

dominating Western knowledge system when she teaches a topic such as biomes. In the interview, also captured in the above quote, she feels that perhaps she should give a stronger place to IKS. This, she argues, can only be done when she has gathered enough information on the various Life Sciences topics while she is reading for her PhD.

Lecturer B: Descriptive Narrative

Educational Training

Lecturer B is one of 5 children raised by a single parent. He grew up in a village in the Eastern Cape. At the age of 10, he said 'I moved back to my mother, in the Eastern Cape who was a matron in the university'. When asked what the most important values instilled in him during his childhood experiences were, he said,

> The concept of ubuntu is applied in my community. So when we did not have sugar or a meal we would go to our neighbour to ask for some. When we slaughtered a goat, we would send it to others in the area, so it's not for us. The other families did the same when they slaughtered animals, we would get something as well. … The well-being of the community depended on the community, because we helped each other.

When asked if indigenous knowledge formed part of the school curriculum, he pointed out that both in primary school and high school his teachers did not make any reference to indigenous knowledge. 'So, when I went to school I became colonised, because science and mathematics were taught from a Western perspective'. It was only later when he was much older that he started to question things. He stated that he was silenced by his teachers who forced him to learn the things he was taught in school. Even the university curriculum was not any different as the focus was mainly on remembering facts, theories and laws. 'This knowledge was not the knowledge I grew up with', he frustratingly (frowning) stated. Therefore, he felt he became displaced as he no longer felt a sense of his cultural identity. When asked to explain this statement, he said 'For example, when I grew up, we needed to cover mirrors and to sit still. My grandparents did not explain why we had to do this, but when I went to school, I learned the scientific principles that

comes with the Western knowledge'. He felt that the knowledge of science was divorced from his traditions. So what should have happened in school and university, he felt, was that teachers and lecturers should have linked the formal educational knowledge to their everyday experiences. 'If this was done', he said, 'then we would have had a very good understanding of our cultures'. He made the point that one of the biggest challenges he faced back then, and that continues to be explicit in modern-day curricula, is the fact that the content lacks context. When this happens in university lecturer theatres, he feels they become displaced because everything is mainly about Western science. 'So, I have nothing against Western knowledge; in fact, it is a good thing and I welcome it, but we must link it to the lived realities of a child'. The following statement is a practical example of what he meant by drawing on the lived experiences of a child to explain scientific principles:

> In my culture, a rainbow tells us that it has stopped raining and it is not going to rain again. A tornado is seen as a snake that destroys houses and cattle and anything that gets in its way. So I'm struggling to understand how this snake can cause so much devastation. We call this *'inkamyamba*'.

At this stage of the interview, we could sense lecturer B's frustration with the curriculum under apartheid, when he attended school, which he implicitly suggested lacked criticality. In other words, to him, a curriculum should not be about culturalization nor psychologization, but entail looking critically at both indigenous cultural and Western epistemologies.

Pedagogical Approaches

When asked to describe how he incorporates indigenous knowledge into his lessons, he said:

> What I do in the classroom is use my traditional experiences and various other cultural phenomena as a child and then incorporating it in my classroom. I don't only use my culture but I study other cultures too. I like to learn about other cultures, so I infuse Western content with the culture. I will explain to the students this is my understanding of what I think is happening. So, I create a space of dialogue

> so that we can argue and discuss. I love these debates as some of their responses do make sense. But there are others in class who is happy with what is in the textbook, so they don't care about what those students from traditional spaces have to say. I make it my responsibility to teach them about other cultures and the worldview they hold.

He further stated that after embracing his students to indigenous ways of being (drawing from various cultures), he then links the indigenous knowledge they hold to Western science to provide in-depth understanding and explanations of what the various cultural phenomena mean. This is because cultural knowledge does not provide clear and coherent explanations for indigenous phenomena.

Effectiveness of the Approach to Decolonise Content

Lecturer B pointed out that he feels what he is doing in the classroom to decolonise knowledge in his subject is very effective. He said:

> I attempt in all my classes to start from the premise of welcoming the students' cultural worldview into my classroom. This means I always give time and space to indigenous worldviews. Once we have exhausted all the different views on the topic, then I start to bring in Western science. But Western science is secondary because it then allows me to give explanations so that they can see the indigenous worldview much clearer. That's why I think there is not much that you can do to decolonise the content, because we do not have documented information and books that I can draw from.

What we observe from lecturer B's response to the question on whether he thinks he is doing enough to decolonise the knowledge in the classroom is his explicitness on how important he views his task of decolonising the curriculum to be. His body language (nodding his head), facial expression and tone with which he spoke expressed the seriousness for epistemic justice. This is summed up by the last part of the above quote when he said '… there is not much that you can do to decolonise the content …'.

Lecturer C: Descriptive Narrative

Educational Training

Lecturer C was born and raised in an indigenous community, namely the Y tribe in the West of Africa. Throughout the interview, he was very passionate in the way he spoke. He pointed out how his interaction with nature formed a huge part of his childhood experiences. These indigenous ways of life never stopped influencing his thinking and action even up until his adult life. When asked whether his traditional ways of life were incorporated into his school science curricula, Lecturer C responded as follows: 'As a learner indigenous knowledge formed an integral part of our learning. Especially, plants, trees and its value to us as people'. He added: 'School training enhanced our understanding of indigenous knowledge. For example, when we talk about the local knowledge, education enhanced that knowledge'. When asked to describe what kind of activities took place at school in the science classroom, he said:

> During classes, we were taken around the school to see those plants that can be used for certain purposes. For example, malaria is very common in Nigeria, so back then we learned about the '*Dongoyaro'* plant. *'Dongo'* means tall, so the tree is big with a white canopy. The outer part of the tree can be scraped and boiled, and we drank it to cure malaria. We were told in school they extract chloroquine to cure malaria. There are many other examples I can use but we used nature to cure us. In the curriculum, they adapted it to the environment. They are not teaching learners things outside of their lived experience.

We asked: 'Now that you moved to South Africa what is different from how you were raised and whether or not you think we attribute the same value to indigenous knowledge?' He said:

> When I came to South Africa, I see people beautifying their gardens with ornamental plants. They don't plant things that they can use for food or medicinal purposes … I find this practice very strange… Even the learners and students think that cabbage grows on the shelves of shops and not in the soil in which they grow their plants.

We then shifted the conversation to his views on Western knowledge versus indigenous knowledge. He responded: 'Indigenous knowledge is easily accessible and inexpensive, whereas Western knowledge is expensive because it is more regulated'. We then asked him to clarify this by using an example to explain the point about economic worth; he said 'For example, when you go to a pharmacy or visit a medical doctor you have to pay. It is for this reason that I prefer indigenous as opposed to Western knowledge'.

Pedagogical Approaches

We were very interested in finding out whether his teaching approaches are reflected in his story explained above. He pointed out:

> What I do and often don't see other teachers do, is to take children around the school, and then into the communities to make them see what is valuable in the community, particularly the knowledge that the elders hold. In other words, make the words and language our elders speak more practical. For example, the Rastafarians, they go through the traditional processes of passing information and knowledge from one generation to the next. When I first came to Cape Town, I saw them dressed in sacks, others are dressed in suits in the cities. So, we must let the kids take the good aspects of indigenous people.

He added,

> even in an online space, I integrate indigenous knowledge into my lectures. For example, when I cover digestion as a topic, I show the students some of the plants, that they can use to help with poor digestion before I go through the curriculum. I take them on an online journey showing them where the plants can be found and what they look like.

The above clearly shows that lecturer C has a strong indigenous component in his thinking and in his planning. Although our thinking is heavily seduced by Western epistemic frameworks, what we see in Lecturer C's responses is a love affair with his indigenous ways of life which he practices in his classroom.

Effectiveness of the Approach

When asked if he thinks his approach to decolonising the university science curriculum is effective, he said

> I think my approach is very effective because students can see the value of indigenous knowledge in their everyday life. We must introduce students to the practical nature of indigenous knowledge. For example, learners must be taught to see beyond the human body and understand the psychic and spiritual nature of our existence.

What we observed from Lecturer C's response is how he views his approach to the decolonisation of his Life Sciences curriculum as a thoughtful process. In his view he is filled with hope, that he is effective in decolonising knowledge, because he takes ownership and responsibility to decolonise the content. He pointed out that he makes it his responsibility to ensure that he values the indigenous knowledge and ways of life that they bring into the science lecture theatre.

Discussion

The findings show that all three lecturers in this study holds similar perceptions of what the 'decolonisation of the university curriculum' mean. To them it is an approach that is situated in Bhabha's (1994) 3rd space model. That is, a type of cultural hybridity and not cultural purity in which WS and IK should be taught as complementary bodies of knowledge. Such an approach to decolonising the university curriculum, they point out, will assist students to discover, renew or even further develop their understanding of the epistemic and ontological nature of both knowledge systems as a way of promoting critical thinking.

However, although the lecturers place a high premium on integrating local cultural knowledge into their lectures, all of them agree that they continue to rely heavily on Western science to give meaning and depth to the various cultural concepts, phenomena and ritualistic processes. This finding resonates with Mutsui's (2015) concern that 'ideas derived from indigenous expression, require validation from Western science and scientists'. Therefore Gratani, Butler, Royee, Valentine, Burrows *et al*. (2011) caution researchers that if such reliance on Western knowledge persists, Western

science will remain superior to indigenous knowledge. Gratani *et al*. (2011) further point out that if this heavy reliance on Western knowledge continues to remain in place, Western scholars could remain and even become more disrespectful of African cultural knowledge. This is because to them indigenous concepts and phenomena will be viewed as empty signifiers as they lack in-depth scientific explanations to make sense of them.

Although the lecturers adopt culturally responsive pedagogies, their cultural upbringing remains second-order expressions of their *Lebenswelt*. Thus, the causality of their *knowledge-of-the-self-as-knower* (indigenous/ cultural imprint) is dependent on Western knowledge – the second pedagogical space (Bhabha 1994). This means that their pedagogical approaches continue to pursue the established Western objectives and strategies. Such approaches Mukwambo *et al*. (2014) point out are mainly about story-telling by sharing their personal lived-through stories as first-hand accounts of the significant stories and events that took place in their communities during their childhood. However, although this approach opens up a plurality of knowledge in which the lecturer transports students to a deliberative engagement with science that enables contextualised epistemologies, from an academic perspective science cannot be taught in our lecture theatres without the Western epistemic architecture. This raises the question: Can we consider these approaches as effective ways to decolonise knowledge in our university curricula?

Although all three lecturers (A, B and C) claim that they consider these approaches as effective ways to decolonise their subject matter content, this can be translated into the question as to whether they achieve epistemic justice. What is striking about this finding is that although lecturers are given epistemic freedom in their subjects to include a plurality of knowledge in their lecture theatres, university curricula in South Africa continue to be tightly structured and controlled by external accreditation bodies, such as the Department of Higher Education and Training, Council of Higher Education, South African Qualifications Authorities, amongst others. The impact of these statutory bodies with their concomitant policy frameworks guiding the practices of academics cannot be ignored. Thus, although the lecturers feel that their work on decolonising knowledge is effective, the claim remains questionable given the complexity and influence of the political and the economic dimensions. This is because university curricula continue to advance and promote the practices and demands associated with neoliberalism.

Key among these demands is the focus on 'higher-level skills' (human capital) and 'problem-solving' research (intellectual capital) (DHET 2013), which are all directly linked to the objectives of a specific economic strategy (DHET 2012). All these policies are designed to ensure that South African universities remain relevant abroad. To do so, universities need to be competitive within the rules imposed by a global knowledge economy. This global knowledge economy advances global capitalism as a function of a market economy. It is for this reason that Grandy (2013) makes the point that politics lies at the heart of preventing critical discourse on issues such as decolonisation. The question that arises here is 'What can be considered epistemic justice in Life Science?' One approach to shift towards epistemic justice, is captured in the words of Grande (2013):

> … the insurgent process of disruption and undoing entails political/pedagogical strategies that go beyond simply resisting settler relations of power and demands working to redefine the epistemological underpinnings through which the colonial world order is maintained.

In other words, to decolonise our university curricula require lecturers to confront the discounting and devaluation of African knowledge systems. Since indigenous ways of knowing rest on two approaches, (i) *agrapha* - oral transfer of knowledge from the elders to children; and (ii) via lived-through experience, this historical conjuncture in the absence of formal assessments is what stands between being partially effective versus being truly effective. This we believe is because the focus of all assessments is on Western knowledge and not on indigenous knowledge. Yet again rendering indigenous knowledge is not important enough to be evaluated.

Conclusion

This paper attempted to answer the following main research question: What are the challenges facing selected Life Science lecturers in decolonising their curriculum? To establish this, the paper adopted a phenomenological approach in which three Life Sciences lecturers from a university in South Africa were recruited as research participants. One-on-one semi-structured virtual interviews and field notes were the main sources of data construction

to provide insight into the awareness of lecturers with regards to (i) what the decolonisation of the university curriculum is all about and (ii) the challenges they faced in decolonising the Life Sciences curriculum. Firstly, the findings showed that the lecturers had a good understanding of what the decolonisation of their curriculum entailed. Secondly, the lecturers had a good understanding of decolonising pedagogical strategies. As such, all three of them adopt pedagogical approaches that are situated in Bhabha's (1994) third space by integrating cultural knowledge into the Life Sciences curriculum, which continues to be dominated by Western knowledge. Thirdly, because they continue to rely heavily on Western knowledge to validate the cultural knowledge they bring into the classrooms, they continue to pursue the established Western objectives for teaching Life Sciences. Thus, although the lecturers in this study are driven by the desire to decolonise their Life Sciences curriculum, they continue to be pressured by national and institutional policies undergirded by political, social and economic forces that drive the promotion of Western knowledge. Therefore, we recommend that an institutional framework be developed that can be implemented in the university sector to guide academics on how to decolonise their curriculum.

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