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Decolonising Rural Ecologies of Teaching and Learning

Guest Editors
Bekithemba Dube,
Dipane Hlalele &
Macalane Malindi

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COVER PHOTO

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ARTICLES

Decolonising Rural Ecologies of Teaching & Learning

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Editorial: Decolonising Rural Ecologies of Teaching and Learning

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Emergent rural epistemologies from the South, find themselves in contested terrain in the academic space. In competition with colonially inspired epistemologies from the North as well as reigning epistemologies serving urban areas and city life, they are challenged to set their own knowledge production agendas creatively and engage with them constructively. Aiming at serving and empowering rural communities, they should problematize the South-North and rural-urban epistemological divides creatively, and produce the requisite rural knowledge epistemologies that serve the objectives of rural sustainable development. They need to negotiate and articulate rural epistemological repositories, social networks, treasured values, moral wisdom and social cohesion, imaginatively and resourcefully in the broader universe of knowledge production relevance, equality and epistemic transformation and development.

These resources, so typical of rural communities, should be intellectualised, harnessed and mobilised in constructive and enabling epistemological networks that serve rural, communal and upwardly mobile wealth creation, modernisation, and socio-economic advancement. As such, rural, home-grown epistemological production would not only reclaim its own space for knowledge production in the broader, universally contested epistemological arena, but also contribute its own intellectualised sociocultural wealth and wisdom

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constructively, to the globalising and digitalising world.

Furthermore, cognisant of the challenge of fostering a constructive and productive epistemic framework for rural learners that attend higher education institutions in the South, decolonial pedagogies should foster positive and affirmative worldviews, human dignity, and knowledge and skills development for rural self-advancement. This should be done in the context of the history of the decolonial experience of the resistance to slavery, and the confrontation of, and struggles against imperialism and colonization, and the achievements of independence and self-rule, as the dominant trajectory in the story of the modern world (Ndlovu-Gatsheni 2013:11-12).

A centrally significant constituent focus in this narrative, is the struggle against the dehumanisation, binarism and hierarchisation of colonising knowledges and the triumphs of the assertion of human dignity, freedom, equality and sustainable development against the imbalances of power, knowledge and the colonial legacy (Sithole 2014). It challenges rural pedagogies to be positively and practically, not only rethinking the very constitution of the present, but also the construction and reconstruction of African subjectivity as an important and integral project in rurally focused teaching and learning.

In the face of the ever-growing divide between the rural and urban, and the South and the North, the innovative engagement of this educational challenge is needed today, more than ever before. It is along the two trajectories – knowledge production and pedagogy innovation – that the Qwaqwa Campus of the University of the Free State, situated in the rural Afromontane region of the Maloti, invited scholars nationally and internationally to contribute theoretical and empirical papers on how rural epistemologies can be a force to be reckoned with in the epistemic space of sustainable development for all.

This issue of *Alter*nation is the result of more than eighty papers that were delivered at the very productive and far-reaching conference. We want to thank all the participants from all parts of South Africa, and we hope that the effects and dynamics of the conference as wel las this issue will provide a foundation for further thinking and developments.

For easy reference, below, we present the abstracts of the articles in this issue, from the authors in this issue, as to their respective research contributions, and scholarly focuses and related arguments. Thank you for your diligence and hard work in bringing this work to fruition.

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In 'Re-Thinking the Value of Land-based Livelihoods in Former Bantustans of Post-Apartheid South Africa', **Takunda Chirau, Precious Tirivanhu and Owence Chabaya** explore the value of land-based livelihoods in former bantustans of post-apartheid South Africa. South Africa, particularly the former bantustans, continue to endure massive inequalities with respect to economic opportunities and poverty remains highly prevalent in the former bantustans. However, agriculture-based livelihoods (crop and livestock production) contribute to sustenance of female headed households. This study applied in-depth interviews and questionnaires to a sample of female headed households, using a purposive non-random sampling procedure using Cala, in Eastern Cape province of South Africa as a case study. Findings indicate that, besides farming economy dwindling in the rural areas, land-based livelihoods continue to provide a safety net for households for both consumption and income generation. This contribution cannot be underestimated as households continue to hang on in face of ever-increasing poverty. The study concluded that it is important for the government and civil society to build on the current farm livelihoods and augment their economic value.

In Lesotho HIV and AIDS is a national crisis with many rural citizens being either affected by or infected with HIV and AIDS. So severe is the rate of infections that HIV prevalence since 2013 has increased from 23 percent to 25 percent, making Lesotho the country with the second highest HIV and AIDS infections worldwide. Of these infections, a substantial percentage is young people. However, learners are also variously affected by the pandemic. Education is generally regarded as a significant factor in the fight against HIV and AIDS. Thus, Lesotho developed the Lesotho Education Sector HIV and AIDS Policy in 2012, which articulates the education sector's response to the HIV and AIDS crisis. It is against this backdrop that the article by **Kelello Rakollobe** and **Kevin Teise**, 'Realities Regarding the (Non)Enactment of the Education Sector HIV and AIDS Policy in Rural Lesotho', reports on a study conducted to explore the realities regarding the (non) enactment of the LESHAP (2012) in particular, schools in the rural areas of Lesotho. Data were generated through semi-structured interviews with various stakeholders in Lesotho education. Findings from the study suggest that the aims and objectives of the LESHAP (2012) might not be realised because of various factors which negatively impact its effective enactment. These factors include a lack of knowledge and training; a lack of school specific policies; culture; a lack of training; the absence of the policy at school; a lack of school specific

HIV and AIDS policies; religious convictions; and the attitudes of teachers about condoms. The article concludes with recommendations aimed at enhancing the enactment of the LESHAP 2012.

'Investigating Patterns of Mathematics Talk in a Rural South African Classroom of an Early Career Primary School Teacher' is the result of an interpretivist research design, by **Benjamin Shongwe**, that reports on an investigation whose purpose is to explore the case of the patterns of talk through which an early career mathematics teacher and her learners interact to construct mathematical knowledge in a South African rural school. Despite increased interest in classroom interactions in primary mathematics across all grades, the problem is that little research has focused on measuring the level of communication patterns taking place in mathematics classes of early career teachers. Exploring the level of communication patterns in mathematics classrooms entails exploration of conjecturing given that conjecturing is fundamental to learning mathematics. To characterise classroom communication patterns, classroom interactions in three lessons (n = 48) of a conveniently selected early career teacher were observed. In framing this study, I draw on various aspects of Vygotsky's sociocultural theory (SCT). To corroborate data obtained from these observations and the RTOP was adopted to detect the degree to which the early career teacher's classroom instruction was reformed. The findings indicate that approximately two thirds of the communication patterns were authoritative and therefore low in the level of interanimation of learners' conjectures. Recommendation for future research is for studies that incorporate both rural and urban schools so that broader understandings of findings can be gained to better understand the problem prior to designing intervention programmes. The implication of these findings for teacher education programmes is that there is a need to foster instructional practices that encourage the delivery of mathematics that is honest to mathematics as a discipline and honours mathematics learners. From a gender equity position, and in light of a plethora of intervention efforts particularly targeting female learners, future research could shed light into how participation and the quality of classroom talk are distributed across gender.

Although higher education as a sector is open for access to many more students than has been the case in the past, students from rural backgrounds continue to be confronted with many barriers which construct them as misfits for university studies. In '"Being in" and "Being of": Reflections on Being a Rural Working Class Student, and Academic Support Practitioner, in Higher

Education', **Samukelisiwe Khumalo** present reflections on how being a student from a rural community has influenced her practice as an educator who has coordinated Academic Monitoring and Support at a South African university. It examines layers of academic and non-academic challenges experienced by students from rural working class backgrounds, through the lens of her own narrative. Using Participatory Narrative Inquiry (PNI), she includes her personal experiences and insights as a participant researcher and interrogates these experiences and observations using Bourdieu's (1985) cultural capital theory. The evidence suggests that the growth in the number of students from rural socioeconomic backgrounds entering higher education is not matched by the preparedness of students for tertiary study, or by institutional readiness to support and nurture these students. She highlights lessons learnt for rural schools' praxis.

The article by **Dipane Hlalele** and **Moeketsi Mosia**, 'Teachers' Sense of Community in Rural Learning Ecologies', reports on the findings of a baseline study that sought to explore teachers' sense of community in so far as it contributes to sustainable rural learning ecologies. Community is a group of people who, together, share the feeling they belong to something, can influence and be influenced by one another, and can have their needs fulfilled by fulfilling the needs of the group. This small-scale mixed-method (quantitative and qualitative) study administered the revised 24-item Sense of Community Index (SCI-2) questionnaire on 161 male and female teachers randomly selected from rural schools in the eastern Free State region of South Africa. The questionnaire was tested for reliability using the Cronbach alpha coefficient and was found to have a reliability score of 0.71, indicating an acceptable reliability coefficient. In addition, three narratives from teachers in one rural school were sourced. Findings indicated that teachers who stay in urban areas but are employed in rural schools evinced a similar sense of belonging, membership, shared emotional connection as well as influence as their counterparts who stay in rural learning ecologies.

The article 'Decolonising the Teaching of Mathematics in Rural Learning Ecologies by Using Indigenous Games' by **Tshele Moloi** aims at decolonising the teaching and learning of mathematics, such that mathematics is accessible to all learners in rural ecologies. The paper uses *diketo* (coordination game), as an example of indigenous games to teach patterns such as linear functions in mathematics. The paper is guided by the theory of community cultural wealth. The theory views community members as experts in rural

learning ecologies. The marginalised knowledge they possess empowers them to find their own solutions to local issues. The knowledge that learners possess from the rural learning ecologies is not used in the teaching and learning of mathematics. The researcher maintains that there are no deficiencies in the marginalised knowledge of the excluded people. As a result, the researcher tapped into the marginalised knowledge of subaltern communities to teach linear functions, using participatory action research (PAR) in generating data; hence, the involvement of community members (parents, traditional leaders), education experts (teachers, mathematics subject advisors, lecturers from institution of higher learning) and learners themselves. All the discussions by participants were captured by using tape-recorder and video camera. The generated data were analysed using Van Dijk's critical discourse analysis (CDA). CDA enabled the study to acquire deeper meanings of the text. Again, CDA assists in identifying instances of 'discursive injustices' in text and talk, and signifies a form of resistance to unethical and unjust social power relations.

In 'Decolonising Practical Space in Rural Teacher Education: The Vehicle of Peer Assessment', **Cias T. Tsotetsi, Bunmi I. Omodan** and **Bekithemba Dube**, aver that previous studies have demonstrated positives and challenges related to assessment, including peer assessment. On a positive note, various authors perceive peer assessment as being more reliable, compared to self-assessment. While peer assessment has positive benefits, markers tend to either under- or over-score their peers. A dearth of literature that explores using peer assessment as a vehicle to decolonise the teacher education system exists. Informed by decolonisation, they generated data from one module presented at a rural university in South Africa. The module had 90 students enrolled. They gave students who were doing the module online open-ended questions for them to comment on. Of the 90 students, 59 students participated. Students had mixed feelings about peer assessment. Positive findings included peers being in accord of thinking as the assignments' authors, and enabling pre-service teachers for the school environment. Peers under- and over-scored one another because of carelessness, not reading with an understanding, and poor class attendance. The article concludes by challenging peer assessment implementers to put mechanisms in place to curb peers from either under- or over-scoring themselves.

The article by **Milton Nkoane** and **Bekithemba Dube**, 'Evoking Afrikan Grand-narratives as a Quest for Decoloniality to Champion Rural Knowledge Systems', proposes to disrupt the inequalities in the discourse that

tends to subjugate '*other*' forms of knowing and pushes these forms of knowing with vanity to the periphery in the corpus or pyramid of knowledge systems. In this regard, we zero in on rural epistemologies within the milieu of universities' knowledge creation. Knowledge systems have variances or a dichotomy informed by lived experiences which are not the same. Dominant discourses have been assertive in knowledge systems and domesticated other parameters for the interpretation of realities as historically out-of-date, irrational, and pre-modern. Through decoloniality theory and Grand Afrikan narratives, we challenge the hegemony in the knowledge industry where the tendency is to perpetuate injustices in knowledge systems especially when coming from the global south, more so in rural contexts. A consciousness of this intellectual piece aims to advance an argument that over and above the hegemonic discourses of the global north over '*other*' forms of knowing, the boundaries could be ruptured in pursuance of equality and justice to '*other*' forms of knowing. We answer two questions: what is it to decolonise the knowledge system in a higher institute; and how can rural knowledge gain access to mainstream knowledge production? This article probes difficult questions about hegemonic socio-political discourses in the knowledge industry. The line of argument is in pursuance of making an effort to refine, protect and defend 'other' knowledge systems and demystify knowledge as something that is presumed to be universal.

The purpose of 'Exploratory Study of TVET Stakeholders' Experiences of Implementing Work-Based Education in Rural Ecology', is to explore TVET stakeholders' experiences of implementing Work-Based Education (WBE) or Work-Integrated Learning (WIL) for students in rural ecology. The study by **Phiwokuhle Ngubane, Dumsani Wilfred Mncube, Maria Siwela Mabusela,** and **Sunday Olawale Olaniran,** was conducted at two campuses of the Umfolozi TVET College, in northern KwaZulu-Natal to understand their experiences. The National Certificate Vocational (NCV) is a new and modern qualification offered at FET Colleges since January 2007. It is offered at Levels 2, 3 and 4 of the National Qualifications Framework which are equivalent to Grades 10, 11 and 12. The NCV programmes were earmarked for the study in order to explore the suitability of these programmes for these learners in a rural context. Purposive sampling was employed to identify the sample size of six participants, which comprised campus managers, senior lecturers and WBE champions. The qualitative method was used to generate data. The findings reveal that college management does not prioritise the needs of TVET students

or give necessary support to curriculum implementers on the ground to carry out the WBE programme to the benefit of learners from rural areas. It was also discovered that college management seems not to understand their role in ensuring compliance with regard to the implementation of WBE. It was evident that there is a need not only to maintain strong ties with existing host-employers, but also to ensure that new host-employers are recruited to help address the shortage of places for students to do their workplace learning. The study recommends that there should be a clear vision for the implementation of WBE in the rural context, and that the vision should be clearly communicated to all role players to ensure effective implementation of the programme.

The purpose of the study, 'Grade Ten Teachers' Understanding of Multiple Intelligences in Teaching Physical Science in the Rural Context', by **N. Pearl Blose** and **Blanche N. Hadebe-Ndlovu** was to explore physical science teachers' understanding of multiple intelligences in teaching. Understanding multiple intelligences in teaching is very important in order to achieve effective teaching. The most important tenacity of this research is to show some of the observable structures of a holistic and constructive enriched curriculum for physical science that shapes the strengths of learners within the classroom. Human intelligence varies so much that each learner has a unique combination of intelligences resulting in a unique personal profile for each learner. As a result, each learner learns in a unique way. It is therefore, very important for teachers to understand multiple intelligences teaching, so that they may reach every learner when teaching. The traditional ways of teaching, catered for only mathematical and linguistic intelligences, leaving learners with other intelligences behind. When traditional ways of teaching are used, physical science is viewed as a difficult subject, because most learners fail the subject. This article presents an interpretive case study of four research participants who are grade ten, physical science teachers in a rural school in Durban, KwaZulu Natal. For data generation, narratives, one-on-one semi-structured interviews and classroom observations were used. The study concluded that even though physical science teachers are showing the visibility of understanding multiple intelligence but they cannot articulate what multiple intelligences are. In their teaching there was visibility of the understanding of multiple intelligences, as they use multiple intelligences strategies unknowingly especially when they use visual aids.

Schools in multiple-deprived environments such as rural areas face a number of unmet needs. The unmet needs extend to science classroom

practices in the form of pedagogies that continue to defy curriculum reform impetuses undergirded by important transformation agendas. Such is the case with the teaching and learning of physical sciences in schools located in multiple-deprived environments through inquiry-based practical work (IBPW). The instructional strategy is reform-oriented and also heavily sustained by both material and human specialist capital. Often one or both of these forms of capital are lacking in schools located in multiple-deprived environments. The lack of one of the capitals also restricts the function of the other. Using Sen's capability theory, this study teased out the shaping of a pedagogical framework to guide pre-service teachers as they facilitate IBPW in multiple-deprived physical sciences classrooms as part of a practical response to calls for the decolonisation of higher education. Against this brief background, this study is titled, 'Shaping a Pedagogical Framework to Guide Pre-service Teachers' Facilitation of Inquiry-based Practical Work in Multiple-deprived Environments'. It is a qualitative case study of one South African Universities, by **Maria Tsakeni**. Data were collected by means of semi-structured interviews with two science teacher educators. In addition, secondary data were also collected by means of document analysis of a secondary school chemistry syllabus to determine the pedagogical demands for IBPW. The findings indicated that methods courses for IBPW prepare pre-service teachers for ideal science classrooms and not to function in multiple-deprived conditions. The study identified three crucial capabilities for the pre-service teachers to make IBPW accessible in multiple-deprived classrooms and opportunities for the decolonisation of the curriculum. A recommendation is made for methods curriculums to include courses to prepare pre-service teachers to function in multiple-deprived science classrooms.

The endeavour to impart sustainable knowledge in a postcolonial state is significantly hindered by legacies and cultures of subjectivity that are perpetuated long after declarations of independence. In the absence of the urban advantage, learners in educational institutions located in the margins tend to experience the heightened challenges of acquiring a sustainable education amid rurality. Learning English as a second language in former colonial spaces poses complex challenges for both the teacher and, especially, the learner due to the hegemony of English that thwarts epistemic access in various ways. This article by **Sindiso Zhou, Nhlanhla Landa** and **Baba Tshotsho** is titled, 'Indigenizing English in the ESL Classroom: Decolonizing Knowledge for Epistemic Access in Spaces of Rurality'. It interrogates the

possibilities of decolonizing the educational experience in the language classroom to maximize epistemic access through indigenizing English using translanguaging. The study engaged in participatory observation of a purposively sampled first year class of university students doing an English for Specific Purposes course at the University of Fort Hare. While acknowledging the largely rural background of students in the sample, translanguaging was employed in the teaching of selected topics to measure content receptivity and student outcomes. The languages involved were English, isiXhosa and isiZulu. Through translanguaging, students participated with enthusiasm during discussions. In the absence of a negative affective filter and cognitive linguistic monitor that is characteristic of learning and speaking in English, students registered positive learning outcomes in both spoken and written assignments. During learning activities, facilitative crosslinguistic influence was acknowledged and explained. The findings established that students were conscious of the discriminatory and xenophobic nuances of scripted curricula as enacted by educators. Therefore, an attempt to redress this injustice through inclusion of, and appreciation for indigenous languages during learning through indigenizing English affirms students' identity, resulting in positive learning outcomes for marginalized and student populations in spaces of rurality.

Makeresemese Rosy Qhosola and **Sechaba Mahlomaholo**'s 'Creating Decolonial Sustainable Learning Environments for the Fourth Industrial Revolution in the Rural and Urban Higher Education Contexts: A Study of Inclusive Management Strategies' explores some decolonial management strategies in four Higher Education Institutions in South Africa that seem suitable for the creation of Sustainable Learning Environments (SuLE), in anticipation of, and in the context of the Fourth Industrial Revolution (4IR). These strategies are considered to be decolonial in that they are inclusive and valorise other forms of managing beyond those that are conventional and western in orientation. Furthermore, they validate the local experience and the particularity of the individuals and institutions under scrutiny. There are currently demands for high levels of technological acumen within the higher education sector, hence the open labour markets. However, there are those workers and students in the Higher Education sector who are at the middle to lower end of the performance levels and who may be rendered superfluous and at risk of failure and dropping out, if they are unable to access these high-level skills and expertise. These tend to be left out as their institutions and societies advance technologically, resulting in increased

inequality, unemployment rates, poverty levels and a subsequent deepening of the colonial arrangement of society. In order to address these challenges, there is a need for institutions to adopt management strategies that can create those sustainable learning environments in which all can succeed, regardless of their differences, thereby allowing for the transformation of society towards the desired decolonial state. This paper reports on how such management strategies are implemented in two urban, and two rural higher education contexts, respectively. In both categories of institutions; the physical, the physiological, the psychological and cultural modes of being human are used as bases for inclusive and decolonial management strategies which ensure success of all in the 4IR. These seem to give even more workers and students epistemic access to knowledge forms demanded in the 4IR era, irrespective of the geographical or socio-economic location of the institution, thereby ensuring cognitive justice for an even greater number of individuals. These strategies both advance and are anchored in complex problem solving, critical thinking, creativity, people management, coordination with others, emotional intelligence, judgement and decision making, service orientation, negotiation and cognitive flexibility – all of which constitute the context for a decolonial condition.

The life worlds, views, opinions and lived experiences of children with street life experiences are not sufficiently explored since these children are muted and relegated to the periphery of society. Researchers do not believe that these children can contribute suitable data and they are thus studied indirectly through adultist approaches in which adults serve as proxies. Researchers who adopt adultist approaches rely on adults' observations and views about the needs and lived experiences of at-risk youth. Therefore, the commonly held views on how streetism could be lessened are those of adults who have proximal interactions with children with street life experiences and not of street-involved children and youth themselves. In this article, 'Intercepting the Deluge of Streetism in a Rural Free State Town: The Views of Children-on-the-street', **Macalane Malindi** and **Lineo Molahlehi** report the findings of a qualitative study in which they explored how child migrations to the streets in a rural town in the Free State Province of South Africa could be prevented. They studied the children directly. The study involved 17 school-going children who fell into the category of children-on-the-street since they kept ties with their families of origin. The participants were aged from 10 to 16 years and in grades ranging from 4 to 10. The participants visited a drop-in centre run by a non-governmental organisation after school where they

received meals before heading home. This qualitative study involved three focus group interviews with the participants sampled conveniently and purposively. Two focus groups consisted of six participants and one consisted of five participants. The data were subjected to inductive content analysis and the following broad themes emerged: stabilising family systems, providing opportunities for gainful employment, eliminating social exclusion and discrimination within families, and strengthening peer support. The findings were derived from the views of children-on-the-street themselves. The findings have implications for research and practice within the fields of social work, education and psychology.

The final article in this issue of Alternation, is titled, 'Rural History Teachers' Perspectives on the Significance of History' by **Mbusiseni Celimpilo Dube**. The rising trend internationally is for history to be taught in schools with a focus on historical significance so that learners may understand relationships between the past and contemporary issues. Given the importance of such an emphasis, the present study sought to explore the perspectives of rural history teachers about historical significance. In addition, the study examined the impact of rurality on the perspectives of these teachers. A qualitative approach was used to collect data by means of interperspectives in the King Cetshwayo education district, north of the Tugela River along the coast in KwaZulu-Natal. The participants consisted of seven professionally qualified history teachers who had taught history for at least five years in the Further Education and Training (FET) band. The findings revealed the perspectives of these teachers that studying history in a way that highlights historical significance develops learners' understanding of contemporary history and political knowledge, acquisition of life lessons, and local, national and global awareness of pertinent issues that affect everyday life. The findings also revealed that rurality impacted negatively on perspectivesof rural history teachers. This research study indicates the value of the potential of historical significance to equip and develop learners in the rural South African classroom with relevant historical knowledge and the ways in which rurality affects the way rural teachers look at issues affecting daily life.

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Re-Thinking the Value of Land-based Livelihoods in Former Bantustans of Post-Apartheid South Africa

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Abstract

This paper explores the value of land-based livelihoods in former bantustans of post-apartheid South Africa. South Africa, particularly the former bantustans continue to endure massive inequalities with respect to economic opportunities and poverty remains highly prevalent in the former bantustans. However, agriculture-based livelihoods (crop and livestock production) contributes to sustenance of female headed households. This study applied in-depth interviews and questionnaires to a sample of female headed households, selected using a purposive non-random sampling procedure using Cala, in Eastern Cape province of South Africa as a case study. Findings indicate that, besides farming economy dwindling in the rural areas, land-based livelihoods continue to provide a safety net for households for both consumption and generation of income. This contribution cannot be underestimated as households continue to hang on in face of ever-increasing poverty. The study concluded that it is important for the government and civil society to build on the current farm livelihoods and augment their economic value.

Keywords: livelihoods, female-headed household, bantustan, sustainable livelihoods

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Introduction

South Africa has inherited a legacy of inequality particularly in the distribution of wealth and access to decent services. Poverty is mainly experience in rural areas which include the former Bantustans-'reserves'. Rural economies are underdeveloped in most southern African countries and depends primarily on the urban industrial economy. The communal lands supports the majority of the rural populace-majority whom live in abject poverty, 24 years later after the end of apartheid. Studies have shown that communal lands and livestock rearing play a crucial role in the livelihoods and household economies of rural inhabitants (Shackleton, Shackleton & Cousins 2000; Cavendish 1999). Rural-urban migration has reduced the agrarian base creating a heavy reliance remitances. (Shackleton *et al*. 2000). However, the assertion by Shackleton *et al*. (2000) does not dismiss the fact that the communal lands in South Africa continue to provide livelihoods for direct household maintaining and well-being as well as supplementing household income, food security, and networking. The rural livelihoods are complex and are ever-changing such that the lives of rural populace are typified by multiple activities which are and not limited to causal labour, social welfare grants, crop production, livestock rearing, and small businesses. These activities are no small in any way as they provide household sustenance.

Livestock farming is common in communal areas, albeit differences on the number of live-stock owned between female headed households and men headed households. Small livestock which are goats, sheep, pigs and chickens are owned by the majority of communal households (Lahiff 1997). Although the size of livestock is relatively small especially within poorer households of rural areas, the value attached to it is significant. Shackleton, Shackleton and Cousins (2000: 586) argues that the 'benefits are more widely distributed through a number of mechanisms, including bride-wealth payments, loaning of animals, cooperative ploughing arrangements, meat and milk sharing, and hiring out and selling of goods and services'. Within the livelihood discourse, such benefits are underestimated, and there has not been much documentation of the benefits that are derived from livestock ownership. Shackleton *et al*. (2000: 2) argues that 'contributions of livestock in rural areas is undervalued both in economic and livelihood terms for several reasons, including: a focus on productivity, limited consideration for non-monetised products or services, and a neglect of small stock such as goats or poultry'.

Similarly, Cousins (1996) argues that the significance of 'multi-purpose livestock systems' in rural areas is seldom valued (see Shackleton's 1999 study in Bushbuckridge, South Africa). Studies that have been conducted across southern Africa highlights that the goods and services attained from livestock farming are analogous, but their significance are different from one to another. The differences are as a result of different factors for example the environmental conditions, grazing land, size of the herd and income.

Crop production is also pertinent in the rural areas. It takes form in arable field cultivation, and homestead cultivation (which includes gardening). With the precarious nature of rural livelihoods, a number of households cultivate homestead gardens. The purpose is to reduce expenditure on things that can be grown. In many instances, the agriculture production system involves crops such as leafy vegetables, maize, sorghum, millet, bean pumpkins, melons, tomatoes, onions and sweet potatoes. The crop yields are comparatively lower than commercial agriculture production system. Ardington and Lund (1996) critiqued the Project for Statistics on Living Standards and Development (PSLSD) for underestimating the importance of agriculture-based livelihoods to sustenance of rural households. This is because 'yields estimates often do not capture substandard or infected produce that may be used as animal feed, nor good quality produce that is kept aside as seed and Plots or fields often have an irregular shape, and often contain small uncultivated areas which are difficult to measure (e.g. grave sites, kraals, pathways' (McAllister 2000). The net effect is that crop production as part of livelihoods for rural population is undervalued, yet it lessens vulnerability and augment security (Cousins 1999). Similarly, Andrew, Ainslie and Shackleton (2003) argues that 'agriculture provides an important supplement, especially those with little access to wage income and a vital safety net in times of crisis'. The much talked about South African land reform has not yet made significant transformation and bearing on rural livelihoods (Hall, Jacobs & Lahiff 2003). Land-based livelihoods activities will continue to suffer as the government prioritises a creation of black commercial farmer bourgeoisie at the expense of the rural poor who with the support of the government can have their livelihoods transformed significantly.

Rural livelihoods are multi-varied and dynamic. The outcomes of rural livelihoods are depended upon geographical location, gender, access to resources and other factors. Rural areas are populated by vulnerable groups including women (also female headed households) as such due to patriarchal

existence, their livelihoods are often constrained. Agrawal (1997) argues that rural communities are complex, and are characterised by unequal distribution of power. Women are always on the receiving end, their access to key resources, for example land, and access to inputs are regulated by formal and informal rules-majority set by patriarchy. Although these regulations conserve save a purpose to which they are created for, they also destabilise livelihoods which are based on natural capital (land-in a loose sense).

It is against this background that this study seeks to unpack the significance of agriculture-based livelihoods to female headed households in the Communal areas of Cala in the Eastern Cape Province of South Africa.

The Present Study

Much research on land-based livelihoods and reduction of vulnerability has focused on the entire rural populace without a specific focus on gender. Rural populace is characterised by different groups; women, men and children. However, their livelihoods cannot be seen through one lens or be treated as a homogeneous. A sizeable number of studies have looked at land-based livelihoods. Cousins (1999; 1996) wrote on the contribution of communal rangelands to rural livelihoods in South Africa, and livestock production and common property struggles in South Africa agrarian reform. There has been attempts by Shackleton *et al*. (2000) to re-value communal land of southern Africa. Shackleton *et al.* (2000) showed the significance of land-based livelyhoods including crop and livestock production. Although their study cuts across all gender, it falls short of documenting how livelihoods of female headed households are transformed as a result of crop and livestock production. Although there are overwhelming debates around the shift from agriculture-based livelihoods to non-agriculture-based livelihoods; with agriculture-based livelihoods being labelled as insignificant to well-being of rural livelihoods. This present study is built upon studies which argues for recognition of agriculture-based livelihoods. This study is important for a number of reasons. It fills an empirical lacuna by generating fresh and current literature on female headed household livelihoods. It does so by providing a gendered examination precisely looking at female headed households in Cala communal areas. This study utilises explorative approach in its quest to understand the value of agriculture-based livelihoods.

This study borrows from the sustainable livelihood and resilience

approach. The central values of the sustainable livelihood approach are that it helps to understand how communities and individuals use different forms of capital; natural, physical, social, human and financial to maintain household well-being (see Scoones 2000).

Methods

The study utilized a purely qualitative design (via in-depth interviews and focus group discussions) to allow for in-depth understanding of the importance of crop production and livestock rearing in Cala communal areas of Sifonondile, Mnxe and Lupapasi in a manner which captures their socially-structured context of their existence. A quantitative method was also adopted to complement the qualitative techniques in form of a questionnaire. To choose the female headed households, a purposive non-random sampling technique was used. Purposive sampling increases the likelihood that variability common in any social phenomenon will be represented in the data, whereas random sampling tries to achieve variation through the use of random selection and large sample size (Muruviwa, Nekhwevha & Ige 2013). From population of female headed households in villages of Sifonondile, Mnxe, and Lupapasi a total of 36 female heads (14 in Lupapasi, 12 in Mnxe and 10 in Sifonondile) were interviewed. The sample size was determined using the concept of saturation (Mason 2010), where it was felt that beyond 36 respondents, there was no generation of new knowledge. Each of the interview took approximately 80 minutes to complete. All the interviews were conducted by the researcher's and assistants. A total of 65 questionnaires were also distributed in the different villages of Cala. Using content analysis, the qualitative data collected was post coded and sorted to determine common themes, shared by the female heads with respect to agriculture-based livelihoods. The collected quantitative data was analysed using SPSS. In upholding research ethics, the names used in thus article are not pseudo names to protect identity of participants.

Results and Discussion

The majority of South Africa's rural population resides in the former Bantustans (homelands). Cash from urban areas and government grants often form the mainstay of the rural economy in most of the former Bantustans, now

called communal areas (including in Cala). Nonetheless, this should not distract from recognition of the diverse livelihoods that rural households pursue (including agriculture) and the contribution of these livelihood activities to overall livelihood wellbeing.

Crop Production

There is evidence of some agricultural crop production in the villages surveyed in the communal areas of Cala, and this takes the form of homestead cultivation and arable field cultivation. In the case of homestead-based cultivation, female heads (and households generally) engage in gardening or cultivation of land in the vicinity of their house. A variety of crops were grown in Cala and these differed from household to household and from village to village. Overall, evidence elicited from the survey indicated that eight main crops were grown around the homestead, namely, beans, groundnuts, pumpkins, spinach, tomatoes, cabbages, onions and maize. The majority of leafy vegetables were grown year round while groundnuts, pumpkins and maize were grown during the rainy season starting from October, November and December.

Homestead gardens are patches of land just a few metres away from the homestead and are from 1 hectare to 5 hectares in size. In the villages of Sifonondile, Mxne and Lupapasi, 93.8% of female heads practiced homestead gardening (or at least had access to land for this purpose) and 6.2% did not have access to land for homestead cultivation. Female heads practicing homestead gardening were not though making full utilisation of the land available due to a number of constraints including but not limited to lack of inputs (notably seeds), destruction of crops by livestock and non-availability of water. The vast majority of female heads (88.3%), when they practiced homestead production, did so over an area of about 50 metres by 50 metres (less than a hectare). Other female heads (10%) reported gardens of between 2 and 3 hectares, while a small number (1.7%) spoke about between 4 to 5 hectares under cultivation.

Female heads were clearly only partially utilising the available land around their homestead and, indeed, there is evidence showing that some of the land has not been ploughed and cropped for a number of years at the time of my fieldwork. From the in-depth interviews with female heads, it became apparent that the size of the gardening venture at the homestead depended in part on the size of the plot available for gardening. The older female heads of

Sifonondile, Mnxe and Lupapasi generally have the bigger homestead plots available to use for gardening because they have lived in the villages longer and, at the time that their household stands were demarcated, the population in the villages was smaller than it is currently. As the population increased over time, the pegging of homestead stands involved the demarcation of increasingly smaller plots. The case of Nqobile, one de jure female head from Lupapasi, serves as an example of how homesteads were located and demarcated in the past:

> *1961 as usual the land was allocated by the headman Mtuzile and there were very few Xhosa people living in the area of Lupapasi. Land allocation for both housing and cultivation was in abundance. I still remember when my late husband was allocated this homestead, the headman counted his footsteps until my husband shouted to him to stop. Between homesteads there was a lot of space because they were very few families in the area; it changed later on around the 1980s if I remember well. Our recently married sons started their families and it meant they have to take some land from their parents; that's why these 1980 and 1990 villagers have small pieces of land around their houses. Even our cattle, goats and sheep did not have to travel far to graze but now livestock travel far to graze* (Life history, Lupapasi Village, November 2014).

Thus, subdivision of plots because of new families (through marriage) being formed in Cala has led to smaller areas available for homestead gardening and this of course affected the older generation which has lost some of its land in the process.

Evidence from the study highlights that the main reason for cultivating gardens around the house is for consumption purposes, particularly because female heads lack sufficient income to purchase foodstuffs and hence they grow crops to reduce food expenditures (particularly on those crops which they can grow). This concurs with the findings of Statistics South Africa (1999) which found that 93% of small farmer households engage in this form of agricultural production primarily to produce food for own consumption. In Cala, 53% of the female heads specifically indicated that they cultivated gardens for consumption, while 6.7% alluded to the production of some surplus, with surplus crops being sold on local markets to obtain extra income

for immediate household purposes. Further, 18.3% of the surveyed female heads said that the main reason for homestead gardening was to improve food access, and 13.3% indicated that gardening was undertaken to improve food supply and nutrition. Both of these reasons though relate back to homestead gardening for household consumption. The spirit of ubuntu (meaning togetherness) is still prevalent at times in Cala as some female heads (8.3%) donated garden crops to family members outside their household, as well as to friends and neighbours, in acknowledgment of kinship and community ties. This finding corroborates what McAllister (2001) found, namely, that community ties and assistance become important at least during times of crisis.

One female head (aged seventy) spoke of the overall importance of gardening and how it saved her some money to use on other expenditures:

> *Money is a problem nowadays because I am no longer working and none of my children support me. On my monthly grocery I do not include vegetables that I grow and it saves money that I can use to buy electricity and other things. At times when I run out of meat, I substitute meat with spinach to eat with pap…I grow onions and pumpkins so I do not buy these. At times I sell spinach at a cheap price of R7 a bundle* (Focus group discussion, Sifonondile Village, November 2014).

Of importance to note is that female heads in times of extreme crisis substitute meat with available grown crops such as spinach, and this is testimony to how central land-based livelihoods can be, at least potentially, to female headed households. Selling the crop produce does not yield much income per month. In a good month, more than R100 was gained by certain female heads depending on the demand for a specific crop such as leafy vegetables (spinach and cabbage). These were often in demand at the middle of the month when the majority of households had exhausted their food supplies (meat in particular).

Crop production under homestead cultivation is not an easy activity, as it is time consuming. Several hours per day were spent on gardening although the time involved differed from one household to another. The majority (64.1%) of female heads spent 2 to 3 hours in this activity, while 20.5% spent 1 to 2 hours, 12.8% spent 4 to 5 hours and a small number of female heads (2.6%) reported to be spending more than 5 hours per day in gardening. Female heads spending a significant number of hours tended to hold

larger sized plots. However, the yields of crops grown by female heads, as measured in quantitative terms, were limited due to the lack of inputs, water challenges and the absence of support services (as there were no agricultural extension services in the villages).

Besides homestead gardening, female heads in Cala also pursed agricultural activities in arable fields (or *amasimi*). Compared to homestead cultivation, though, relatively few female heads cultivate arable fields. In the Cala villages of Sifonondile, Mnxe and Lupapasi, there is certainly no pronounced evidence of demand for arable land to cultivate. Shackleton, Shackleton and Cousins (2001), in citing several studies, indicate that demand for arable fields is often greater than the supply of available land. In contrast, my study found that cultivation of land in the villages in Cala is limited, with vast tracks of land unutilised. In this respect, McAllister (2001) provides evidence that, in Transkei, communal farmers have been abandoning cultivation of their fields and investing all their agricultural efforts in the homestead plot (which can be up to 2 hectares), with the focus of production activity being household consumption or commercial sale. Something similar seems to be happening in Cala, as arable fields are in abundance but often underutilised or unutilised.

Evidence collected from Cala revealed that, in terms of utilising the arable fields, the majority (69%) did not utilise them while 31% of the female heads did. Arable fields in the Cala villages varied in terms of distance from the area of residence (or homestead), as some were located close to the homesteads and other arable fields were located a few kilometres away. The major crops grown are maize (*imbona*), beans and pumpkins. Maize is for home consumption and is eaten as green cobs though some female heads reported to occasionally enter local markets (in Cala) to sell maize cobs at a fixed price of R6 to R7 a cob. Other female heads indicated that they sold cooked cobs at a price of R10 each. It is quite revealing that female heads sold maize cobs to earn extra income in the context of their precarious livelihood situation and, like selling crops from homestead gardening, this was meant for acquiring cash to meet basic household needs.

Cala has a long history of arable land cultivation which dates back to the colonial era and before. Hence it is an old practice carried over and evolving through generations, though disrupted at times because of apartheid agricultural engineering such as betterment schemes. Currently, the practice is proving to be difficult and its prevalence seems to be on the decline for various

reasons. Female heads for instance indicated that destruction of crops by livestock, changing rainfall patterns, lack of inputs (money, seeds and fertilisers) and labour shortages are major challenges forcing them to abandon or scale down arable cultivation. Data gathered through the survey indicate that a significant majority of female heads (78.1%) lack seeds, 12.5% reported to be lacking draught power and 9% lacked actual physical labour to work on a day-to-day basis in the fields. In terms of size of the arable fields (as evidenced by transect walks), they are relatively large. And a significant majority (69.2%) reported that they owned (or possessed) 6 to 10 hectares of land while a smaller number (30.8%) of female heads owned up to 5 hectares of land. Thus, if the challenges are addressed, there is considerable potential for arable land cultivation in Cala.

From the focus group discussions and in-depth interviews, though, there was overarching agreement that, despite the land distribution programme of the government, little or nothing was being done by government specifically to support and bolster subsistence farming in Cala communal areas (for example, with regard to input acquisition notably seeds and fertilisers). Compounded by lack of household income among female heads (and other households in Cala), a significant majority (92.3%) of heads reported that they retained home-grown maize seed for maize production while 7.7% borrowed maize seed. This reliance on own seeds however has reduced the size of land cultivated, subsequently reducing the yields. As such, relatively-small areas are cultivated because of inadequate resources and lack of inputs (Fenwick & Lyne 1999), despite people's access to pieces of arable land beyond the homestead. This is also consistent with Francis' (2000) finding that underutilised arable land is primarily due to that fact that people in rural areas, particularly in the former Bantustans, lack the agricultural means, including equipment, fertilizer, and credit, to work the land.

The land in communal areas like Cala is state-land, but households tend to treat it as private property with security of tenure. The arable fields in Cala are inherited and are passed on from generation to generation, and are subject to subdivision because of new families emerging. Kinship and lineage therefore are very significant factors in access to and possession of arable fields. Some of the arable land is divided among sons, but most of these young men are not using the land, either because they are staying in urban areas or, even in cases where they are residing in the village, they lack inputs and sufficient labour to work the fields. With specific reference to the female heads

in Cala and their acquisition of land, a slight majority (53.8%) inherited their land and these consisted of de jure female heads who retained the land for usage after the death of a husband. For other de jure female heads (46.2%), the land held by them was formally allocated by the headman in the different villages. For the de facto female heads, they alluded that the land belonged to their husbands. No female head indicated either invading or purchasing the land.

Unlike homestead cultivation, arable land cultivation is practiced over the rainy season in the soils that potentially store moisture until the dry season. Field cultivation is carried out from October or November with harvesting taking place from March to April depending upon the hybrid maturity of the maize seed used (see Table 1).

Table 1: Timetable for crop production (homestead and arable fields)

Jan	Feb	March	April	May	June	July	August	Sep	Oct	Nov	Dec
Leafy vegetable are grown all year round											
							Land preparation				
									Planting in arable fields		
Weeding		Harvesting									Weeding

Source: In-depth Interviews, November 2014.

Value of Crop Production in Cala Communal Areas

Shackleton *et al*. (2001:592) describe previous studies as underestimating agricultural production and its contribution to communal area livelihoods in South Africa and, in the case of Zimbabwe, it is argued that agricultural activity accounted for approximately 50% of total income to rural households in communal areas of Zimbabwe two decades ago (Bradly & Dewees 1993). Whereas many studies measure the importance of commercial agricultural production (Nattrass & Nattrass 1990, May 1996) with reference to South

Africa, I seek to understand the significance of crop production in former Bantustans and specifically in Cala.

Broadly speaking, subsistence crop production in former Bantustans is of some significance despite the limited level or scale of production and even though it rarely contributes to household income through market sales. As highlighted earlier, homestead crop production (and field production) is mainly for consumption with very little or no surplus for sell. In cases where surplus is sold, and this is done on a seasonal basis, household income is not increased substantially. But this does not invalidate the monetary contribution of crop production which rural households obtain from their land, though this contribution is difficult to measure accurately. The benefits derived from crop-based livelihoods are critical to the survival of many female-headed households in Cala, particularly the very poor, and thus crop production at times reduces household vulnerability to risks such as death.

Using the survey for Cala, it is estimated that the contribution of homestead crop production and arable land production is on average between 15-21% of total female-headed household income. In monetary value, after selling the grown crops, female heads on average spoke about an amount of more than R1200 in sales every two months making it over R7,000 per annum. These findings are consistent with Makhura *et al*. (1998), although my findings are slightly lower than their projection that income generated from selling agricultural produce represented 27,7% of total measured income to the household. It is also critical to note that crops, which in the main are for own consumption at household level, provide a non-cash contribution by supplementing foodstuffs purchased on the goods market. Hence, own-consumption crops reduce household food expenditure.

Nonetheless it is not every female-headed household which earned income through crop sales, and there are several factors which affect the quantity of sales including the size of homestead land available, and the availability of inputs and labour. Some earn much less than R7,000 per year while others earn considerably more. The case of Sibongile, a de jure female head aged fifty-five, is revealing in as far as earned income is concerned.

> *Since the death of my husband in 2005 I learnt how to use my hands and earn a living for my family. Almost everyone in the village has access to land but some people do not use the land because of different reasons, some you have seen are too old to cultivate land. I am not yet qualified*

> *for an old pension grant as other female heads so I have entered into a deal with people who run food outlets in Cala town, like Mama Zakele who is a good and constant customer. All my produce is purchased by these customers ranging from onions, beetroot, beans, spinach and at times tomatoes but they are always affected by a disease. The amount of money that I get over a year is more than R7000 in a very good year. This money is very important to me to support my children. It is not easy though; it requires a lot of effort from fetching water, spending many hours weeding and constantly guarding goats and cattle from entering the fence* (Life history, Sifonondile Village, November 2014).

In a different vein, another de jure female head aged sixty-eight indicated the following:

> *Gardening is important to me and my grandchildren because sometimes I take time to go and collect my old age pension and child support grant so I always make use of spinach in the garden to eat with pap and if I do not have money for transport I always sell in advance before the day for collecting the grants…I do not get a lot from selling the spinach only R7 a bundle but if I have imbona [maize cobs] I get R30 for a dozen. It is not always the case because crops are at times destroyed by goats and owners of the goats do not compensate* (In-depth interview, Sifonondile Village, November 2014).

Clearly, crop production is not an easy task, particularly for older female heads, yet they persevere because it complements other livelihood activities at times (for example, old age pension) or even becomes a more crucial source of household sustenance when other activities are not possible. The crops produced were either marketed in the local village or neighbouring villages, as this reduced transport costs. However female heads indicated that, during month end, crops were sold further away in Cala town when they go and receive their monthly pensions or child support grants. The income generated varies across households, but coming to exact monthly amount through crop sales (per household) was not possible because female heads do not record their sales. The crop income is used for immediate household consumption purposes and income generated (let alone profits made) was never recorded.

In conclusion, although female heads in this study were unable to

clearly quantify the monetary value of their crop production sales, or the value of crops consumed directly by the household, the fieldwork evidence in Cala indicates that the contribution of crop (homestead and field) production should not be underestimated. Although there is evidence of abandoned land (particularly the arable fields), this does not necessarily reflect a declining importance of crop production in the livelihoods of female headed households. Certainly, to a level difficult to determine statistically with any fine-tuned precision, crop production increases the self-provision of foodstuffs and generates sporadic cash income.

Livestock Production

According to Cousins (1996), a number of studies have investigated the role and importance of livestock in communal systems in southern Africa. Livestock ownership in Xhosa culture in the Eastern Cape Province, including Cala communal areas, is critical as it acts as a stock of wealth and a safety net in times of crisis. Livestock in the Cala communal areas of Sifonondile, Mnxe and Lupapasi ranged from cattle, goats, sheep, pigs and poultry (chicken). Like in many communal areas (in South Africa and elsewhere), cattle regularly form the main component of livestock and the more the cattle a household owns the wealthier and financially stable it is deemed to be. Although ownership of cattle is mainly attributed to men, female heads in Cala reported that they inherited livestock (in the form of cattle, goats, pigs and sheep) after the death of their spouses, while others have bought livestock. Data collected for this study indicates that a significant majority (95.8%) (see table 1) of the female heads claimed to be actual owners of livestock of some kind while 4.2% of female heads do not own livestock. Those female heads who are owners of livestock are mainly *de jure* female heads (given the absence of the spouse) while those who not own livestock are *de facto* female heads. In *de facto* households, and despite the absence of the husband for extended periods, livestock is owned by the man (spouse). *De facto* female heads indicated that they played stewardship role in keeping livestock while spouses are away. The livestock numbers varied across the three studied villages and differed from household to household depending upon capacity to build up stock levels and the benefits derived from keeping livestock.

The significance of livestock in communal area households is not always directly and clearly recognisable. Overall, female heads under study

revealed that despite having relatively small herds of cattle (and other livestock), these play a significant social and financial role (almost an investment portfolio for savings and security) in their lives. This finding tends to demystify any perception that communal livestock rearing is unproductive as compared to commercial livestock especially with regard to cattle. Many Cala female heads thus spoke as if their livelihoods centred on cattle because of the range of goods and services obtained thereby. In fact, better-off *de facto* female heads and *de jure* female heads revealed that they have invested in cattle rearing despite the drought that recently killed a significant number of Cala cattle.

Table 2: Total number of livestock surveyed in Cala

Type of Livestock	**Cala Communal Areas under survey**			**Total of Livestock surveyed**
	Sifonondile	**Mnxe**	**Lupapasi**	
Cattle	40	15	44	99
Goats	70	25	12	107
Sheep	34	15	108	157
Pigs	12	8	20	40
Chicken	140	60	191	355

Source: Baseline Survey, November 2014

Livestock provides goods and services to female heads in Cala communal areas which are easily ignored and under-valued, including being a source of bride-wealth. At the time of the fieldwork in 2014 almost every household had some form of livestock and female heads stressed the importance of livestock especially when adverse circumstances arose (such as the loss of alternative livelihood sources). Cattle play a crucial role in bringing income to female heads. For instance, evidence gathered through in-depth interviews uncovers that female heads who owned sufficient cattle (or had cattle available at the time) ploughed for cash the homestead gardens and arable fields of other villagers (although this happened only seasonally in the case of arable fields). Comparing with the price charged for a local tractor, female heads revealed that their cattle were ploughing for others at a very competitive rate and that, because most households planted homesteads gardens perennially, this served as a fairly regular source of income. In 2014, a tractor was charged at R400 to

R450 per acre (which is 70m x 70m) whereas using animal draught power cost only R250 to R300 (and at times because of the spirit of *ubuntu* and local networks of social obligation, the price was even much lower). As well, this kind of cooperative ploughing increased food security for female-headed households which did not have cattle or money to hire a tractor.

Given the general inadequacy of household income in the Cala communal areas of Sifonondile, Mnxe and Lupapasi, most households relied on substituting meat with milk (locally known in Xhosa language as *ubisi*) particularly at critical times (mainly relating to mid-month until the month end). In general, Xhosa people as part of their culture attach milk production as very important for their food dishes. Data from the field work uncovered that female head's milk production was mainly for home consumption, such as for eating with pap (known as *umvubo/ umphokoqo*, which is a traditional Xhosa meal involving a mixture of crumbed pap and sour milk). Fresh milk was also used for tea while at the same time for emergency sale to the villagers at a cost ranging from R10 to R12 per litre.

The significance of particularly cattle came out clearly in the interviews with the female heads, notably as a safety net when adverse circumstances befell a household. Also, better-off female heads used cattle as a source of income perennially. This is clear from the following quotation:

> *Owning cattle is very important to me; when my husband died he had just retired and part of his retirement package went to purchase cows in Elliot* [Elliot is a town located approximately 28km east of Cala town]. *I am very thankful to him, I do not work permanently I work for the community works programme* [CWP] *under* [what is called] *Mngcunube. I have entered into a deal with butcheries in Cala and Queenstown* [a town located more than 150km away from Cala town]. *I sell one cow at a price of R5000 and more depending on the size of the cow; in a month I can sell 2 to 4 cows but I never slaughter a cow for my family…I buy calves as well so that I sell them in future otherwise my business will go down…Yes this money is very important especially tuition for my daughter at Walter Sisulu University in Mthatha and buying food and clothes for my children* (In-depth interview, Lupapasi Village, November 2014).

The above sentiments from Sibonelo (a *de jure* female head) are revealing in

highlighting the importance of livestock in the form of cattle as an income generating activity, compared to selling cattle in the face of adverse circumstance. In this context, one female head from Mxne village said the following

> *I was forced to sell my cows at a very low price when my son was admitted at Cala Hospital. Because I have no one to help me, I had to do what it takes to get money in order for my son to have a leg operation…a very low price…R1500 and another one was R2000* (In-depth interview, Mnxe Village, November 2014).

The selling of livestock therefore takes place under different conditions. In the first case, it becomes a means of generating income (of converting livestock into cash) at a favourable market price. In the second case, livestock is sold under desperation and often at below-market value, particularly in households where there is no stable income. Thus, for the vulnerable female head from Mxne, private buyers effectively ripped her off and this served to deplete her household assets over at least the short-term. Cattle though were central in both cases, and specifically the selling of cattle. In this respect, female heads argued that slaughtering a cow for own (household) consumption was like 'eating capital'. Additionally, it was noted during focus group discussions with female heads in Mnxe that cattle were used as an alternative to money in the case of fines levied by traditional courts. In the case of Thokozani, she paid a cow to another family because her grandson Simphiwe had impregnated a niece in the family (locally known as *muzukulwana*).

Besides cattle, households had some form of small livestock during the study period including the following: sheep (18.2%), pigs (18.2%), poultry (36.4%) and goats (7.6%). During interviews and focus group discussions, it became apparent that some female heads kept small livestock (goats, sheep and pigs) not mainly for consumption but for selling. However they slaughter when the need arises particularly during festive seasons when their sons and daughters visit the village. Hence the significance of rearing small livestock differed from house to house, and the significance was also seen in total numbers of small livestock. Female heads who were selling their small livestock were rearing above ten (across all small livestock) while those who reared for social obligation (such as festivals) would have less than five. In terms of selling, female heads argued that at times they slaughtered the

livestock to sell the meat rather than selling the beast live. The market price per kilogram varied depending with the market demand in villages or in Cala town. If slaughtered, female heads sold the meat to villagers at specific prices: during the time of the fieldwork, goat meat was priced at R40 per kg, sheep (mutton) was priced at R45 per kg and pig meat (pork) was priced at R40-R50 per kg. Poultry generated a significant amount: R45 for a chick, while medium to large chickens ranged between R100 to R110 depending on size. Additionally, eggs were sold at R1 each. In addition, there was the case of a *de facto* female head (Thokozani) in Lupapasi Village who owned over thirty sheep and earned much of her household income through small livestock rearing. She claimed that over a three to four month period she receives over R6,000 after selling wool to a company in Port Elizabeth. Broadly speaking, the money generated by female heads through small stock sales was channelled towards purchasing groceries and covering school fees and medical bills.

As with crop sales, it was difficult to estimate the average monthly household income generated through small stock sales. Accurate records were not normally kept. And sales were uneven across the calendar year (with good and bad months), with the timing of sales depending upon household need as well as specific events during the year, with festive seasons being particularly important in this regard. During festive season, for example Easter and Christmas holidays, goats and sheep were priced at between R500 to R700 while pigs were priced at R600 to R900, depending on the size of the animal. For female heads who did keep reasonably accurate records of their sales, an estimated R3000-6000 a month was gained from small livestock, but this is likely an overestimate as better-off households were more inclined to keep records.

Non-owners of livestock (both cattle and small stock) or those households with limited stock levels also have access to and are given products and services from livestock. This is important for such resource-poor female heads as they receive meat, milk, dung and ploughing services through kinship and neighbour relationships. Dung is used as manure for the homestead gardens, as well as a source of energy especially at times of crisis when poor female heads cannot afford to purchase electricity for preparing food. It is also used on floors and as a binding and for plastering houses. Therefore livestock rearing is not simply a household level asset but has implications at neighbourhood and village level as a source of community aid and assistance.

One other source of land-based activity in Cala relates to the long-

standing practice of fishing both as a source of income through fish sales and for household consumption. Fishing is undertaken along the nearby Tsomo and other rivers and mainly during the rainy season. A significant number of female heads practiced fishing themselves while others revealed that their grandchildren were directly engaged in it. In some cases, female heads practiced barter trade with other village members especially during mid-month when food shortages begin to arise. For instance, two fish would be exchanged with another household which has rice or mealie meal. Households also directly sold fish at a price ranging from R10 upwards depending on the size of the fish. Further, market forces of supply and demand affected the pricing of fish within Cala communal areas. During the rainy season (October to February) when this livelihood activity is mainly pursued, the price of fish is low as compared to the months between March and September when the supply of fish is very limited.

Conclusion

This article discussed a recent study on the significance of the agriculture-based livelihood in former bantustan of post-apartheid South Africa, with a focus on female headed households. Literature acknowledges the importance and contribution of agriculture-based livelihoods to sustenance of rural households (including female headed households). However, due to rural transformation, non-farm and agriculture-based livelihoods contributes to sustenance of households. There is a need for further reflection and research to ascertain which of the activities, non-agriculture and agriculture activities contributes to rural households. This study apotheosises crop production and livestock rearing in bantustans as offering household sustenance, precarious employment, and security through generation of food for consumption and money despite the dwindling of farm economy in the former Bantustans. Therefore, there is a good reason for the government and other civil society organisations working in former bantustans to promote agriculture-based livelihoods among female headed households. It is clear from the findings of the study that crop production and livestock rearing has an impact on the female headed households and it is important for the government and civil society to build on the current farm livelihoods and augment their economic value.

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Realities Regarding the (Non)Enactment of the Education Sector HIV and AIDS Policy in Rural Lesotho

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Abstract

In Lesotho HIV and AIDS is a national crisis with many rural citizens being either affected by or infected with HIV and AIDS. So severe is the rate of infections that HIV prevalence since 2013 has increased from 23 percent to 25 percent, making Lesotho the country with the second highest HIV and AIDS infections worldwide. Of these infections, a substantial percentage is young people. However, learners are also variously affected by the pandemic. Education is generally regarded as a significant factor in the fight against HIV and AIDS. Thus, Lesotho developed the Lesotho Education Sector HIV and AIDS Policy in 2012, which articulates the education sector's response to the HIV and AIDS crisis. It is against this backdrop that this article reports on a study conducted to explore the realities regarding the (non)enactment of the LESHAP (2012) in particular schools in the rural areas of Lesotho. Data were generated through semi-structured interviews with various stakeholders in Lesotho education. Findings from the study suggest that the aims and objectives of the LESHAP (2012) might not be realised because of various factors which negatively impact its effective enactment. These factors include a lack of knowledge and training; a lack of school specific policies; culture; a lack of training; the absence of the policy at school; a lack of school specific HIV and AIDS policies; religious convictions; and the attitudes of teachers

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about condoms. This paper concludes with recommendations aimed at enhancing the enactment of the LESHAP 2012.

Keywords: Lesotho education, HIV and AIDS, LESHAP 2012, education policy, policy implementation, policy enactment

Introduction

HIV and AIDS is a global health threat with 36.7 million people living with the disease globally, of which 1.8 million are children (UN 2016). An estimated 25.5 million people living with HIV are found in sub-Saharan Africa (UNAIDS 2016), despite various attempts aimed at reducing new infections. HIV and AIDS does not only negatively affect the livelihoods and futures of the youth as they appear to be the most affected, but it also threatens global development. The situation in Lesotho is no different, as a large number of the Lesotho population is living with or is affected by HIV. This according to the UNAIDS (2018: Gap Report), which estimates that more or less 320, 000 of the 2 million people in Lesotho live with HIV. So severe is the impact of HIV and AIDS on the Basotho people that it was declared a national disaster (Belle, Ferreira & Jordaan 2013:1117; Nyaphisi & Obioha 2015:84).

Education is considered crucial in the fight against HIV and AIDS (Coombe, 2002:25; Kelly 2002:3). UNESCO (2013:7) states that "if schools and the education fraternity are not utilised in the curbing of HIV and AIDS pandemic, Lesotho will for a long time struggle with this epidemic". Being the largest sector, as well as being strategically placed, education in Lesotho is both the hope for the eradication of HIV and AIDS, and a significant role player in the fight against HIV and AIDS.

By virtue of its obligation to the people of Lesotho and because of the responsibility placed upon education to play a prominent role in combating HIV and AIDS, the Ministry of Education and Training (MOET), not only incorporated HIV and AIDS education into its school curriculum (Khau 2016:99), but it also developed the Lesotho Education Sector HIV and AIDS Policy 2012 (*LESHAP* 2012). This policy aims to "prevent the further spread of the epidemic" (MOET 2012: Section 8). However, noble policy aims can be achieved only if conducive conditions exist or are created for its enactment. It is our contention that education can play a significant role in preventing the

further spread of HIV and AIDS in Lesotho, only if the LESHAP 2012 is successfully implemented in Lesotho schools.

Studies conducted in Lesotho education looked at various HIV and AIDS related issues (cf. Hlalele & Letsie 2011; Belle, Ferreira & Jordaan 2013; Khau 2016). We could not trace any study focusing particularly on the enactment of the LESHAP 2012. Based on this silence in the literature, we deemed it relevant to explore the realities regarding the enactment of the LESHAP 2012 in particular schools in rural Lesotho.

In reporting our findings, we first give a contextual background to Lesotho. Having done this, we present a brief overview of the HIV and AIDS situation in Lesotho, as well as the HIV and AIDS macro policy framework that is supposed to respond to the HIV and AIDS crisis in the country. Finally, findings from the interviews concerning the enactment of the LESHAP 2012 are offered and discussed. This paper concludes with recommendations.

The Lesotho Context

The Kingdom of Lesotho is located in the southern part of Africa and it is landlocked by South Africa. It is a constitutional monarchy, which is currently under multiparty coalition leadership. Lesotho is both a member of the Southern African Development Community, as well as of the British Commonwealth of Nations (Tlali & Jacobs 2017: 78). The country covers an area of 35,355 square kilometres which is mostly mountainous, and it has a population of about 1.911 million people, and a per capita income of US$ 1,322.403. The economy is small, with GDP in current prices of US$2.527 billion growing at a 5% average year on year rate (IMF 2014). The 2016 Human Development Report (UNDP 2016) locates Lesotho in the low human development category, because of its very low Human Development Index – 0,497.

Lesotho's education is primarily influenced by missionaries and British rule which variously introduced formal education to the Basotho (Tlali & Jacobs 2017:87). So strong was the influence of missionaries on Lesotho education that a large percentage of Lesotho schools are still co-owned and controlled by various churches. Within these schools, education not only has a strong religious character but religion, to a large extent, also informs the value system of the Basotho people, which impacts on perceptions about how HIV and AIDS should be combatted. Together with MOET, churches in Lesotho

are therefore very important partners in education and in the fight against HIV and AIDS.

HIV and AIDS in Lesotho

According to the **Lesotho Times** (27 November 2014) the HIV and AIDS pandemic is spreading rapidly among the youth aged between 15 and 24 as they refuse to engage in precautious and responsible sexual behaviour. Research also indicates that in Lesotho, 1 in every 10 people aged between 15 and 17 is living with HIV (UNFPA 2015:3). In addition, a study conducted by the Ministry of Health in 2011 indicates that 34 percent of children in Lesotho are orphans due to HIV and AIDS. HIV and AIDS infections have spiralled dramatically in recent years, to the extent that Lesotho is currently the country with the second highest HIV prevalence after Swaziland (UNAIDS 2016). Esther (2012:28) maintains that the pandemic has affected every level of society and that many of the development achievements of the post-colonial era are being eroded. Mohale's Hoek, where this study was conducted, also faces various HIV and AIDS related challenges. According to the Ministry of Health and Social Welfare, Mohale's Hoek had the fifth highest number of orphans due to HIV and AIDS (Kingdom of Lesotho 2010:170). These statistics paint a gloomy picture for future socio-economic development in Lesotho, especially since the youth are regarded as the future of the country. In addition, it also signals danger for Lesotho education, because HIV and AIDS directly affects education as it is responsible for teacher and learner absenteeism, the decline in school enrolment, and learner drop-out due to the illness of parents.

Furthermore, a large percentage of learners orphaned by HIV and AIDS means that the already weak economy of Lesotho is enfeebled even further as limited resources have to be stretched to cater for the orphans' needs (Kingdom of Lesotho 2014:14). With regard to education, the *Lesotho Education Sector Strategic Plan 2005-2015* has identified HIV and AIDS as one of the critical challenges facing basic education in Lesotho, because of its impact on teachers (Kingdom of Lesotho 2005:43). To mitigate the impact of HIV and AIDS on education and on the development of Lesotho requires an elaborate policy framework with clear enactment strategies, and the will to implement these policies.

Lesotho HIV and AIDS Policy Framework

Lesotho is a signatory to various international treaties and declarations aimed at combating HIV and AIDS. These treaties and strategies include the Sustainable Development Goals; the United Nations General Assembly Special Declaration of Commitment to HIV/AIDS (2001); the Abuja Declaration of Commitment for Action in the Fight against HIV/AIDS, Tuberculosis, and other Infectious Disease (2001); the 2003 Maseru Declaration and Commitment to HIV and AIDS in the SADC region; as well as the 2006 Brazzaville Declaration and commitment on scaling up towards Universal access to HIV and AIDS prevention, treatment, care and support in Africa by 2010 (Government of Lesotho 2006:xiii).

Informed by these treaties and declarations, Lesotho developed and adopted its own unique country specific, macro policy framework. This framework consists of policies, such as the Preventive Strategy to Combat HIV and ADS (1995) (Government of Lesotho 2006; xii). In addition, the government of Lesotho (GOL) also adopted the Policy Framework on HIV/AIDS Prevention, Control and Management of 2000; the amended National HIV and AIDS Policy (2006) and the Public Service HIV and AIDS Policy (2010).

To further strengthen the fight against HIV and AIDS, the Multi-Sectoral National AIDS Strategic Plan (2002), and the National HIV and AIDS Policy 2006 was sanctioned. Whereas the former aims at coordinating all HIV and AIDS activities by Government Ministries and other interest groups, the latter aims to strengthen 'the implementation of the current HIV and AIDS interventions' (Government of Lesotho 2006:xiii). The National Aids Commission (NAC) was established with the sole purpose of coordinating Lesotho's HIV and AIDS responses. Although the NAC was disbanded in 2011, it was re-launched in 2015 (Kabi 2016:np). Over the years the GOL has also embarked on various projects aimed at increasing awareness about HIV and AIDS (Furin 2011:850). Currently, all Lesotho's policies and national plans are informed by the National Vision 2020 (2003). This Vision states that:

> Lesotho shall be a stable democracy, a united and prosperous nation at peace with itself and its neighbours. It shall have a healthy and well-developed human resource base. Its economy will be strong, its environment well managed and its technology well established.

Against this background, Lesotho developed the National Strategic Development Plan (NSDP) 2012/13-2016/17 as a medium-term enactment strategy. It is through the enactment of the NSDP that Lesotho also hopes to address the priorities as laid out in the Istanbul Programme of Action (2011), which amongst other things, also focuses in particularly on "improving health and combating HIV and AIDS" (UN 2011:24). Naidoo (2003:2) maintains that when states sign and ratify international conventions and draft national strategies, they automatically assume an operational responsibility to substantiate these in-principle commitments. Lesotho is therefore obliged and have a moral responsibility to not only implement these conventions and national plans or policies, but also to create conducive conditions for its effective enactment.

Although the existence of an elaborate policy framework signals a commitment from the Lesotho government to effectively combat HIV and AIDS, perceptions suggest the opposite. Olown (2014:6321) opines that although the Government of Lesotho has tried to respond positively to the HIV and AIDS pandemic, most of their efforts remain at the stage of policy statements and have never actually been practically implemented. Tlali and Jacobs (2017:86) also maintain that policy enactment in Lesotho is frustrated by a lack of logistical support. The mere fact that a number of policies exist does not guarantee that those policies are implemented, let alone effectively implemented. Rather, what is required is a sincere commitment on the part of the Lesotho government to ensure that policies are effectively implemented, and thus solve social problems or HIV and AIDS challenges, with which the country is faced.

Policy Enactment

Whereas Imurana, Haruna and Kofi (2014:197) regard policy enactment as the operational stage of the policy process, where policy is translated into action with the hope of solving some public problem, Ahmad, Rauf, Imdadullah and Zeb (2012:241) regard it as the adoption of the policy at grassroots level. To therefore ensure that a policy is adopted and translated into action assumes that those responsible for the enactment of the policy are equipped to do so, and embrace the vision of the policy.

Although policies are supposed to change or regulate the lifestyles of individuals (De Coning, Cloete & Wissink 2011:46), and to solve public

problems (Ahmad, Rauf, Imdadullah & Zeb 2012:241), Imurana, Haruna and Kofi (2014:196) claim that many policies in Africa face challenges in the enactment phase. This situation makes it difficult to address the major problems for which they are developed. Morah (in Meyer & Cloete 2011:229) also views bad policy enactment as the major obstacle to development in developing countries. Ali (2006:5) in particular, ascribes the failure of educational policy in developing countries to the issue of poor enactment. While the LESHAP 2012 articulates the Lesotho education sector's response to the HIV and AIDS pandemic, the extent to which it will indeed realise its objectives is dependent on the effective enactment thereof. Since it cannot be assumed that policies will be (effectively) implemented, an empirical investigation into the enactment of the LESHAP 2012 is warranted.

Research Strategy

Participants and Ethical Considerations

This study adopted a qualitative research approach, and 9 participants consisting of 3 teachers, 3 principals and 3 school board members (SBM) representing 2 different church schools, as well as 1 government school, were purposively selected to take part. As proprietors of schools, churches are important partners in Lesotho education, thus their inclusion in the study. Participants were selected based on the assumption that they would serve as information rich sources (Bernard 2013:164). Ethical protocols were observed by ensuring that we received permission from the University of the Free State, the MOET, and from the participants. We also secured the trustworthiness of this study (Elmusharaf 2013), by ensuring that results are not contaminated in any way by research design errors, the bias of the researcher or misinterpretations of the data and the transcriptions.

Data Sources

Data were generated through semi-structured interviews. Apart from being flexible and providing for a friendly non-intimidating conversation (Creswell 2012:46), these interviews also required us to build trust with the participants, so that the likelihood of information being withheld was eliminated (Bernard 2013:180). Interviews were audio recorded with permission from the participants, and transcribed in order not to lose any information. Responses in

Sesotho (the home language of the Basotho), were first translated into English by a Sesotho specialist. The interviews were analysed in search of particular themes.

Data Analysis

Data were analysed using thematic analysis. During this process we identified, analysed and interpreted data meanings using themes or codes (Braun, Clarke & Terry 2015:95-113). The themes identified and around which the data will be reported on are: knowledge of the LESHAP 2012; training; religion and culture; school specific policies; partnerships and stakeholder involvement; and personal values and attitudes.

Findings

Although discussed separately, the themes presented below are interrelated and point to the realities that exist regarding the enactment of the LESHAP 2012 at some rural schools in Lesotho.

Knowledge about LESHAP

From the data it appears that some participants have no knowledge about the existence of the LESHAP 2012. This, according to SB members A and B who "do not know about it"; and SB member C who "as the relevant stakeholders, do not have any knowledge about it". These views are corroborated by principal A who also "don't know it kannete (honestly)" and principal C who replied "It's my first time to see it". Teachers also seem not to be informed of the LESHAP 2012: teachers A and C respectively indicated that they have "not yet come in contact with the policy" and "have never met [sic] it". Principal B and teacher B seem to be the only ones who have knowledge of the policy as they respectively indicated: "Yes, I have seen it" and "I have heard about it but I have never read it". That the policy might not have been widely communicated to schools is emphasised by principal C who stated "Except for you, I have never met another person who knows about this policy". The lack of knowledge about the policy could be linked to the possible non-dissemination of the policy to schools. In this regard principal B indicated "No, I don't have the policy at school" and principal C who stated "MOET has never

brought the policy to the school; I saw the policy for the first time when you brought it here at my school".

Because LESHAP 2012 appears not to have been disseminated, principals do "not know what it says schools should do to assist in decreasing HIV" (principal B), and SB members are "unable to ensure that it is implemented effectively in schools" (SB member C). Similarly, teacher B also claims that he/she "does not know what the policy says" and is therefore "not sure if it can be helpful in the fight against HIV in Lesotho".

Training on Enactment

The enactment of the LESHAP 2012 seems to be further affected by a lack of training on the policy and its enactment. Principal C claimed that they "have not received any training on the LESHAP 2012", and that "MOET has never talked about it in any meetings". This was supported by principal B who observed "I do not know anything regarding the implementation of the LESHAP 2012". These views were echoed by teachers A and C who respectively asserted that they "know nothing about its implementation" and "have not received any training on the implementation thereof".

Participant (teacher B) appeared frustrated when claiming that MOET "does not assist us in any way". The same level of frustration is visible in the responses of participant principal B: "[the] Ministry is not useful" and that of participant teacher B who "is not getting any support from MOET" and for whom the fight against HIV is consequently "not as effective as it should be". MOET's apparent ignorance is also visible in the words of another participant (principal B): "MOET does not even accompany the people from the Ministry of Health when they come to assist us in health and HIV related issues".

Consistent with the above, it appears that MOET is not evaluating or monitoring the enactment of the LESHAP 2012. This is confirmed by participant principal A who stated that "MOET does not monitor anything". That the LESHAP 2012 is not communicated or monitored could be ascribed to the lack of dedicated officials in MOET, as is evident from participant principal C: "MOET needs to have personnel dedicated to the dissemination and enactment of LESHAP 2012".

Religion and Culture

Amidst the lack of knowledge of and training on the LESHAP 2012, various

religious and cultural factors also seem to impact on its effective enactment. Principal A appeared concerned that the "Government policy speaks about condoms [whilst] the church [policy] is not allowing us to talk about condoms". Teacher B confirmed that church policy does not support the use of condoms: "We never encourage the use of condoms … we do not talk about it".

Furthermore, the data reveal certain cultural practices which also seem to influence the educational context within which LESHAP 2012 is implemented. Although culture does not allow them "to talk to children about sex" (principal A), teacher C feels that they are now forced to deviate from cultural practices, because government "asked the schools to talk to learners about being circumcised in hospitals, not in initiation schools". For SB member B this is against their culture "which encourages that men should be circumcised at initiation schools".

Furthermore, whilst some of the learners infected with HIV "believe it is witchcraft, and therefore do not go to health centres but consult traditional healers" (SB member B) cultural practices, such as polygamy also promotes the spread of HIV. SB member C also highlighted the practice where "the brother of a deceased person marries the widow" as problematic because "sometimes the husband died due to HIV and this promotes the pandemic".

School-specific HIV and AIDS Policies

From the responses it appears as if schools do not have school specific HIV and AIDS policies that either articulate the school's response to HIV and AIDS or facilitates the enactment of the LESHAP 2012. This is according to SB member B, who "has never seen one", and SB member C whose school does "not have a policy document". These responses are corroborated by principal B who "doesn't have a school based HIV policy"; and principal C who "doesn't have a school specific policy". The absence of school specific HIV and AIDS policies are confirmed by teacher C who seems not to have "any knowledge about such a policy" and teacher A whose school does "not yet have a school specific policy".

This said, some of the church schools do seem to "have the policy of the church" (principal A); however, this school specific policy is "in the possession of the principal" (SB member A). Similarly, although the school of teacher B also "has a school policy" he/she appears not to have that policy in class: "No I don't have it".

Personal Values and Attitudes

The responses also suggest that the personal values of participants might influence the enactment of the LESHAP 2012, especially with regard to the distribution of condoms at schools. Whereas SB member A regarded condom distribution as a good thing - to make condoms available at school "because the learners are already sexually active"; SB member B "feels threatened by that suggestion" because "it is problematic [and] not an easy issue at all". SB member C also "doesn't know [because] it seems as if we are giving them permission to engage in sexual activities". Although principal C seems to believe that "the availability of condoms might help", principal B "doesn't encourage them to be at school". Principal A is also sceptical about the success of condoms in combating HIV and AIDS because "the condom did not help the country".

Similar mixed reactions were expressed by the teachers. Whereas teacher A objects to the distribution of condoms because they "are educating small learners" teacher C appeared aware that some of the learners they are teaching at primary school, are ready for sex. Objections to the distribution of condoms at schools were further informed by fears that learners "might want to experience and they will just use them" (principal B), and that it will be perceived as "a way of encouraging learners to freely have sex" (SB member B).

Partnerships and Stakeholder Involvement

Parents and learners appear not to be actively involved in decision-making about HIV and AIDS in schools. SB member C avers that "the parents are not included at all". The absence of parents in decision-making is that "parents here are reluctant to even attend meetings" (SB member A). Learners are similarly "not included [and] the teachers decide what they want to share with the learners" (SB member C), making learners "just recipients of information" (principal A).

Discussion

Policy enactment is regarded as "the final acid test for a policy to be successful" (Brynard, Cloete & De Coning 2011:135). However, policy enactment is also a complex process that is influenced by various actors and

variables. The success of policy enactment and the subsequent realisation of policy aims and objectives are therefore largely dependent on the recognition of the complex nature of policy enactment, and the concomitant responsibility to act in pursuance of the effective enactment of the policy. One way of implementing it is by ensuring that policies are disseminated and information about policies is communicated to all (Makinde 2005:63; Ahmed, Rauf, Imdadullah & Zeb 2012:242; Mthethwa 2012:40).

This research revealed that the LESHAP 2012 was neither disseminated nor communicated to the participating rural schools. The lack of information about a policy not only creates confusion, it also creates a distance between the policy implementers and the beneficiaries, which leads to a disjuncture between policy and practice, with good policy intentions being ultimately hindered (UNESCO 2008:18). Thus, although the LESHAP 2012, specifies the basic principles to be pursued in attaining its explicit goals, a lack of information and non-communication about it will hamper its effective enactment, therefore preventing the Lesotho government from attaining the envisioned goals articulated in it and in national HIV and AIDS programmes and policies. Instead of aiding the fight against HIV and AIDS, the gap that is effectively created due to the non-dissemination and the subsequent non-enactment of LESHAP 2012, not only put learners and teachers in these schools in greater danger of contracting HIV and AIDS, but it also jeopardises Lesotho's macro policy response to HIV and AIDS, and the country's social and economic development.

In addition, whilst the enactment of the LESHAP 2012 could potentially provide persuasive leverage to improve existing HIV and AIDS education (Aggleton & Tyrer 2003:17), in Lesotho the apparent non-dissemination of the LESHAP 2012, might variously impact the effective execution of HIV and AIDS education. This is particularly true for rural schools where the Basotho tradition and culture still serves as the anchor of the community. The interviews revealed that some participants have reservations about MOET's stance towards particular cultural and religious convictions and practices as articulated in HIV and AIDS education. It also appears that the personal values of the participants influence their perceptions about HIV and AIDS and particular related topics, to the extent that resistance to the teaching of and about HIV and AIDS, is discerned. Research confirms that the orientation of teachers' personal values, and religious and cultural dictates, influence perceptions about the use and value of condoms in HIV and AIDS

protection, as well as what can and cannot be said about sex and thus also about HIV and AIDS (Henning, Chunheui & Sunil 2011:8; Smith, Kippax, Aggleton & Tyrer 2003:17; Hartell in Chabilall 2012:122). It would therefore be detrimental to the effective enactment of the LESHAP 2012 and to HIV and AIDS education if these variables are not taken into consideration, and if the perceived tension as a result of this is not acknowledged. As implementers of the LESHAP 2012 and of HIV and AIDS education, rural teachers in Lesotho find themselves in a difficult moral dilemma: on the one hand they need to conform to cultural and religious norms and also stay true to their own value orientations; on the other hand, they have an equally important moral responsibility to teach about and implement policies on HIV and AIDS.

Teachers are key players in the facilitation of programme enactment and change (Swanepoel & Booyse 2006:1), and in the improved enactment of HIV and AIDS education and policy. Teacher's adoption and enactment of HIV and AIDS policies are also strongly influenced by their attitudes and norms (Mathews, Boon, Flisher & Schaalma 2006:388). The successful enactment of the LESHAP 2012 policy in Lesotho rural schools therefore hinges on the extent to which teachers are able to navigate between personal values, cultural and religious dictates, and policy pronouncements and expectations. This because personal values not only determine teachers' understanding of the policy, how it should be implemented, and what it aims to achieve but also their positioning on issues of HIV and AIDS. It is only through access to and training on policies where these issues are articulated, that educators can come to understandings that will enable a conducive positioning and thus an effective enactment of the LESHAP 2012. Walker (in Mufune 2008:147) concede that even though teachers are unprepared and lack confidence to teach sex education, training in the enactment of HIV and AIDS policies will assist them to appropriately respond, through sex education, to the disease and its impact in and on the school.

However, the enactment of the LESHAP 2012 also depends on its monitoring and evaluation. The LESHAP 2012 pronounces that "all policy implementation will be monitored, evaluated and reported on a regular basis to provide accurate and relevant management information to the sector" (MOET 2012: Section 7.8). Nevertheless, findings from the interviews suggest that in rural Lesotho schools, the enactment of the LESHAP 2012 is neither monitored nor evaluated. Monitoring and evaluation not only enhances policy enactment, but it is also the fulfilment of a responsibility that enables authorities to assist

with capacity building and training (Mupa 2012). By monitoring and evaluating its enactment, an opportunity is created for MOET to identify particular enactment challenges, such as the fact that rural schools appear not to be in possession of the LESHAP 2012, and the conflict teachers experience between what the policy pronounces and what religion, culture and personal convictions dictate, and to propose remedies to ensure effective enactment. Monitoring would also provide information on the extent rural schools have school specific HIV and AIDS policies as directed by the LESHAP 2012. School specific HIV and AIDS policies are supposed to give operational effect to national policies (RSA-DoE 1999: Section 12(1). More so, it also creates a climate of equity and fairness, and sound school-community relations which are positively associated with teaching about HIV and AIDS (Henning, Chunheui & Sunil 2011:7; Gatsi, Chikuvadze & Mugijima 2016:34). Thus, whilst school specific policies can potentially contribute to creating a greater awareness for the LESHAP 2012, they could also contribute to creating a HIV and AIDS-friendly school environment and a school culture infused with the values of social justice. The value of school specific policies therefore lies in the potential they hold to articulate a school specific response to HIV and AIDS, together with making particular pronouncements on how social justice values and principles be lived out as they relate to those infected and affected by HIV and AIDS. Within such a context, prejudice against and the scourge of discrimination and marginalisation that people living with and are affected by HIV and AIDS are subjected to in schools and in society, might be mitigated.

Furthermore, the contribution learners could make towards the effective enactment of HIV and AIDS policies should not be disregarded. The LESHAP 2012 (MOET 2012: Section 7.4) encourages the involvement of learners in the fight against and in school's responses to HIV and AIDS. UNICEF (2002:32-33; UNGASS 2001) maintain that the involvement of young people is a precondition for successful HIV and AIDS management and has become a central pillar of international AIDS policy. However, the interviews suggest that in rural schools in Lesotho, learner involvement in HIV and AIDS related issues are non-existent. The involvement of young people and learners in HIV and AIDS related issues are even more pertinent because participation in all aspects of life is part of the package of human rights young people should enjoy and which is written into international policies and charters (UNICEF 2003). Moreover, because HIV and AIDS is a prominent health issue for young people (Campbell, Gibbs, Maimane, Nair & Sibiya

2009:94), and that learners are variously affected by it, the assumption is that they would be involved in the enactment of policies directed towards addressing HIV and AIDS. This is particularly relevant for Lesotho as a large number of the Basotho rural youth in particular, appear to be either infected with and affected or orphaned by HIV and AIDS. To exclude learners from decision-making about HIV and AIDS, as it appears from this research, not only amounts to a disregard for their basic rights and their voice, but it also contributes towards their social marginalisation. Since the fight against HIV and AIDS requires the involvement of all members of society, the silencing and marginalisation of learners holds the potential for distancing them from active participation in school and HIV and AIDS related issues. This not only erodes democratic practices and collective decision-making practices within the school context, but it also disempowers the rural learner.

Conclusion

The aim of this article was to explore the realities regarding the (non) enactment of the Education Sector HIV and AIDS Policy (LESHAP 2012) in rural Lesotho. The LESHAP 2012 was developed as the Lesotho educational response to the HIV and AIDS pandemic in the country. More specifically, it was developed to make schools, and rural schools in particular, safer spaces by minimising the risk of contracting HIV and AIDS at school. Whilst the assumption is that policies should be disseminated and communicated in order to enhance their enactment, in the case of Lesotho education it appears that the LESHAP 2012 has never been disseminated and/ or communicated to rural schools. The reality is therefore, that the LESHAP 2012 seems not to have been implemented in schools in rural Lesotho. Consequently, ideals articulated in the LESHAP 2012 will not be realised, and the Lesotho education sector will effectively not be contributing towards the fight against HIV and AIDS in the country. If the MOET is committed to fight HIV and AIDS through education, it should in all earnest, develop plans and strategies and implement the infrastructure to facilitate the LESHAP 2012 dissemination in schools and to train teachers and SB member's on the policy in order to ensure its effective enactment. Such training should be sensitive to the perceived tension between individual-, religious- and cultural values and pronouncements made in and expectations of the LESHAP 2012.

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Investigating Patterns of Mathematics Talk in a Rural South African Classroom of an Early Career Primary School Teacher

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Abstract

This interpretivist research is designed to report on an investigation whose purpose is to explore the case of the patterns of talk through which an early career mathematics teacher and her learners interact to construct mathematical knowledge in a South African rural school. Despite increased interest in classroom interactions in primary mathematics across all grades, the problem is that little research has focused on measuring the level of communication patterns taking place in mathematics classes of early career teachers. Exploring the level of communication patterns in mathematics classrooms entails exploration of conjecturing given that conjecturing is fundamental to learning mathematics. To characterise classroom communication patterns, classroom interactions in three lessons (n = 48) of a conveniently selected early career teacher were observed. In framing this study, I draw on various aspects of Vygotsky's sociocultural theory (SCT). To corroborate data obtained from these observations, the RTOP was adopted to detect the degree to which the early career teacher's classroom instruction was reformed. The findings indicate that approximately two thirds of the communication patterns were authoritative and therefore low in the level of interanimation of learners' conjectures. Recommendation for future research is for studies that incorporate both rural and urban schools so that broader understandings of findings can be gained to better understand the problem prior to designing intervention programmes. The implication of these findings for teacher education programmes

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is that there is a need to foster instructional practices that encourage the delivery of mathematics that is honest to mathematics as a discipline and honours mathematics learners. From a gender equity position, and in light of a plethora of intervention efforts particularly targeting female learners, future research could shed light on how participation and the quality of classroom talk are distributed across gender.

Keywords: Early career teacher, rural school, communication patterns, sociocultural theory, mathematics education reform

Introduction

Classroom talk has been studied over many years and an extensive literature reports on the challenges experienced teachers face in promoting reform initiatives advocated by mathematics education bodies (Common Core State Standards Initiative [CCSSI] 2010; Department of Basic Education [DBE] 2011; National Council of Teachers of Mathematics [NCTM] 2000) and researchers (Aaron & Herbst 2015; Bergqvist 2005; Chinnappan 2005; Jones & Fujita 2013; Manouchehri & St. John 2006) in the teaching and learning of mathematics. By classroom talk is meant here the 'ways of representing, thinking, talking, and agreeing and disagreeing that teachers and students use to engage in [mathematical] tasks' (National Council of Teachers of Mathematics [NCTM] 1991: 34). According to the *Curriculum and Assessment Policy Statement* (CAPS) (Department of Basic Education [DBE] 2011: 217), teachers are mandated to stimulate learners' natural curiosity and reasoning when making conjecturing to solve mathematical problems akin to adult experts. The CAPS is one of the policy instruments – the one prominent other being instructional materials such as prescribing textbooks to be used in the classroom – South African education system's framework mobilised to effect reform in the classrooms.

For the purpose of this study, an early career teacher is defined as a beginning teacher in their first five years of teaching (Schuck, Aubusson, Buchanan, Varadharajan & Burke 2018; Raue & Gray 2015). Linked to this interest is the notion that learners are capable of making insightful conjectures (e.g., Balacheff 1988; Lee & Sriraman 2011; Mueller & Maher 2009). In addition, despite increased interest in classroom interactions in primary mathematics across all grades, the problem is that little research has focused

on measuring the level of communication patterns taking place in mathematics classrooms of early career teachers. Cañadas, Deulofeu, Figueiras, Reid, and Yevdokimov (2007), building on the work of Yevdokimov (2003), define a mathematical 'problem' as a task with two defining characteristics: (1) no solution is immediately available to the learner, that is, the task is not a trivial exercise, practicing a skill learnt previously; and (2) it is possible for the learner to find a solution provided their prior knowledge is adequate. The term 'problem' in the context of mathematics is used here as understood by Callejo and Vila (2009: 112) to designate a mathematical question whose solution is not immediately accessible to the solver, because they do not have an algorithm for relating the data with the conclusion. Thus, the option available to these learners is to formulate guesses or more precisely, to make conjectures.

The *Standards for Mathematical Practice* (Common Core State Standards Initiative [CCSSI] 2010) implores teachers to seek to create opportunities for learners to make conjectures for consideration by classmates and build a logical progression of statements to explore the truth of their conjectures. These mandates are important to advance because if learners are not given an opportunity to see mathematics through the perspective of a mathematician they can be left with a false impression of the nature of mathematics (Rumsey 2012).

Studies and curriculum documents emphasise the importance of making conjectures not only to reflect knowledge construction in the mathematics discipline but also to respect learners of mathematics. For instance, Lampert (1990) argues that to change meaning of learning, conjectures must be a feature of classroom interactions to help learners understand the mathematical structures underlying solutions to mathematical problems even at primary school level. Similarly, Rumsey (2013) points out that conjecturing is one of the elements of doing mathematics. Thus, mathematics education documents and researchers advocate for a focus on conjecturing in mathematics across all grades (Jones & Fujita 2013) as the basis of constructing and communicating mathematical knowledge in ways that 'reflect fidelity to the discipline of mathematics' (Aaron & Herbst 2015: 1). Traditional classrooms are dominated by teacher talk that entails lecturing, drilling, and quizzing. Although these are useful instructional tools, they are unlikely to reveal misconceptions in context – even from what on the surface seems like a 'correct' answer – thus inhibiting the teacher from chiming in by adjusting their teaching.

However, these studies have focused on experienced teachers and little is known about the various patterns of communication obtaining in classrooms of early career teachers. The purpose of this study is to address this gap in literature by not only shedding light on the communication approach in mathematics classroom interactions of an early career teacher but also the quality of these interactions. Thus, the main research question posed in this paper is: What is the nature of the communication approach in the classroom of an early career teacher? The study was guided by Vygotsky's (1978) sociocultural theory of learning, which is premised on the notion that individual learning understood by studying how the classroom environment is organised and how learners participate in social practices.

As a consequence, the next section considers literature primarily on conjecturing. Through the lens of the sociocultural conceptual framework, this article describes the classroom talk obtaining in the classroom of an early career mathematics teacher in the midst of a curriculum that foregrounds conjecturing. The conclusion highlights the lessons that can be drawn from both the findings in this study and the literature to make recommendations to support meaning making in the classrooms of teachers who are in the early years of their career.

The Review of Literature

In this section I situate the study in terms of previous work on conjecturing. It is believed here that conjecturing can contribute the arrest of the declining enrolments in mathematics across various countries in the world. Thus, attempts to foster conjecturing in mathematics not only help to reflect the character of the mathematics discipline, but they also should contribute towards addressing the decline in learner participation in mathematics. The literature reviewed in this section is premised on the intellectual-honesty principle which advocates for the teaching and learning of mathematics that is honest to mathematics as a discipline and honours mathematics learners. Very few will contest the statement that the best way to honour the mathematics discipline in the classroom is to foster conjecturing. In addition, the mathematics classroom is a learning site 'in which the children are expected to publicly express their thinking, and engage in mathematical practice characterized by conjecture, argument, and justification' (Cobb, Wood & Yackel 1993: 28).

The Decline in Mathematics Interest

Learner participation in mathematics is steadily declining in many countries (Organisation for Economic Cooperation and Development [OECD] 2006). South Africa is no exception to the rule. The proportion of learners enrolled for mathematical literacy rather than mathematics is skewed in favour of the former. For instance, Umalusi (2014) reports which indicate a 17% decline in the number of learners who wrote mathematics between 2009 and 2013 (from about 290 400 to 241 400). At the same time, the number of candidates writing mathematics literacy rose sharply to 58% of the 2013 cohort. Various reasons are attributed to the decline.

The hypothesis in this study is that one of the origins of this decline is the distorted nature of mathematics presented in primary school classrooms through to high school. This article will focus on the talk during an early career teacher's actual classroom practice while keeping an eye on the discipline of mathematics because talk is thought to be a primary medium through which learning and teaching takes place (Ball, Lewis & Thames 2008). Teaching through dialogic interactions is a critical lesson for teachers to learn (MacIsaac & Falconer 2002). It is accepted that mathematics classrooms are dominated by discussions which follow transmission methods of teaching of the Initiation-Response-Evaluation (IRE) format. The IRE pattern of instructional practice – also referred to as the 'triadic dialogue' (Mehan 1979) – takes place where the teacher initiates the question, the learner responds and finally the teacher evaluates the response in terms of school mathematics view. This links with Manouchehri an St. John's (2006) argument that classroom environments in which opportunities for learners to share ideas which lead to an increase in learners' confidence to make conjectures are rare. The CAPS document advocates for the making of conjectures because of their power to foster productive construction of mathematics by learners for themselves.

Research in classroom practices of mathematics teaching and learning has also underscored the centrality of communication of mathematical knowledge in the learning of mathematics. In an effort to understand what distinguishes higher performing schools from average performing schools, the National Center for Educational Achievement (National Center for Educational Achievement [NCEA] 2009: 24) found that the former embrace instructional practices that foster classroom environments where learners 'feel safe trying to answer questions, make presentations, and do experiments, even

if they make a mistake'. Therefore, it is the teachers' responsibility to treat learners' ideas as conjectures. According to Chinnappan (2005), making conjectures and proving them creates classroom practice that could provide rich learning contexts that foster learners' independent exploration of problems. Thus, conjectures are the basis for proving (Reid, Understanding Proof and Transforming Teaching 2011). In this study, a conjecture is viewed as a problem because its proof is not readily available to learners.

Conjecturing

The importance of conjecturing in the construction of mathematical knowledge has been emphasised in mathematics education research throughout the grades (Chinnappan 2005; Komatsu 2010; Protheroe 2007) and different national mathematics standards (Department of Basic Education [DBE] 2011; Common Core State Standards Initiative [CCSSI] 2010; National Council of Teachers of Mathematics [NCTM] 2000). I draw on the work of, Cañadas, Deulofeu, Figueiras, Reid, and Yevdokimov (2007) who characterise five exhaustive types of conjecturing familiar in mathematics education research: empirical induction from a finite number of discrete cases and from dynamic cases, analogy, abduction and perceptually based conjecturing. In the next section I describe each in turn. In describing the instructional norms that underpin classroom interactions between the teacher and learners, Aaron and Herbst (2015) point out that once the conjecture has been discussed, the class moves on to discussing another conjecture or to the proof of an endorsed conjecture.

Worth noting is that conjecturing entails engaging in classroom interactions in which learners' ideas invite justifications, counterexamples, and therefore refinement from interlocutors who draw on concepts from a range of observations and previously learnt mathematical ideas. Thus, conjecturing fosters classroom interactions in which mathematical authority and ownership shift from the textbook or teacher to the community of learners who become producers of mathematical knowledge (Bay-Williams, McGatha, Kobett & Wray 2013; Rumsey & Langrall Promoting Mathematical Argumentation 2016). Drawing on the work of Jones and Fujita (2013), the practice of making conjectures unfold in classrooms in two distinct phases: (1) learners working privately (individually or in groups) making conjectures and (2) the class publicly discusses those conjectures. In this study, I am interested in exploring the latter phase because it is broader in the sense that not only does it capture

learners' ideas but also the teacher as he or she introduces learners to the social knowledge of mathematics. That is, in Mortimer and Scott's (2003: 17) terms, the second phase involves interactions as a '*public performance*. This performance takes place on the 'social plane', a term Vygotsky (1978) coined when describing classroom interactions in which a teacher works with a class of learners in a school. Ideas in social situations are rehearsed using a range of communication modes: talk, listening, gesture, writing, visual images, and actions. In this study, the focus is limited to the orchestration of classroom talk involving both teacher and her learners geared towards learning mathematics. The focus on talk is not intended to undermine the importance of other forms of communication, which are also contributory to the learning process (Abrahamson & Sánchez-García 2016; Schultz 2009).

The concept of conjecturing is important to consider in the teaching and learning of mathematics because it reveals the various activities in which mathematicians engage prior to reaching the final form of a proof (Komatsu 2010). Thurston (1995) views mathematical practice as an intellectually gratifying human activity that requires social interaction and conjecturing. That said, it is important to note that the mathematics teacher is central to this process in the sense that they have the responsibility not only to introduce learners to the social knowledge of mathematics but also to encourage learners to verbalise their thoughts and building on one another's ideas while critiquing the ideas of others and asking probing questions that require them to refine their ideas. Classroom talk does not only help the teacher to evaluate learners' mathematical understanding, but also to evaluate learners' mathematical communication features (vocabulary, symbolic representations, syntax, semantics, and linguistic features).

Previous Studies on Conjecturing

My contention here is informed by Vygotsky's perspective that a child's learning is not dependent on their maturity but rather on them being supported by a 'more knowledgeable other'. In support of my argument, is a particularly significant and recent study conducted by Rumsey and Langrall (2016). In one task, Grade 4 learners were presented with a false claim on the basis of a subset of numbers, 'Every time you multiply two numbers, you are always going to get an even number as the product'. They found that that learners in the primary grades are able to make observations of patterns and conjecture about mathe-

matical ideas.

Reid (2002) conducted a study in which he wanted to illustrate a particular pattern of learners' conjecturing in a mathematical activity occurring in a Grade 5 classroom of a teacher-researcher in an ethnically, religiously, and linguistically diverse private school. The activity involved presenting learners with a 5x5 grid for which they had to find and prove that they had found all the squares. Her learners reasoned as the number of grids contained increasing squares and made conjectures with a view to finding their proofs. He found that his learners were able to observe patterns which enabled them not only to make conjectures but also to test them.

Komatsu (2010) investigated learners' mathematical activities with counter-examples in a Grade 5 mathematics classroom of a public primary school in Japan. He interviewed these learners on a task related to conjecturing so as to investigate that 'the sums of two-digit integers and the integers whose digits are the reverse of the order of the original integers' digits', for example:

$$32 + 23 = 55.$$

The learners were able to make various conjectures and attempted to prove them.

The Quality of Communication

Although communicating mathematical knowledge is seen by mathematics education documents (Common Core State Standards Initiative [CCSSI] 2010; Department of Basic Education [DBE] 2011; National Council of Teachers of Mathematics [NCTM] 2000) and researchers in mathematics education (Komatsu 2010; Stylianides, The Notion of Proof in the Context of Elementary School Mathematics 2007) alike as vital in the learning of mathematics across all the grades, little is known about the level of communication patterns in classrooms of early career teachers of mathematics. The level of communication patterns is important to determine because it is a phenomenon that helps to determine the degree to which classroom mathematical practice is 'honest to mathematics as a discipline and honoring of students as mathematical learners' (Stylianides 2007: 3). The term 'intellectual-honesty principle' was coined by Stylianides (2007) to stress the importance of

ensuring that classroom practice not only reflects the practice of mathematicians but also accords learners the dignity of learning mathematics rather than its mutated form characterised by the need to memorise unintelligible rules and procedures for passing tests and examinations. In other words, this principle raises awareness of the importance of respecting our learners by giving learners the 'real deal' rather than placing emphasis on procedural and conceptual knowledge aimed at passing tests and examinations. I concur with Komatsu (2010: 1) in his assertion that 'this principle is valuable for not only proofs in school mathematics but also all mathematical learning at all grades'.

Thus, this review focuses on previous literature on conjecturing in primary mathematics because at the core of doing and knowing mathematics is conjecturing (Stylianides & Stylianides 2009). This need not be construed as an indictment on the focus on mastery of computational skills. Truth is, although the acquisition of procedural and conceptual knowledge is important and has garnered more attention than mathematical practices (e.g., conjecturing), besides potentially being harmful to learners' capabilities later in their mathematics education (Bieda, Ji, Drwencke & Picard 2014), these approaches to learning mathematics may not expose the true beauty and nature of mathematics (Rumsey 2012). With this background in mind, this study has three aims. First, to explore the communicative patterns during classroom interaction mediated by an early career teacher. Second, to determine the classroom environment in which the interactions take pace. Third, to characterise the quality of these interactions by focusing specifically on determining the frequency of high interanimation of conjectures as compared to the total number of learners' conjectures. The research questions guiding this study are:

1. What are the communicative patterns in the classroom of a teacher?
2. What is the nature of this teacher's classroom learning environment?
3. How is the quality of these communicative patterns in the classroom?

By way of preview, the following findings were made:

1. The early career teacher's classroom was relatively interactive but authoritative.

2. The classroom environment conform to reform initiatives in mathematics.
3. The quality of the communicative approach was low; most (66%) of the interactions exhibited a low interanimation of ideas.

Theoretical Framework

I hold the view that mathematics classroom activities can understood when investigated from social perspectives because of the nature of the schooling system. Hence Vygotsky's theory of learning became an obvious choice. Vygotsky's (1978) sociocultural theory of learning frames the exploration of classroom interactions and served as a lens with to interpret results in this study. In terms of this theory, the society's contribution to the development and learning of a child is appreciated. In addition, this theory appreciates the interaction between the culture in a child's life and their development and learning. By culture here is meant 'shared motives, values, beliefs, identities, and interpretations or meanings of significant events that result from common experiences of members of collectives that are transmitted across generations' (House, Hanges, Javidan, Dorfman & Gupta 2004: 15). According to Thompson (1992), beliefs relate to individual learner's views, conceptions and theories. In this study, a belief is a view, conception, theory that a person holds as true of mathematical principles based upon their own experiences, experiments, emotions or social influence. The central idea of this theory is that learning is predominately a social process rather than an isolated entity.

Vygotsky (1978) introduced the concepts of zone of proximal development (ZPD), scaffolding, and internalisation to challenge Piaget's theory relating to the relationship between development and learning, that learning should be matched with the child's level of biological development. This zone is the area of exploration for which the learner is cognitively prepared, but requires 'scaffolding' which is the help and social interaction provided by a teacher or in collaboration with more capable peers to fully develop. Vygotsky (1978) refers to the taking in of new knowledge observed in social contexts and mediated through language as internalisation. Alongside these Vygotskian perspectives we are reminded of the argument that constructing mathematical knowledge entails observation and conjecturing with mathematical objects.

This sociocultural perspective of children's development is suitable for

this study on two counts. First, the foundation phase (Grades 1–3) mathematics Curriculum and Assessment Policy Statement (CAPS) defines mathematics as 'a human activity that helps learners to 'develop mental processes that enhance logical and critical thinking, accuracy and problem-solving that will contribute to decision-making' (Department of Basic Education [DBE] 2011: 8). Second, it is incumbent upon teachers to introduce and facilitate learners' enculturation into the mathematical practices. These two ideas taken together are consistent with Vygotsky's (1978) perspective that learning involves a passage from social contexts to individual understanding. In describing the relationship between classroom talk and learning, Turner, Dominguez, Maldonado, and Empson (2013: 203) assert that:

> discussions afford opportunities for students to do such things as explain and justify solution strategies, pose questions, and articulate connections between mathematical ideas. In other words, they afford opportunities for students to take on agentive problem-solving roles and to participate in ways that can impact students' dispositions toward the subject and, over time, their sense of themselves as competent, agentive learners.

Methods

The interpretivist paradigm within a qualitative methodology underpinned this study. In particular, this study followed an interpretivist paradigm to gain an insider view (Creswell 2014) of the character of classroom interactions to answer the research questions on the communicative patterns that characterised the sequence of mathematics lessons of the early career teacher. Mortimer and Scott's (2003) provided an analytical framework for describing the nature of classroom interactions in the lessons delivered by the early career teacher and to come to a better understanding of the learners' experiences of mathematics lessons and thus increase the trustworthiness of the findings. Classrooms of early career teachers are interesting to study because they reveal much about the teacher's instructional practices which are likely to be challenged during the first few years of teaching as their teaching and learning ideals are pitted against the realities of actual classroom (Brown & Borko 1992). In addition, early career teachers are more familiar with both content and instructional practices that the *Curriculum and Assessment Policy Statement* (CAPS) (Depart-

ment of Basic Education [DBE] 2011) demands due to having recently graduated from teacher preparation programmes that emphasise these practices.

Setting

The research site is a large community school on the Eastern part of the Eastern Cape province of South Africa approximately 42 km from Lusikisiki with 350 learners on its roll, 18 teachers and 5 support staff. Given the low employment levels associated with South African village life, and as is the case with most learners in South Africa, the participating schools is a no-fee school. Nationally, of the 65% of learners attending no-fee schools, 82% of them are in the Eastern Cape compared to 41% and 45% such learners in the Western Cape and Gauteng, respectively (Statistics South Africa 2016). The extent of poverty in the Eastern Cape is shown by the level of support provided by the National Schools' Nutrition Programme (NSNP). This programme, introduced two decades ago by the South African government to ensure that children living in poverty-stricken households are not deprived of participating in the education system on the basis of lack of nutritional food. Thus, learners participated in the school feeding scheme that provided them with lunch during break periods. The mathematics period in the school was approximately forty minutes long, five days per week.

Participants

The sample of 48 learners will be relatively homogenous in terms of gender (27 female and 21 male), age ($\overline{x}$ =10 years), and socio-economic status. Learners in the intermediate phase are interesting to study because they are at the important crossroads in their mathematical education in that they are 'forming conclusions about their mathematical abilities, interest, and motivation that will influence how they approach mathematics in later years' (Protheroe 2007: 52).

Procedure

A focus group discussion protocol was designed and piloted with five participants from a separate class taught by the early career teacher who were not part of the sample whose results are reported in this study. Feedback from

these learners helped to reword any unclear questions. The purpose of the study was explained to all three classes with emphasis placed on confidentiality and anonymity. At the focus group interview stage, as the moderator I eased participants into the discussion by serving them refreshment and engaging them in small talk like asking each one to introduce themselves, an activity you like to do in your spare time, and talk about their favourite sport (Dilshad & Latif 2013). After this rapport-building phase, I shifted the conversation to their experiences of mathematics with the early career teacher after explaining to them the purpose of the interview, stating ground rules, telling them that there were no right or wrong answer, assuring them that nobody, not even the early career teacher, would know what they said in the discussion. Probing helped to steer the discussion towards discussions that tended to elicit perspectives that answered the research question. In concluding the interview, I asked the group to add if I missed something. To reciprocate the early career teacher's willingness to agree to provide access to her classroom, the scored observation protocol was discussed and handed over to him for reexamining her own teaching practices.

Data Collection

This study used multiple data collection methods. Initially, classroom interactions were observed for two weeks to obtain a rich understanding of the communication patterns that obtained in the classes of the early career teacher. Observation was chosen as one of the data collection technique because it allows for building of rapport and enables familiarity with the setting and is not affected by the limitations associated with self-report bias (McMillan & Schumacher 2010). In an attempt not to overwhelm the early career teacher and remain focused on obtaining trustworthy results, I did not participate in the classroom activities. In addition to using an observational method, I adopted the Reform Teaching Observation Protocol (RTOP) which I personally filled out for each of the teacher's lessons. This protocol was designed by the Evaluation Facilitation Group (EFG) of the Arizona Collaborative for Excellence in the Preparation of Teachers (ACEPT) to measure 'reformed' teaching from primary school through to university mathematics and science. In addition, RTOP affirms the importance of specialised preparation, knowledge, and professional development for physics teachers (MacIsaac & Falconer 2002). By reformed teaching is meant a classroom learning

environment in which learners use data to justify their positions and learn from one another, and stress a problem solving approach, in concert with the mathematics reform efforts as embodied in reform documents (Sawada *et al.* 2002). The protocol contains twenty-five items, divided into five subscales (Lesson design and implementation, Propositional Knowledge, Procedural Knowledge, Student-teacher classroom interaction, Student-student classroom interaction) each of which features 5 items on a scale of 0-4, for a maximum possible score of 100 points. Given that this protocol was used to conduct multiple observations, the trustworthiness of the findings was enhanced.

Data Analysis

The communicative approach focuses on the ways in which the early career teacher works with her learners to address the different ideas that emerge during the lesson (Mortimer & Scott 2003). Drawing on the work of Bakhtin (1934) which underscores the dialogic nature of meaning making in the classroom, Mortimer and Scott (2003) developed a framework to describe how to the sociocultural theory can be used to study classroom practice, specifically interactions. The communicative approach – the focus of this study – constitutes one of the five components of the framework, the other four being teaching purpose, content, patterns of discourse, and teacher interventions. This aspect of the framework is not only confined to whether or not the teacher interacts with learners but also whether the teacher takes account of learners' diverse conjectures that emerge during the lesson (Mortimer & Scott 2003). They identified four fundamental classes of communicative approach generated from categorising the talk between teacher and learners along two continuous dimensions: a continuum between dialogic and authoritative talk on the one hand and a continuum between interactive and non-interactive talk on the other hand.

The characterisation of the quality of communication patterns in the mathematics classrooms of an early career teacher took place through Mortimer and Scott's (2003) model. The model comprise five linked aspects to analyse the role of the teacher in supporting learners in meaning making in the classroom: teaching purpose; content; communicative approach; patterns of discourse, and; teacher interventions. For this study, the communicative approach aspect of the framework was used to analyse the early career teacher's lessons. Episodes of classroom interactions were coded according to

these components of the communicative approach: either interactive/dialogic, non-interactive/ dialogic, non-interactive/ dialogic, or non-interactive/ authoritative. These components of the model are described in Table 1, below.

Table 1. The communicative approach analytical tool (Mortimer & Scott 2003)

	INTERACTIVE	**NON-INTERACTIVE**
DIALOGIC	Interactive/ Dialogic[a]	Non-interactive/ Dialogic[c]
AUTHORITATIVE	Interactive/ Authoritative[b]	Non-interactive/ Authoritative[d]

[a]I/D Interactive/Dialogic: teacher encourages learners to put forward their ideas including those that are quite different from the mathematical view.

[b]NI/D Non-interactive/Dialogic: teacher considers learners' possible misconceptions without inviting any input from learners.

[c]I/A Interactive/Authoritative: teacher uses a question-and-answer session to convey and consolidate the mathematical view though more than one view may be heard – alternative views are discounted. The teacher's sole aim is to focus on the single view, the mathematics view.

[d]NI/A Non-interactive/Authoritative: as in delivering of a lecture, the teacher presents the mathematics view only in a monologue. A 'closed' teaching situation in that new voices are not entertained by the teacher.

However, although classroom interactions research focuses on examining behaviours and strategies used by teachers and learners and how these features correlated with learner performance (Rex & Green 2008), in this study, the focus is limited only to the early career teacher talk meant to facilitate learners' mathematical knowledge construction through elicitation of learners' ideas within the 'official classroom air time' (Cazden, 2001: 54). As a consequence of this focus, excerpts featuring teacher talk which show patterns of interactions in the communicative approach were identified for analysis. Thus, the analysis focused on the quality of communicative approach by exploring the teacher helped her learners to build new knowledge (new to learners, at

least) by making connections between what they know and what they are supposed to learn. In this sense, other than merely adopting the 'What is … ?' questioning line, the teacher needed to probe learners' ideas, by including questions such as 'Why makes you think so?', 'How?', 'What if …?' or 'Give an example …', 'Do you agree with …', 'How do you know that?', 'Can you elaborate on why …', and so on (Chin 2006; Mortimer & Scott 2003).

However, while exploration of classroom interactions is important, more valuable is to determine the quality of these interactions to see whether they indeed experience mathematics that is honest to the discipline and the teacher's practices honours them as mathematical learners. To do this, I investigated the interactive/dialogic (I/D) communicative approach in which there are two different levels of interanimation (exploration) of learners' conjectures (see, Table 2), as pointed out by Scott, Mortimer, and Aguiar (2006). They point out that exploration of learners' conjectures about mathematical ideas takes place at low interanimation in situations where although a teacher elicits learners' conjectures about the ideas in topics under discussion, but neither the teacher nor the learners probe the conjectures about mathematical ideas or make connections between the various conjectures. In contrast, high interanimation of learners' conjectures refers to the collection and probing, comparing and contrasting of conjectures about mathematical ideas with a view to making connections between what is known and new concepts.

Table 2. Dialogic discourse and interanimation of ideas (Scott, Mortimer & Aguiar 2006)

Dialogic discourse	LOW level of interanimation of conjectures about mathematical ideas.	Different ideas are made available on the social plane.
	HIGH level of interanimation of conjectures about mathematical ideas	Different ideas are explored and worked on by comparing, contrasting, developing.

In Table 3, I present the three topics from the teaching of the Grade 4 mathematics lessons. The three lessons were on varied topics, as illustrated in Table 2.

Table 3: Lessons recorded, transcribed and analysed

Transcript	Topic	Grade	Length of period
A	Tallying	4	40 minutes
B	Pictographs		
C	Bar Graphs		

The data in the RTOP was analysed according to three themes: traditional lecture; active lecture; and active learning. The classroom interactions were judged according to the following score ranges: traditional, 0–29; active, 30–49; and active learning, 50 and above. Noteworthy is that a score of 100 and above indicates a reformed, learner-driven classroom environment consistent with reform efforts.

Findings

Using excerpts from an episode, I counted the number of instances in which the communicative approaches occurred in six (see, Appendices A – F) of the ten lessons observed. The purpose of this exercise was to tally, then compare and contrast the communicative approaches in order to establish findings for the investigation. Table 4 below is presented to illustrate the prevalence of the interactive/authoritative patterns in the excerpts. Specifically, 66% of the interactions were primarily interactive/authoritative. As can be seen in the table, none of the learners' responses were probed and made available to the whole class to interrogate; they were neither interactive/dialogic nor noninteractive/ dialogic.

First, Figure 3 shows an example of an interactive/authoritative segment of the interactions in which the teacher's focus is on telling the mathematics story without inviting various learners' ideas to be explored on the social plane; she does not treat learners' responses as conjectures. Learner 1's response of 100 in line 6 is not put to the class for exploration.

Teacher: What was our number A. number A. Hands up! Number A. We were dividing 165 by 5. Isn't it?
Learners (Chorus): Yes, mam
Teacher: 165 divided by 5. Ok, let us do the solution. What do we do first? … [Chorus answers] Hands up! … Yes
Learner 1: 100
Teacher: Yeah, 100, continue. 100 … [Answer from learner not forthcoming]
Masimncediseni (*Let us all help him*). Yes

Table 4. Frequency of communicative patterns

Lesson topic	INTERACTIVE		NON-INTERACTIVE	
	Interactive / Dialogic	Non-interactive / Dialogic	Interactive / Authoritative	Non-interactive / Authoritative
Tallying	0	0	21	6
Pictographs	0	0	13	10
Bar Graphs	0	0	17	10
Total	**0**	**0**	**51**	**26**

The next excerpt (Figure 4) provides some more evidence for the case of an interactive/ authoritative pattern of communication. In lines 9-16, the teacher confirms Learner 2's response by repeating it herself to the class. However, she does not pass this response for checking of its validity by the whole classroom.

Learner 2: 100 divided by 5
Teacher: 100 divided by 5 [teacher repeats learner's answer]. Next?
Learner 3: 60
Teacher: 60 divided by … 5? Yes ... yeah …
Learner 2: What is 100 divided by 5? … Yes, Alipheli?
Learner: 20
Teacher: 5 divided by 5
Learner 1: 1

In the following excerpt, the teacher only entertains responses that are consistent with the canonical ideas of mathematics. In lines 17-23, Learner 4's response is judged by the teacher as incorrect, hence she tries to show him that he needs to reconsider his answer.

Teacher: 5 divided by 5 [teacher repeats learner's answer]. Ok, let us get the answers. 60 divided by 5? … Akpani?
Learner 4: 300
Teacher: Hhhe
Learner 4: 300 [Repeating her earlier answer]
Teacher: When you say 60 divide by 5 we get 300? How come it's 300 where we divide 60 not 100. Let us count in 5's

The nature of the excerpts indicates that low interanimation of ideas was prevalent. That is, although learners provided different responses as their answers to the teacher's questions, these responses were not contrasted and compared to test their veracity. An overall RTOP score of 43 which reflected that there was relatively some degree of active learner participation in the lessons was consistent with the findings obtained in classroom observations as are shown in the excerpts. In the next section I examine the data to determine points of convergence between the findings in this study and the existing literature.

Discussion

This study investigated classroom talk in the mathematics lessons of an early career teacher in a primary school with a focus on the teacher-learner interactions. The results of the study show that on the whole, the quality of these interactions is low. In fact, despite the teacher's attempts to interact with her learners, these interactions were characterised by episodes in which only the ideas deemed consistent with the mathematical view were tolerated. Thus, interactions in which learners' ideas were made available on the social plane for the purpose of probing conjectures were far and few in between. This result is consistent with that of Arends, Winnaar, and Mosimege (2017) who found that the opportunities for the learners to make conjectures through the discussion technique was very small. According to Mercer and Sams' (2006) and Sfard's (2007) findings in Grade 5 classrooms, the low interanimation of

ideas is indicative of learners' inadequate prior content knowledge necessary to engage in meaningful classroom talk.

The observations of the lessons provided evidence that the early career teacher struggles with orchestrating interactions embedded in sense making. Although in all three lessons observed, the teacher was well-prepared for the lessons and appeared very comfortable from the mathematical content point of view, a number of opportunities arose for him to probe learners' responses for deeper learning, reasoning, refining ideas on the social plane. However, very little attempts were made by the teacher to seize these moments to develop the mathematical story.

Given the low participation of girl learners in mathematics in general and in mathematics-related careers in particular, policy interventions intended to improve girls' and women's participation in mathematics discipline over the past two decades, future research endeavours can shed light into how participation and the quality of classroom talk are distributed across gender in developing countries such as South Africa. In the construction of mathematical knowledge, the Specific Aims of CAPS and the nature of school mathematics in general reveal an interesting contradiction. On one hand, the CAPS document advocates for assessment approaches that encourage investigations of mathematical objects through conjecturing. Yet, on the other hand, the education system pressures its teachers to cover prescribed content within a specified time period to prepare learners for tests and examinations.

Conclusion

The purpose of this study was to understand the instructional practices in which an early career teacher engages to add knowledge to the understanding of the behaviour and strategies in classroom interactions that are associated with meaningful learning of mathematics in the primary schools. I have built a rationale for this study by describing citing germane work, stating the hypothesis and considering propositions of previous studies, defining terms, and clarifying limitations (Merriam & Simpson 2000). The four categories of the communicative approach obtained from the combination of two dimensions along which the types of interactions in lessons of the early career teacher functions, provided a framework for analysing these interactions.

The finding that the early career teacher was found wanting in respect of scaffolding his learners in the meaningful learning of mathematics, in this

particular research, suggests that the teacher requires assistance in the orchestration of classroom interaction that help learners develop views that reflect the practices in the mathematics discipline. Thus, the implication resulting from this recommendation is that teacher preparation programmes need to redefine classroom interactions to equip preservice teachers with the necessary skills to conduct classroom talk in ways that resemble the practices of mathematicians, especially conjecturing work. Additionally, many questions relating to the effect of factors such as class size and pressure to adhere to the delivery of the content as dictated to by the curriculum remain unanswered and may be the subject of further research. Whereas this study is limited in that it followed three lessons of a single early career teacher only, restraining the size of the sample enabled a deeper analysis of the mathematical experiences of these 48 learners.

One particular limitation of this study is that the findings were based on only three observations of a single classroom of a single early career teacher due to constraints in resources (time and funding). The decision to use a case study approach was based on Merriam and Tisdell (2016), who reason that the general can be found in the particular in that lessons learnt in one situation can be transferred or generalised to subsequent similar situations if 'thick' descriptions are used as a strategy to enable transferability of the results of a study to another setting. By 'thick' description is meant a 'detailed description of the setting, participants, and the findings with adequate evidence presented in the form of quotes from participants' interviews, field notes, and documents (Merriam & Tisdell 2016: 257). Another limitation is that a few of the learners were silent during the interactions and thus their ideas remained unavailable for subsequent analysis.

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‘Being in’ and ‘Being of’: Reflections on Being a Rural Working Class Student, and Academic Support Practitioner, in Higher Education

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Abstract
Although higher education as a sector is open for access to many more students than has been the case in the past, students from rural backgrounds continue to be confronted with many barriers which construct them as misfits for university studies. This paper presents my own reflections on how being a student from a rural community has influenced my practice as an educator who has coordinated Academic Monitoring and Support at a South African university. It examines layers of academic and non-academic challenges experienced by students from rural working class backgrounds, through the lens of my own narrative. Using Participatory Narrative Inquiry (PNI), I include my personal experiences and insights as a participant researcher and interrogate these experiences and observations using Bourdieu’s (1985) cultural capital theory. The evidence suggests that the growth in the number of students from rural socioeconomic backgrounds entering higher education is not matched by the preparedness of students for tertiary study, or by institutional readiness to support and nurture these students. I highlight lessons learnt for rural schools’ praxis.

Keywords: Access, higher education, narrative inquiry, cultural capital, preparedness for tertiary studies.

Background/ Context
While higher education has increased access to students from previously

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marginalised backgrounds, students from rural backgrounds continue to be confronted with many barriers which construct them as misfits for university studies. Both academic and non-academic support and mechanisms to nurture students from rural background should take into consideration who these students are. Failure to understand the nature of our students will continue to negatively affect throughput. Scott *et al*. (2007) found that about 25% of students drop out from university at their first level of study, with only 21% of students being able to graduate within minimum time. South Africa's graduation rate of 15% is one of the lowest globally, according to the National Plan for Higher Education (NPHE) compiled by the Department of Education in 2001 (Letseka & Maile 2008). One of their findings is that students were dropping out because they were first generation students to attend university. Students from rural backgrounds become alienated by institutional cultures and subcultures of the university and they take time to adjust (D'Andrea & Gosling 2005). The new culture of doing things at university, such as the absence of the bell to time students, and the move from being dependent on teachers and family to being independent requires that the students make a radical adjustment to the new environment on their own. Such self-reliance while navigating the higher education space can be daunting.

One of the major factors that is a barrier to students from rural areas while navigating academic space is academic literacy and English as a medium of instruction (Kapp & Bangeni 2011). If students struggle with the medium of instruction or cannot access academic language, then they will be challenged in terms of epistemological access.

Literature Review

Globally, increasing rates of students' access has brought into focus the question of the readiness of both higher institutions and the students them-selves (Archer 2005). It is equally observed that levels of student and institutional preparedness differ across countries (Archer 2005). The increase in enrolments has not been met with sound throughput owing possibly to lack of student and institutional preparedness. However, increasing need is being recognised globally and locally, for higher institutions to attend to students' transitional support needs before they become 'at risk' of completion because of initial challenges to adjustment to the life and demands of higher education studies. Increasing efforts are aimed at what Adams (2016: 15) sums up as 'to equip them with knowledge and skills that will enable them to succeed in their

studies'. South African higher education enrolment increased by 193000 between 1993 and 2004 and the majority are first generation students (Vincent & Hlatshwayo 2018).

In the context of South African universities, expanding access and ensuring throughput is identified in the literature as a perennial challenge (Goastellec 2010). Since the 1930s, evidence from literature shows that the nature of access and throughput challenge has changed (Foster 2017) over time. Before the transformation period in higher education in 1996, there were racial imbalances in terms of student access to higher institutions (Akojee & Nkomo 2007). McKenzie and Schweitzer (2001) recognise that the focus of higher education institutions continues to shift from restrictedness to expansion of access to other races and working class people, opening doors to accommodate a diverse community of students. However, Akojee and Nkomo (2008) observe that the social and political agenda that accompanied the transition and transformation era of South African universities meant that the challenge of access has been defined within these agendas.

There is no clear or sufficient evidence from research about how these social and political agendas shape, influence and contribute towards students' 'at risk' factors, and their eventual dropout or non-completion of degrees and diplomas. Thus far, focus has been placed on accelerated physical access, its challenges, its enhancement and the special and pedago-gical support it requires (Hornsby & Osman 2014). There are also assumptions that relevant resources of support provided for the disadvantaged students suffice for the challenges of transition and adjustment to university (Gellin 2003). However, once in the system, how the disadvantaged students access the support provided and use resources on the one hand, and the ways in which these support provision and resources are put in place and made accessible to them on the other, are experiences and narratives with which we are not yet familiar.

Letseka and Pitsoe (2013) brings a contextual appreciation to the term 'access', as it applies to South African higher education. They explain access to mean the process whereby students register to study a certain degree or profession full time (Letseka & Pitsoe 2013). Access is taken to mean that students are accepted and admitted based on certain criteria such as matric points. According to Nyamapfene and Letseka (1995) and Moll (2004), access in higher education is challenged by under-preparedness of students who come from secondary schools to engage with teaching and learning at university level. Some of these students are recognized as coming from homes where they

are first generation university students, implying that their social network is limited. These students may be coming into the university with little exposure to the notions of university life and experiences. Boughey (2003) observes that, as much as access into higher education has improved, epistemological access is still a concern. While gains in access to higher education are being made, the not-so-smooth transition from secondary school level to the level of university undergraduate studies in the South African context remains a challenge that compromises student success.

Presently, some higher education institutions in South Africa offer 'Access' programmes. These are programmes that are specially designed as bridging courses aimed at ensuring that students who do not meet university entry requirements, particularly those that come from disadvantaged backgrounds, are supported foundationally to start their degree studies (Waetjen 2006; Maphosa & Mudzielwana 2014). The South African government also gives scholarships and loans such as National Students Financial Aid Scheme (NSFSAS) to students from low socio-economic status backgrounds to access higher education (Wangenge-Ouma 2010). Whereas opening up of access to higher education has translated into opportunity for students from diverse backgrounds to enter the university, it has also opened up other challenges for higher education access and success. The emerging issues around what has been recognised as epistemological access in South African higher education are particularly of concern (Slonimsky & Shalem 2006).

Making Sense of my Learning Using Bourdieu's (1986) Social Cultural Capital Theory

I use Bourdieu's (1986) social cultural capital theory as a lens through which to examine systemic and cultural contexts and influences that impact on students from rural low socio- economic backgrounds who enter learning institutions from different structural positions associated with different social habits (Hattam *et al.* 2009: 304). For the purpose of this paper, I focus only on the following: the gap between higher education and students from rural economic backgrounds, the kinds of capital that are valued and the kinds of capital that are discounted and reasons thereof, and what effect they have on higher education's claim to offer all deserving students a place (Thayer 2000). Bourdieu (1986) argues that cultural capital considers the family influence on a student's academic activity across the historical, evolving institutional

systems. The central notion is to recognize socio-economic and sociocultural contexts that may impact on individuals. Some behaviours are located within the family and the sociocultural environment, such as students being socialised into voicing their opinions and becoming independent. Some students enter university too underprepared to be independent and adjusting to decision making like making sound financial decisions without proper financial literacy. Bourdieu's cultural capital concept refers to collection of symbolic elements such as skills, mannerism, clothing, credentials etc. He points out that cultural capital is a major source of social inequality. Students enter higher education with different cultural capital and struggle to fit in and cope with tertiary education expectations. As first year students enter the lecture room, lecturers assume that all of them are ready to engage with the content and are able to handle all demands such as typing assignments, engaging with academic work using technology, and confidently voicing their opinions in front of their peers using English as a medium of instruction. Failing to acknowledge this lack of skills perpetuates social inequality and exclusion.

Some cultural capital, such as use of the medium of instruction, is located within the school environment. Students from rural economic backgrounds are used to being taught in native language or having content explained in their native language, and that is missing in tertiary education (Mngomezulu 2014). This shift enlarges the gap between what the university expects from students and what students bring with them. This disjuncture impacts negatively on students' success.

Thus the research question guiding this study is this: What are the challenges in higher education experienced by students from rural backgrounds?

Methodology

In this paper, I use Participatory Narrative Inquiry (PNI) methodology to explore the gap between higher education practices and expectations and what students from rural socioeconomic backgrounds bring. According to Shacklock and Thorp (2005), narrative inquiry is concerned with personal accounts of lived experiences that are interpreted and produced. These stories are selected and told as they are remembered, to give an account of personal experiences. When locating a story with a particular context, it shows that individual experiences are not happening in isolation but within complex societal structures (Tierney 1999). I make explicit understanding and interpretation of my experiences within the boundary of my context. This study is auto-

ethnographic in nature as it follows the norms of narrative inquiry (NI) (Creswell 2006). It shows my central role as a participant and main narrative contributor as I reflect on my journey as a rural working class university student, as well as my practice. I come from a village populated by Black Africans; the village is situated in the coastline of Northern KwaZulu-Natal, where most people survive by sugarcane farming and working in forestry while some work in the nearby town. I attended quintile 1 schools from primary to secondary schools in the area where I matriculated. The paper narrates my personal experience growing up in a rural working class family, the challenges I encountered at university, and how I figured out how to persevere and succeed within my struggles. I also narrate my journey as Academic Monitoring and Support coordinator of students who are targeted 'at risk' of academic failure. The narrative is inward and outward looking as it shares the know-hows, approaches and dispositions of transition in higher education (HE), outwardly exploring systemic and structural issues of academic support programmes at the university. I also explore that many barriers I confronted that constructed me as a misfit in university studies. I also explore my experience of interacting with students who are targeted 'at risk' of academic failure, and the role of the support environment. In order to analyse my lived experiences, I use Bourdieu's work to conceptualise the gap between preparedness of HE and readiness of students from rural socioeconomic backgrounds. I further use Stierer's (2008) construct of reflexivity to explore a deeper meaning of my journey. I also make explicit the discourses that challenged me as a rural working class student and barriers faced by students who are targeted as 'at risk' in HE.

As both a participant and a researcher, I give a narrative description of my story, as I did not go to the field to collect data. The narrative derives from my four years as an undergraduate student and three years as an AMS coordinator. It tells my academic and non-academic encounters as a student and as the AMS officer interacting with students and various institutional stakeholders in various forums (both formal and informal). As much as I have many experiences to reflect on, I have only selected critical moments that were pertinent in my journey as both rural working class student and AMS coordinator. I conclude the paper by arguing for re-examination of the gap between the readiness of HE and preparedness of students from rural backgrounds as it is not clearly understood – in particular, the kinds of capital that are valued, and reasons thereof, and the kinds of cultural capital that are

discounted, with attendant reasons. I question what effect this has on HE's claim to offer all deserving South African students a place.

How I Navigated the Terrain as a Rural Working Class Student

I grew up in what is considerably a village background where I attended a quintile 1 school (school in poorest community). I had aspirations from my earliest years to my maturity, including aspiration for university education. My being a village 'girl' could not diminish the aspirations, but rather was instrumental in my aspiration to work hard, push boundaries, and go extra miles to succeed. I became one of those referred to in literature as 'first generation' students and 'non-traditional' students, meaning those who are usually not college going or university candidates because they are from disadvantaged educational backgrounds or the first in their families to enter university (Blackwell & Pinder 2014). Thus, though it was achievable, navigating my way as a university student was never easy. The adjustment from secondary school to HE was a cultural shock. At school, the bell, teachers, parents and school community assisted us in managing our time and telling us what we needed to do, what was expected of us and where we should be. The university assumed that we knew where we were supposed to be at particular time. There was a sudden big shift and the expectation that you had the cultural capital needed to navigate your way in this new environment. For me, university meant layers of challenges, and because of my poor socio-economic background, it meant staying outside campus in the cheapest accommodation, having limited interactive spaces and little socialisation time with peers, having no access to the library in the late afternoons, and experiencing little exposure to English language (the only medium of instruction used on campus) (Murray 2014). This was in contrast to my peers who came from well-resourced schools. Students who came from advantaged schools were offered more opportunities in terms of resources and the type of education they received at a school level. Being exposed to English as the medium of instruction and better resources enjoyed by my peers at school gave them an edge in university.

First generation Black rural working class students struggle to negotiate their way to success in HE because they are alienated by university systems (Vincent & Hlatshwayo 2018). As a second English language speaker, for almost two weeks I struggled to understand the accent of a Professor who

spoke very softly in a lecture of about 300 students. In the third week, I used to come very early for this lecture to occupy the front seat so I could hear him. This, however, did not help much owing to my not being used to being taught in English for the whole lesson. The challenge was compounded by the heavy accent and the speaking rate of the lecturer. I had to buy a textbook in order to cope with this lecturer. As he was teaching, I would underline in a book what he was teaching then make meaning of what was taught on my own. The reality was that, being a second language English speaker who was used to code switching, and to teachers using our native language to explain concepts, I felt marginalised. This is how the university cultural capital entrenches and perpetuates the disadvantage of those from disadvantaged environments. However, realising that the medium of communication was a barrier, I then decided to read a lot and use previous question papers to understand the type and language used in assessment. Foster (2017) questions how, for instance, students whose mother tongue is not the language of instruction or second language speakers cope with the academic and discipline-specific writing demands. This deepens the issue of how institutions understand the importance of language in pedagogical access.

Adjustment for me was not a curve, but a sharp and challenging experience. I recall too, what a lonely and untutored experience it was, even in the midst of the sea of people which the university seemed to be for me then. On one hand, I was on my own as a first year student, on the other, here was the university, which required of me pedagogical knowledge, literacies and cultural capital I did not possess. I needed to instantly adjust and transit to this new life in the university. At first, I was excited to be on campus, but later was disappointed with being confronted by many barriers which constructed me as someone not matched to university studies. Being unprepared or inadequately prepared, and being unable to fit into the neatly carved institutional expectations and culture, created barriers to success in my journey. However, as a student, I knew that I had only one chance of success and work towards a scholarship. I knew that if I worked hard and did well academically, I would qualify for a scholarship. And with funding sorted, at least I would have respite from worrying about money and become focused and energised to pull through other challenges. This realisation eventually became the motivating force which drove my firm resolve and developed my initial resilience. I was able to strive against all odds, and my resilience contributed to eventual success cumulating in my first degree, graduation with a *cum laude*. Having a strong

will and working towards a set target made success a reality for me. But this may not have been the same story for all those who shared similar experiences to mine, no matter how 'oh what a happy ending' it sounds. My personal journey impacted in a strong way on my practice as the coordinator for the Academic Monitoring and Support. This is because, in many ways, I was able to relate to the problems and issues that defined the students' support needs and how these impacted students' experiences on campus.

Self-reflection on my Journey as a Practitioner

When I started as Academic Monitoring and Support coordinator at the university in 2010, I was guided by the university policy. I tried to draw from these to understand the issues and challenges 'at risk' students faced as well as their experiences. My understanding was from both the policy and practice point of view. I had an insight into to what students attribute their academic challenges. My understanding positioned me to know how to approach problems related to students' support needs, particularly related to their academic performance.

However, the narratives of 'at-risk' students challenged this presumptive confidence on and about whom the students were and what their support needs were. These narratives were experienced in many divergent ways. This increased my knowledge of not only the challenges students bring with them to campus in terms of support needs, like personal baggage, but also how such challenges would remain a barrier if they were not resolved. Another important form of knowledge was that students have active agency in terms of the way they want to be supported. I observed that students are aware of what their support needs are, and how they are to be supported to meet those needs. I observed too, the support environment, the structural, cultural and policy environment, and the students themselves. Through intense observation, I was able to identify a number of issues.

Two months into the job, I began to have a different approach to handling these dynamics and a better appreciation of the existing realities. I reflected on what was on the ground in real time and space and decided on a number of steps to address these issues. At the time, we had challenges in terms of lack of student attendance in the support programme. One of the reasons why students were not attending the programme was their perception of the AMS, which carried a certain stigma. At the beginning of each semester, students 'at risk' attended a compulsory session to determine their challenges

and discuss intervention strategies. The popular narrative amongst the students was that the AMS was a programme for those considered as 'failures', perhaps seen as not fit to be in the university. In response, I worked with colleagues to change interventions programme and the name of the programme. It was then called the STAR (students at risk of academic failure) programme. We had to reconsider the paradigm how we view these students without losing the reality that these are students who are at risk of academic failure. With this sort of rebranding, we saw a shift in terms of attitude and participation as STAR is associated with something positive. The second initiative was that the programme shifted from being the programme for 'at-risk' students only and was made open to all first years. This was meant to encourage wider acceptance and participation and to increase levels of student engagement. This resulted in increased attendance and participation at AMS activities.

At another level, it became clear to me that 'at risk' interventions are, structurally speaking, reactive in approach. Interventions are meant to try to work on a problem with students who have already 'failed'. WE re-looked at the existing programmes, and tried to re-draft these in ways that the intervention programmes could suit the many student's needs. In particular, the capacity and support related to supporting the students' subject content knowledge need, in terms of mentoring, had to be fully spread and maximised. With this in view, I applied for funding from University Teaching and Learning Office (UTLO), Competitive Research grant to enable the AMS / STAR to start a peer-mentorship programme. With a successful funding grant application (thanks to the UTLO), the STAR Mentorship programme came on board. Besides being accessible as a support intervention to the 'at risk' students, it supported many other students. The programme was also an added layer to the positive conception of AMS, its programmes and activities amongst the student body on campus. With the funding, the AMS could hire student mentors to support students, and also set up a Mentoring Drop-in Centre where mentors took turns in providing subject content knowledge, mentorship to mentees and information, and in responding to the immediate needs of students. Through a reawakened experience of the job, of the students themselves, and of the dimensions and complexities of students' 'at risk' support needs, I began to experience in myself a deep prompt and interest in choosing to research AMS, particularly for furthering my studies. This was the push I needed to register to study for a PhD degree focusing on AMS. Being AMS coordinator positioned me to work with a Mentorship Programme, where mature students were mento-

ring first year students and those that are 'at-risk' of academic failure. Chaplin (2006) observes that Ubuntu is an attempt to help people in the spirit of service, to be respectful, honest and trustworthy. I learnt that there was a spirit of Ubuntu or community spirit between mentors and mentees. Students with funding and those that could afford it, were buying food for the less privileged students who could not buy food, and those that did not have funding. The mature students were looking after first years in a brotherly and sisterly spirit.

Cultural Capital of Students from Rural Working Class Families

Students from rural working class families come with an added layer of support needs during transition from secondary school to university. Some have never seen the huge and tall buildings, some lack competencies occasioned by the poor socio-economic backgrounds of students such as lack of computer literacies. Not only are they confronted with academic transition, but also with the physical navigation of their journey. Leaving home for the first time where I had a support structure and community members who played a pastoral role regardless of which family I came from, was a difficult decision to make. Leaving people who cared most about me was daunting, scary and exciting at the same time. I wondered how I would adjust to the new environment but was equally excited about being a university student who came from the village. Being the first child to go to university came with lots of expectations. Family and community members had high expectations, as I was deviating from the norm by focusing on education rather than on the job and getting married. However, as I entered the university, I carried with me the spirit of Ubuntu, togetherness and community care that I had experienced from my rural community. I needed both to leave behind some things – such as the expectations around job and marriage but also to bring with me the spirit of Ubuntu.

Students who come from rural working class families are socialised in a particular way and they come with knowledge which is not fully valued in academic spaces, such as ways of showing respect (not looking at the adult in the eye, how you communicate with an adult), also the spirit of togetherness (emanating from extended family and rural community). As a result, this makes them feel isolated and forced into a foreign paradigm, not only in their lecture rooms but also outside lecture rooms, in their new found social space (how they dress, what they eat, how they conduct themselves, how they fit in).

How Differences between my Background and University Set me Up for Failure

When I entered the university I was confronted with the opposite of what I knew. In my view it promoted individualism. Rurality promotes a sense of belonging: 'I am a human being because I belong' (Desmond Tutu 2003). Students who come from rural contexts value themselves and others because this is what is practiced in their upbringing. When they enter university, the sense of belonging is diluted by embracing other new cultures and confronted with individualism. The communal nature of rural life that I know of becomes a valuable resource when students are working in groups. The culture is different from school where there is conformity and teachers are behind you. One can be misled by seeing people moving up and down and with no understanding that they have been to classes or are waiting to attend lectures. The significance of the community values and identity that the rural working class students bring cannot be overstated as they contribute to academic success.

The Agency to Succeed against All Odds

My understanding of the institutional culture made me enact my own agency of wanting to succeed against all odds. The inspiration of making a difference in my family and my community has driven me to focus in my studies. I know what it means to complete my degree on time and start working. What was also pushing me was that in my clan, girls were not allowed to go to the university. Since my father had taken a decision, different from the norm, of allowing me as a woman to further my studies, it also pushed me not to disappoint him in his family. I also wanted to break the poverty cycle and become a role model in my community. This was the agency which contributed to my success.

Discussion

Challenges Emanating from Being a First Generation Student and the Rurality of my Background

From my own experience and observations as a student and as AMS coordinator, first generation students and students from working class families come with an added layer of support needs. Such students navigate major challenges in the transitional space from school to university because siblings and parents

lack the relevant educational experiences (Collier & Morgan 2008). As much as non-traditional students comes with an added layer, once they receive relevant support, they become resilient and succeed. A study conducted by Arbelo-Marrero and Milacci (2016) focused on understanding undergraduate non-traditional students in their last year of study. Their findings suggest that family context, personal aspiration played an important role in the perseverance by participants. In my context, the majority of students from working class families experience using computers for the first time whereas the university expects them to access information about the qualification online/ using Moodle site. Some students still struggle to cope with the medium of instruction and are challenged by incompetence in academic literacy. As much as there are university structures in place to support students academically, the capacity is not matched with enrolments. Students also struggle to manage their time effectively as they are not adequately prepared at a secondary school level. Universities provide funding to students from disadvantaged background. However, as much as the funding is made available to students, financial literacy is still a challenge and the worry about poverty contributes to students using the money intended for their studies to support their families.

Lack of Institutional Readiness to Accommodate Student Diversities

Reflections on being a rural working class student, and being an academic support practitioner provide an interesting position of how students navigate their success in HE and what cultural capital and characteristics students entering HE from a working class background come with.

Post 1994, universities have opened doors for students who come from disadvantaged backgrounds with the assistance of government funding. The physical access of students from low socio-economic status has been improved. However, not much attention has been put on institutional readiness and the layers of challenges such students are faced with (Badat 2016). The student demographics have changed in higher institutions, however, the pace is not matched with the changes in the institutions to accommodate the change in who the students are that enter HE. Levine (2017) argues that the academic profession has drastically changed and one of the reasons is the changing characteristics of university students and further that what is propelling the change are forces outside the institutions, hence the lack of readiness. As much

as university are experiencing swift change with regards to students, not much change has occurred with regards to the systems. Some students find themselves not coping with the system and not easily adjusting to academic demands or to the quick shift from dependency to becoming independent non-mentored young adults. Adjustments comes with certain expectations or epistemological demands and this results in student drop out (Suhlmann, Sassenberg, Nagengast & Trautwein 2018). The reality is that, as much as institutions are responding to transformation, there is inadequate exploration of diversity and of who these students are. Focusing mainly on matric scores or standardized tests and using assumptions and a blanket approach to the readiness of students coming from different quintiles, may mean that there is something we are missing on how we can help them reach their potential.

Coming from disadvantaged background does not mean that you are not capable. Some support to bridge the gap or some mentorship during the transition period is crucial for both academic and non-academic development. As the reality shows, that transition period requires some form of mentoring in most spaces, and lecturers should also assume pastoral roles in their teaching spaces.

Conclusion

In this article I presented an auto-ethnographic narrative on my personal experience on being a rural working class student and academic support practitioner in HE, and reflected on challenges confronted by students from a rural background in HE. I used Bourdieu's (1986) social cultural capital theory as a lens through which to examine systemic and cultural contexts and influences that impact on students from rural low socio- economic backgrounds. I have come to realise that the recognition of socio-economic and sociocultural contexts of students in HE may positively impact on their academic success. I now realise the impact of the gap between learners from disadvantaged and well-resourced schools. The insight that I gained from my journey both confirmed and contradicted the literature I have read about students from rural backgrounds. There is an assumption that students from rural communities have low educational aspiration (Tieken 2016). Despite this general statement, many of my peers at secondary school aspired to further their studies. The greater barrier was, however, funding. Although findings from the study conducted by D'Andrea and Gosling (2005) suggest that being

a first generation student is a risk factor, it is important to also note that students who are first generation and come from rural background are resilient and have agency to succeed to support their families. For some, challenges they are confronted with become a motivation to succeed against all odds. I have come to realize that access and funding become the greatest enabler for students from poor backgrounds. The implicit assumption has been that a student from a rural working class family will be able to cope with well-designed university programmes like other students who were privileged in terms of resources, the use of language and their ability to adjust socially to a new environment. This is not the case.

Through my experience as a rural working class student and working in academic support, I have come to realise that as much as rural working class students come with resilience and self-agency to do well, an added layer of support is essential for this group of students. I have also observed that, as much as institutions provide support, the increase in enrolment becomes a limiting factor in providing adequate student support. It has been argued that in order to balance the intake with the throughput rate, extensive intervention support programmes should be established (Agar & Knopfmacher 1995). How this act of balancing is achieved within the South African HE landscape is important to study and understand. This is particularly so in order to further develop systems that best enhance students' success. It is also important that HE system understand who their students are and what their support needs are and whether they can be met to successfully navigate their academic journey. Seeing generally the dissonance between institutional capital and that which students bring, it is important to understand what is it that institutions are doing to bridge the gap.

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Teachers' Sense of Community in Rural Learning Ecologies

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Abstract

This paper reports on the findings of a baseline study that sought to explore teachers' sense of community in so far as it contributes to sustainable rural learning ecologies. Community is a group of people who, together, share the feeling they belong to something, can influence and be influenced by one another, and can have their needs fulfilled by fulfilling the needs of the group. This small-scale mixed-method (quantitative and qualitative) study administered the revised 24-item Sense of Community Index (SCI-2) questionnaire on 161 male and female teachers randomly selected from rural schools in the eastern Free State region of South Africa. The questionnaire was tested for reliability using the Cronbach alpha coefficient and was found to have a reliability score of 0.71, indicating an acceptable reliability coefficient. In addition, three narratives from teachers in one rural school were sourced. Findings indicated that teachers who stay in urban areas but are employed in rural schools evinced similar sense of belonging, membership, shared emotional connection as well as influence as their counterparts who stay in rural learning ecologies.

Keywords: Cronbach alpha; membership; questionnaire; Rural schools; shared emotional connection

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Introduction

Teacher shortages in rural South Africa are common. Phakathi (2013) states that in an attempt to curb the shortage, the Department of Basic Education (DBE) is considering making it compulsory for new teacher graduates to at least have been engaged in teaching in rural schools as part of their training. The decision to demand that student teachers serve in rural areas before they complete has been practiced elsewhere in the country. Some South African universities including University of Kwazulu Natal, Nelson Mandela Metropolitan University as well as the University of the Free State have embarked on concerted efforts to introduce student teachers to schools in rural learning ecologies with the expectation that such students will be more likely to accept teaching posts in these ecologies. As expected, placing student teachers in rural schools yielded some desirable results where the students indicated that the exposure made them appreciate rural areas more and 'gain a competitive advantage' (Hopkins, Raymond & Carlson 2011:337) in the process. The DBE (cited in Phakathi 2013) reports that 6641 schools in South Africa had fewer than six teachers and more than 20 000 teachers were obliged to teach multigrade classes. A great majority of children in rural poor communities continue to receive less than is their right in a democratic South Africa. Worse still is a fact that this will have long-term effects on their opportunities for development, their capabilities and their lives. Moreover, the communities in which they live will continue to suffer the debilitating effects of poverty and inequality for as long as these problems remain (Nelson Mandela Foundation 2005:viii-ix). A case for rural education can be advanced on the following grounds (Nelson Mandela Foundation 2005:139):

- Urban constituencies are more organized and vocal than rural ones and have succeeded substantially in monopolizing attention.
- The universal framework employed in government and policy documents is insufficiently sensitive to the specific conditions and needs of the rural poor.
- Education cannot compensate for poverty and inequality, and social inequalities need to be addressed before rural education will change.

According to Barley (2009:10) rural schools continue to experience difficulty recruiting and retaining new and qualified teachers. The teachers recruited for

rural schools must be prepared for the conditions of rural teaching. They not only must have the credentials they need, but they should also be aware of the nature of rural schools and communities. Furthermore, teachers in rural learning ecologies need to be acutely aware of the increasing diversity in rural schools and communities (Wenger, Dinsmore & Villaḡomez 2012:1). The importance of teacher preparation for rural learning ecologies cannot be over emphasised. In focusing on the role of teacher education, White and Reid (2008, as cited in Cline, White & Lock 2013:1) also identified links between the sustainability of rural communities and teacher preparation, finding that rural communities stand to benefit from teacher education that is inclusive of rural education needs. White (2010) further argued that the relationships between rural schools and local communities need to be reciprocal, whereby successes in the areas of rural leadership and community collaboration can inform teacher education practice.

It has further been noted that rural learning ecologies are not well known and appreciated. Historically, rurality and rural education have been marginalised bodies of knowledge in South Africa and little is known of the focus of the various studies and the state of rural education and rural education research (Nkambule, Balfour, Pillay & Moletsane 2011:341). Over and above what Nkambule *et al*. (2011) suggest, i.e., little is known about rural research, the little knowledge that authorities have seem to take a long time to be acted upon. One of the problem areas in rural education is multigrade teaching. A study by the Centre for Education Policy Development (CEPD), probed the teaching literacy and numeracy in multigrade classes in rural and farm schools in South Africa. This research analysed data as well as carrying out six case studies, in the North West province, using interviews with principals, interviews with teachers. Most of the schools that had these classes were poorly resourced. There was no curriculum adaptation, and the planning requirements were the same as those of the monograde classes. Teachers' exposure to suitable teaching strategies was limited, there was no specific teacher training on multigrade teaching, and no specific support was offered to these teachers. The learning materials were not always available in the mother tongue, and were not suitable for self-study. The continued neglect of the multigrade problems contributed to ongoing marginalisation of the poor, for whom multigrade schools were a reality (CEPD 2011).

Recruiting and retaining highly effective teachers (growing-your-own-timber!) may be a solution in many rural learning ecologies. Successful rural

high schools are able to ensure an adequate number of high-quality teachers to boost academic success. Unfortunately, too many rural communities struggle to find and keep effective teachers. Even though rural teachers generally report a higher level of job satisfaction than their urban and suburban counterparts, rural communities have a higher number of less-qualified teachers and often lose their most experienced employees to higher-paying posts in nearby suburban and urban areas. Despite these ongoing challenges, an increasing number of rural communities are addressing these difficulties head-on with advanced technologies and distance learning that allow teachers to expand their professional development opportunities, as well as 'grow-your-own-timber' programs that encourage talented young people to stay and teach in their home communities (Hlalele 2012; 2014).

Mulkeen (2005) states that while the problem of teachers is usually linked to low numbers of teachers being produced by the system, in actual fact, there are qualified teachers in urban areas who are unemployed. Therefore, the existing shortage of teachers in rural learning ecologies may not be exclusively accounted for by general and current teacher shortage discourses. Mulkeen (2005) further alludes to the fact that teachers prefer to teach in urban areas while rural posts remain unfilled or when filled, the teachers who take on these posts tend to be unqualified and inexperienced. Therefore, there is a need to ensure that well trained and motivated teachers are made available for rural learning ecologies. In our view, incentives may contribute to attract teachers to rural learning ecologies. Teachers' sense of community constitutes one of the strongest aspect of recruiting, attracting and retaining teachers. According to Bennell (2004) and SACE (2011) local teachers are less likely to choose to migrate to urban areas if they have some ties to their local community. This means that if teacher training institutions were present within rural learning ecologies, those who attend them would be more likely to remain in their local areas and provide much needed teaching to these areas, willingly. Due to their ties with rural areas, their sense of community and attachment is likely to be greater. The purpose of the study is to explore the teachers' sense of community in rural learning ecologies.

Building viable models of community support and partnerships may also contribute to maximising efforts in rural ecologies. According to schools are also an important resource for connecting rural people to their community and promoting rural lifestyles (Hedlund 1993; Ferris, Oosterhoff & Metzger 2013:2). Similar to churches, schools are often considered stable institutions

within rural communities, providing rural residents with a sense of identity (Miller 1993; Ferris, Oosterhoff & Metzger 2013:2). Schools not only provide the physical location for organized activities, but many school clubs build on academic curriculum outside the traditional school day. Rural communities play a vital role in the success or failure of their local schools. High-performing schools tend to depend on local community-based services, businesses, and other non-academic partners to stretch limited resources and support a common vision for change. Rural schools often have the benefit of small, tight-knit communities to help guide school improvement efforts and participate regularly in school activities. Unprecedented and widespread reliance on technology may also allow rural schools to engage local stakeholders in educational goals and outcomes more broadly than ever (Myende & Hlalele 2018). Unfortunately, some rural ecologies may still lack the tax base, stable local economy, and sufficient social and community capital to invest adequately in sustainable endeavours. In areas that have lost a large number of young people and highly educated professionals to better paying jobs in nearby cities, retaining broad-based community support is also an ongoing challenge (Hlalele 2014).

Regarding migration from rural to urban areas, Cross, Seager, Wentzel, Mafukidze, Hoosen and Van Zyl (2009) and the South African Council for Educators (SACE) (2011:15), estimate that approximately half of all rural districts in South Africa undergo a net loss of population due to rural-to-urban migration. Young adult males in particular, with secondary education, are migrating out of rural areas in search of employment in urban areas.

Mulkeen (2005) identified three distinct challenges affecting teachers and accounting to why educational provision in rural learning ecologies may be described as weaker. They include: *Teacher deployment practices* which leave fewer teachers, more unfilled posts, and more unqualified teachers, in rural areas. Secondly, *teacher utilization practices* which result in larger class sizes at early grades, cases teachers without adequate preparation and materials are left trying to handle multigrade teaching. At the same time, qualified teachers may be found working with very small classes. Thirdly, there are *limited teacher management systems* which are likely to result in higher absenteeism, and shorter working hours, in rural areas. In addition the systems to ensure and develop the quality of teaching (inspection and support services) are often weaker in rural areas. In effect, the weakest teachers receive the least support. In addition, rural learning ecologies are often left with teachers who are described as desperate for jobs and who have failed to acquire jobs in other

preferred areas (Wentzel & Tlabela 2006; SACE 2011). The next section attempts to conceptualise the concept, sense of community.

Sense of Community Conceptualised

According to Brown and Schaff (2011:35) a community refers to a group of people organised around certain commonly held interests and attributes that help create a sense of shared identity. It implies a web of affective relationships that are qualitatively different from those constituting other kinds of human groups (Hlalele, Manicom, Preece & Tsotetsi 2015; Hlalele & Tsotetsi 2015; 2016). Being part of a community further implies long-term, continuous social interaction that contributes to the formation of personal, and to social and economic production and reproduction (Boyd & Nowell 2017). As a result, members share a sense of belonging, of 'we-ness.' Mothowamodimo (2011: 23) draws from a few authors' opinions and views a sense of community as,

> sets of people who may identify themselves with a place in terms of notions of commonality, shared values or solidarity in particular contexts. These values could be informed by the spirit of *botho* which is itself a community value. Other values include among others service, charity, respect, togetherness, and hospitality.

Jenny Fremlin, a community Psychologist, collated different theorists' views and describes the four factors that work in tandem with each other to create a sense of community. For each of the factors, he compiled descriptive keywords and phrases as follows (Fremlin 2012: 31; Vanover 2014: 17-20):

> *Membership:* a sense of belonging, personal relatedness, investment of the self, feeling the right to belong, being part of the community, boundaries including identifying people who and people who do not belong, emotional safety (through belonging), feelings of acceptance, willingness to sacrifice for the group, identification with the group, sharing common symbols, and personal investment.
>
> *Influence:* mattering, individual members making a difference to the group and the group having an influence on its members, conformity, members having a say in what happens in the group, consensual validation, closeness.

> *Integration and fulfilment of needs:* feeling that members' needs will be met by the resources of the group and through membership, reinforcement, rewarding to members, status of membership, group success, group and individual competence, serve individual's needs by belonging, shared values, members are able and willing to help one another and receive help in return.
>
> *Shared emotional connection:* the commitment and belief that the community has (and will continue to share) a history, common places, shared events, time together, and similar experiences, positive experiences among group members; relationships and bonds between members; completed tasks; shared importance of tasks/events; investment (time, money, intimacy); emotional risk between members; honours; rewards and humiliation by the community have an impact on members; spiritual bonds.

From the foregoing we can deduce at least two points that cement/bind together a community. Reciprocity and mutual co-existence, existence of oneself for self and other…..sharing, collective ownership. This blends well with the African philosophy of Ubuntu/ Botho (Letseka 2000; Hlalele 2015; Le Grange 2012; Oppenheim 2012). The individual is seen in relation to the collective (Prinsloo 2000; Metz 2007; Beets 2012; Furman 2012). Gunsfield (1975 cited in McMillan and George 1986:6) distinguished between two major uses of the term community. Firstly, the 'territorial' or geographical notion of community-neighourhood, town, city. The second is 'relational', concerned with 'quality of character of human relationships without reference to location. According to Casto and Audley (2008:12) schools that have achieved a positive, strong sense of community generally share a broad range of qualities including:

> *Staff, learners, and their families feel as if they belong to the school and as if the school belongs to them. All members of the community feel obliged to play a role that will further contribute to a feeling of being part of the school and vice versa. Adults attached to the school feel a shared sense of responsibility for learners' academic, social, physical, and emotional welfare. Learners feel safe and significant wherever they are in the community. There exists agreed upon standards for learner behaviour and learning throughout the*

> *community. Members of the community coordinate their efforts to help the learners to meet expectations mainly regarding educational attainment. Members of the community interact with one another in a genuinely caring and respectful manner. Relationships within the community are a model for the welcoming, friendly and cooperative behaviour that is expected of the learners.*

The University of the Free State Community Engagement Policy (2007:8) regards communities as specific, collective interest groups, conjoined in their search for sustainable solutions to development challenges, that participate or could potentially participate as partners in the similarly inclined community service activities of the UFS, contributing substantially to the mutual search for sustainable solutions to jointly identified challenges and service needs through the utilisation of the full range of resources at their disposal.

Research Design

Approach

This primarily exploratory and descriptive study uses a mixed method design to explore teachers' sense of community in rural learning ecologies. According to De Vos, Strydom, Fouchė and Delport (2011) exploratory studies are conducted to gain insight into particular situations, phenomena, or communities or individuals. The need for such studies could arise out of a lack of understanding of a new area of interest, or in order to be acquainted with a situation (Fouchẽ 2005). Historically, rurality and rural education have been marginalised bodies of knowledge in South Africa (Nkambule, Balfour, Pillay & Moletsane 2011). Nkambule *et al*. (2011) further state that despite several interventions, education in rural areas continues to face a set of challenges due to, among other factors, the diverse geographic location of the schools, diverse learners' backgrounds and diverse learning styles. Therefore, there exists a need to explore the subject at hand. According to Neuman (2011) we use exploratory research when the subject is very new or if we know little or nothing about it. A descriptive study provides a picture of the specific details of a situation, a social setting, a relationship (Neuman 2011) or a picture of a phenomenon as it naturally occurs (Bickmann & Rog 2011). The descriptive section of this study blends well with its exploratory orientation as it (the study) begins with a well-defined subject/ issue (i.e., teachers' sense of community)

and sought to illuminate the basic facts on the issue (De Vos *et al.* 2011; Neuman 2011).

Participants

For generating quantitative data, participants in the study were 161 teachers serving in rural and farm schools [rural learning ecologies] in the Free State province of South Africa. Whilst the number of participants may be seen to be lower (i.e., 161), we are of the view that the study covered a broader area and a larger number of schools since most schools in rural learning ecologies have lower than ten teachers at any one point, due to the lower number of learners. The results revealed that 72.05 percent of the teachers in the sample were female; 80.75 percent resided in rural learning ecologies; and 83.85 percent of them spoke the local language as their home language. Their average age in years was 43 with a range of 19 years (i.e., between the oldest and the youngest), and they have spent on average, of 11 years in their respective schools.

Reliability and Validity

Reliability refers to the degree of consistency of the data gathering instrument in measuring that which it is supposed to measure. According to Tavakol and Dennick (2011: 53) Cronbach Alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1. Internal consistency describes the extent to which all the items in a test measure the same concept or construct and hence it is connected to the inter-relatedness of the items within the test. The Cronbach Alpha coefficient for this study was 0.71 which is, according to Peters (2014: 57) acceptable. As a caution Tavakol and Dennick (2011: 54) indicate that the maximum alpha value of 0.90 has been recommended since the one greater than 0.90 suggests that some items are redundant as they are testing the same question but in a different guise.

The Questionnaire

This small-scale quantitative study administered the revised 24-item Sense of Community Index (SCI-2) questionnaire which has four subscales/domains.

The questionnaire consisted of the initial question and subscales/domains included reinforcement of needs (questions 1 to 6); membership (question 7 to 12); influence (question 13 to 18) as well as shared emotional connection (question 19 to 24). The questionnaire was adapted to include biographical details (gender, age, number of years served at a particular school as well as the nature of place of residence) (Warner, Kerwin & Walker 2013; Vanover 2014; Morgan 2015; Mamonov, Koufaris & Benbunan-Fich 2016; Halamová, Kanovský & NaniŠtova 2018).

Quantitative Data Analysis

Interpreting the Initial Question

The initial question sought to probe how important was it to teachers to feel a sense of community with other community members. On a six-point Likert scale, a mean score of 5.08, median and mode of 5 (for both) surfaced. This means that an overwhelming majority of teachers were of the view that it is important for them to feel a sense of community with other community members in rural learning ecologies.

Table 1: Distribution according to age

	Reinforcement	**Membership**	**Influence**	**Shared**
Age	0.09630	0.04426	0.02049	0.00530

Table 1 exhibit the correlation coefficient (r) that measures the strength of the relationship between age and four domains as shown. $r = 0.0963$ captures the existence of relationship between age and reinforcement and $r = 0.044; 0.020; 0.0053$ for membership, influence, shared respectively. Based on the positive correlation coefficients (r) less than 0.5, we construe that there is a weak positive relationship that exists between age and reinforcement, membership, influence as well as shared emotional connections. Therefore, this means that teachers' responses to all four domains are not strongly explained by age patterns. However, one notable fact is that r-value for shared emotional connection is too small, this implies that age difference does not seem to capture how community members have a sense of sharing emotional connections.

Table 2: Correlation Matrix

	Reinforcement	**Membership**	**Influence**	**Shared**
Reinforce-ment	1	0.72418	0.60514	0.71240
Membership	0.72418	1	0.73420	0.76923
Influence	0.60514	0.73420	1	0.75622
Shared emotion-al connection	0.71240	0.76923	0.75622	1

Table 2 sketches the correlation structures that exist between all four domains. The main diagonal of the correlation matrix shows that interaction between each variable by itself hence all values equal to 1. Row one of the matrix shows how reinforcement correlated with other variables. The reinforcement and membership have a very strong positive relationship with the correlation coefficient of 0.72. Therefore, in the context of this study it means that the way people respond to reinforcement has positive implications to their sense of membership. Furthermore, the correlation matrix shows that there is a relationship between reinforcement and influence, and shared emotions with r=0.61 & r=0.71 respectively. This also implies that reinforcement can explain the both influence and shared emotional connection. More so, Membership in row two exhibit r - values that are greater than 0.7 which attest to the existence of a strong positive relationship between membership and all other variables. This implies that membership seem to explain the patterns observed in other domains. This trend is observed in other domain such as influence and shared emotional connection. Furthermore, relationship is statistically significant for all domains since r – values $p=0.001<0.05$.

Table 3: Distribution according to gender

Domains	**Gender**		**Difference**	**P-values**
	Male mean	**Female mean**		
Reinforcement	2.54	2.74	0.20	0.09
Membership	2.60	2.66	0.05	0.62
Influence	2.83	2.79	0.04	0.75
Shared emotional connection	2.744	2.85	0.11	0.38

Table 3 above shows the participants' mean responses over the all four domains. From mean values exhibited on this table, one can construe that most participants responded positively to the questions since the highest number on the scale is 3. We observed a minimum average of 2.54 for both male and female which attest to positive response. However, a question of interest is that are the difference in mean responses gender sensitive? We performed t-test, to test if the difference in mean is gender sensitive and results are reported in Table 3 above. According to the t-test results, there is no significant difference in male and female mean responses since all p-values (0.09; 0.62; 0.75; 0.38) over all domains are greater than the 0.05 significance level. This implies that female and male responses in this study were not influenced by gender.

Table 4: Distribution according to Residence

Domains	**Residence**		**Difference**	**P-values**
	Urban mean	**Rural mean**		
Reinforcement	2.74	2.67	0.08	0.54
Membership	2.76	2.61	0.144	0.24
Influence	2.97	2.77	0.20	0.10
Shared emotional connection	2.93	2.80	0.13	0.33

Table 4 above shows the participants' mean responses over the all four domains as according to residence. From mean values in Table 4, we can infer that most participants responded positively to the questions since the highest number on the scale is 3 but we observed a minimum average of 2.61 for both urban and rural. However, there are differences in the mean responses of urban and rural participants. In order to find if the difference in mean is statistically significant we performed a t-test with the null hypothesis that there is no difference in the mean responses of rural and urban. The t-test results show that there is no significant difference in male and female mean responses since all p-values (0.09; 0.62; 0.75; 0.38) over all domains are greater than 0.05 significant level. This implies that urban and rural responses in this study were not influenced by residence as a variable.

Qualitative Data Analysis

The qualitative data was generated through a narrative inquiry which is a ubiquitous practice in that human beings have lived out and told stories about that living for as long as we could talk (Clandinin & Connelly 2000; Clandinin 2006; Chou, Tu & Huan 2013). These lived and told stories and the talk about the stories are one of the ways that we fill our world with meaning and enlist one another's assistance in building lives and communities. The narrative approach acknowledges human experiences as dynamic entities that are in a constant state of flux (Lemley & Mitchell 2011; Yin 2014; Wang & Geale 2015; Wang**,** Andre & Greenwood 2015). Teachers were prompted to comment on the importance of a school in rural learning ecologies.

The Importance of a School in Rural Learning Ecologies

> The school serves as fundamental institution in which learners consider a vehicle to better their lives and that of their families. It is perceived as a training ground, from which after completion of grade 12, children would be better equipped for life-long responsibilities.

From the above, it is noted that teachers regard the school as a bedrock/ springboard from which lives unfold and flourish.

A Sustainable Rural School

> It is important for government to support rural schools in the following areas: infrastructure (roads and school buildings) and basic needs such as water, electricity and toilets. Given the conditions of poor roads that lead to rural schools, government need to regularly renovate these roads and provide quality transport for learners living around the farms.

In respect of sustainability, we notice an expectation that help would emerge from outside the community [from government]. This is inconsistent with current thoughts around seeing rurality as beset with assets that may be tapped into (Myende & Hlalele 2018). Further, a sense of community/ belonging was probed.

Sense of Community/ Belonging

> The community through SGB's does get involved in the affairs and management of the school. They support in the maintenance, renovation and security of the school. Parents teach their children why they should regard the school as belonging to their community.

The pivotal role played by parents in sensitizing their children to observing the school as owned by the community is noted. The silence from the three written narrative regarding a sense of community pertains to teachers themselves. Whilst quantitative data in this study indicates that teachers have a stronger sense of community towards rural learning ecologies, blind spots/silences in respect of this matter is observed. The study further probed socializing as a facet of sense of community.

Socialising

> Great interaction exist between teachers of farm schools. Teachers, parents and children from the school do attend funerals, weddings, church, join whatsapp and facebook groups and share ideas, great moments and even grief.

The above shows participation in a number of common community activities attended by parents, teachers and learners. Social media is also mentioned as an enabler for interaction between community members. We thought it would be interesting to probe how the teacher is positioned within rural learning ecologies.

A Rural Teacher

> A teacher is seen as a role model, someone to be treated with respect and dealt with. Sometimes it get worse to an extent where a teacher is idolized as a 'god' perfect without fault and infallible.

Over and above being seen as a role model, there is some sense of a teacher as a savior in the rural community.

Teaching Responsibilities

> Teachers do take full responsibility and a passionate in teaching in farm schools, despite many challenges. Modern technology teaching aids are not accessible, in instances where they are found, they are not sustainable. Teachers still rely on the old chalkboard style teaching. Multi grade classes still prove a challenge. A single teacher is expected to teach many subjects because of the number of children in the school.

Despite a positive feeling about being a teacher in rural learning ecologies, challenges are also noted. The above details some of the shortages. It would have been helpful to probe recognition of some assets that may not necessarily be found elsewhere.

School - Community Partnerships

School - community partnerships play a major role in enhancing and strengthening a sense of community in rural learning ecologies. Teachers indicated that:

> The school boast of great partnership with the community organizations, ranging from government, private sector business to non profit entities. Security and check-ups is conducted by the SAPS in their program of adopting schools to ensure a safe and secure learning environment. Church institutions do offer religious support, spiritual counseling and social assistance e.g. uniforms and clothes to children. Local business provide financial support in programs or events that the school organize.

From the above, it is clear that rural learning ecologies thrive when their diverse partners play a decisive role.

Discussion of findings

Results of this study indicate that it is important for teachers to feel a sense of community with other community members in rural learning ecologies. In the

current study, the existence of a strong positive relationship between membership and all other domains surfaced. According to Dueber and Misanchuk (2001: 7),

> membership deals not only with who is in or not in a community, but with the sense of safety that accompanies such delineation. The ability to identify another member of a community allows people to better determine how to spend resources and with whom to feel comfortable.

The question of relationships is taken further by Levebre (1999 cited in Blewitt 2006: 14) who states that:

> we deal with relationships on a daily basis and every day is where we are in terms of our direct relationship with the social and natural worlds and where our desires, capabilities, identities and potential are, in the first instance, formulated, developed and made real. Everyday life is also the site from which we can fashion a critique of dominant, alienating and exploitive ideas and practices and start to create a new or alternative way of doing things, of thinking and acting, of producing and consuming, combining to develop a new art of living.

Age difference does not seem capture how community members have sense of sharing emotional connections. This finding is inconsistent with the trend that SACE (2011:15) hold as they advance an argument that says:

> the younger generation aspires to move out of their rural lifestyles, while those with tertiary qualifications, after a period of urban living, eventually opt to return to their rural homes, out of a sense of responsibility to the family, due to emotional ties with home that the younger generation may not necessarily have.

There is a strong positive relationship between reinforcement and membership. This is consistent with the strong relationship between reinforcement and

influence. This implies that teachers in rural learning ecologies view themselves as capable of influencing other members of the community and as amenable to being influenced in return. This reciprocity provides for pervasive co-existence as teachers are of the view that their terrain extends beyond the confines of the fences surrounding their respective schools.

There is no significant difference in male and female participants' all the four domains. This implies that responses are not influenced by gender. This is inconsistent with general societal gender dispositions. According to Eckert and McConnell-Ginet (2013: 1),

> We are surrounded by gender lore from the time we are very small. It is ever-present in conversation, humour, and conflict, and it is called upon to explain everything from driving styles to food preferences. Gender is embedded so thoroughly in our institutions, our actions, our beliefs, and our desires, that it appears to us to be completely natural. The world swarms with ideas about gender – and these ideas are so commonplace that we take it for granted that they are true, accepting common adage as scientific fact.

The assertion above points to the fact that we remain highly gendered as a society. Males and females are expected to behave differently even if they assume the same responsibilities [of being a teacher in a rural learning ecology]. Findings of this study are encouraging as they indicate a paradigm shift-a shift that holds true the fact that males and females do not necessarily need to behave differently.

There is no difference in the mean responses regarding rural and urban as places of residence for teachers. This implies that rural and urban responses are not influenced by residence. This means that teachers who stay in urban areas evinced the same sense of belonging, membership, shared emotional connection as well as influence as their counterparts who stay in rural learning ecologies. Incentives may have played a significant role in respect of this trend. According to the Adedeji and Olaniyan (2011) and SACE (2011) providing incentives to qualified teachers to remain in the rural learning ecologies and teach is likely to yield positive results for increasing the numbers of teachers in rural schools. Brown (2003) provides a slightly different angle when he states that the 'ideal' rural teacher can teach multiple grades or subjects, organize extracurricular activities, and adjust well to the environment and the

community. In addition, Chigbu (2013: 264) opines that a sense of community in rural ecologies is constituted by 'a rural mind, rural life and rural character'. The assertion by Brown is supported by Hlalele (2014) who states that usually the teachers who end up staying are either from a rural background or have previous experience with rural communities. Such teachers interact with the members in their ecologies on at least two levels. One is that is that of common expectation and one of fulfilment on the other hand. With regard to expectation, the teachers:

> get important needs of theirs met because they are part of the community; value the same things as other community members; the community has been successful in getting the needs of its members met; feel good as members; when they have a problem, they can talk about it with members of this community; have similar needs, priorities, and goals; can trust people in their community as well as recognize most of the members of their community.

On the other hand, fulfilment comes across when teachers:

> put a lot of time and effort into being part of the community; feel that being a member of the community is a part of their identity; feel that fitting into their community is important to them; feel that their community can influence other communities; care about what other community members think of them; have influence over what their community is like; believe that their communities have good leaders; feel that it is very important to them to be a part of their community; expect to be a part of their community for a long time; and are hopeful about the future of their community.

The discussion above suggests the existence of inviting elements such as sense of belonging, trust, patriotism, as well as we-ness. In such situations, emancipatory and participatory inclinations are likely to imbue such ecologies. Strong internal relationships are more likely, over and above entrenching membership, shared emotional connection, a feeling that the individual is capable of exerting some influence over activities and other members (Farahani 2016; Mahdi 2018), to source valuable external relationships that may benefit the broader learning ecologies resulting in cross-pollination. The

current study was conducted in rural South Africa. Using the SCI-2, and narratives, the study may appeal to many other parts of the world and areas of study (Warner, Kerwin & Walker 2013; Morgan 2015; Mamonov, Koufaris & Benbunan-Fich 2016). According to Halamová, Kanovský and NaniŠtova (2018) sense of community is associated with a significant number of positive consequences for individuals and communities as well as society.

Conclusion

The study sought to explore teachers' sense of community in rural learning ecologies. Whilst there are many negative perceptions associated with teaching in rural learning ecologies, the current study portrays a paradigm shift where negativity does no longer occupy centre stage. It showed positive inclinations towards rural schools and communities. Despite notable challenges, teachers who 'feel' positive towards their communities may be more likely to engage in healthy, enjoyable and kindling interactions with fellow community members.

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Decolonising the Teaching of Mathematics in Rural Learning Ecologies by Using Indigenous Games

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Abstract

The paper aims at decolonising the teaching and learning of mathematics, such that mathematics is accessible to all learners in rural ecologies. Thus, the paper uses *diketo* (coordination game), as an example of indigenous games to teach patterns such as linear functions in mathematics. The paper is guided by the theory of community cultural wealth. The theory views community members as experts in rural learning ecologies. The marginalised knowledge they possess empowers them to find their own solutions to local issues. The knowledge that learners possess from the rural learning ecologies is not used in the teaching and learning of mathematics. The researcher maintains that there are no deficiencies in the marginalised knowledge of the excluded people. As a result, the researcher tapped into the marginalised knowledge of subaltern communities to teach linear functions, using participatory action research (PAR) in generating data; hence, the involvement of community members (parents, traditional leaders), education experts (teachers, mathematics subject advisors, lecturers from institution of higher learning) and learners themselves. All the discussions by participants were captured by using tape-recorder and video camera. The generated data were analysed using Van Dijk's critical discourse analysis (CDA). CDA enabled the study to acquire deeper meanings of the text. Again, CDA assists in identifying instances of 'discursive injustices' in text and talk, and signifies a form of resistance to unethical and unjust social power relations.

Keywords: decolonisation, indigenous games (*diketo* or coordination game), linear functions

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Introduction and Background

The aim of this paper is to decolonise the teaching and learning of mathematics so that learners and teachers can have access to hidden knowledge of learning and teaching mathematics. This is argued against the backdrop of colonisation processes of dismemberment and alienation of indigenous knowledge in teaching and learning of mathematical content (Ngugi wa Thiong'o 2009). The question that the paper addresses is the epistemological issue on how mathematical content knowledge is generated within the context of learners in rural ecologies, as well as bringing back the indigenous knowledge of teaching and learning mathematical content to the centre. In this paper, indigenous games such as *diketo* (a coordination game) will be the focal point in generating mathematical content.

Furthermore, Ndlovu-Gatsheni (2015) views this notion as coloniality of knowledge, useful for enabling decolonial thinkers to understand how endogenous and indigenous knowledges have been relegated to the periphery of 'superior' knowledge, where they exist as folklore and superstitions. In essence, this shows that the Global North perceives Global South cultural activities irrelevant in enhancing mathematical understanding. Largely such indigenous resources (*diketo game*) are regarded as epistemic dependence (Higgins 2014; Raju 2017) in the learning of mathematical content. Raju (2017) adds that the teaching and learning of mathematics was globalised by colonialism. Hence, there are two ways of teaching mathematics, that is, formal mathematics, used to teach mathematics at schools and universities today. In most cases, this kind of mathematics teaching and learning excludes the epistemologies of the indigenous communities and learners in the rural contexts. The other way is termed 'inferior' way of teaching, that is contextualising of mathematics. This is the approach which the decolonial thinkers argue strongly that it has to be at the centre, where everyone learns mathematics from his/her own perspective. Thus, in this article, it is maintained that learners can learn mathematical content easily when using their indigenous context of playing.

Subsequently, Aikenhead and Elliott (2010), Ndlovu-Gatsheni (2013) and Raju (2017) agree that decolonisation is pushing for an epistemological paradigm shift from using European-American knowledge systems to the use of indigenous knowledge systems. They further argue that decolonising the teaching and learning of mathematical content occurs by recognising indigenous knowledge as being foundational to understanding the physical world of the learners in rural context. The social backgrounds of rural learners

part of their physical world when learning. Therefore, it is key that the indigenous games they play on a daily basis are infused in the learning of abstract mathematical content. On the other hand, Mosimege (2000) cautions indigenous games need not be perceived in narrow way of enjoyment and play, but as a useful resource for learning mathematical content. In the South African education system, learners do not perform well in mathematics locally, regionally and internationally (Reddy, Isdale, Juan, Visser, Winnaar & Arends 2016). The teaching and learning of mathematical concepts are divorced from the learners' physical world. Raju (2017) demonstrates that even to understand a simple calculations such as 1 + 1 = 2, most people in the world need the opinion of western-approved experts, and all others (Aikenhead 2006, referred to 'others' as indigenous communities and leaders) are actively distrusted, on account of their 'barbaric' epistemologies . In pushing the decolonisation agenda, the teaching and learning of mathematical content, need to tap into the wealth of knowledges that indigenous communities possess (Martinez 2011; Yosso 2005; Yosso 2002). In furtherance of a decolonisation agenda, the DBE (2011) and Dowling (1998) claim that mathematics is humanistic subject, a feature of all human cultures. Therefore, learners from a rural learning environment who always play *diketo* can easily comprehend abstract mathematical content. This article concurs with Mertens (2010) that the teaching of mathematical content using *diketo* is an attempt to decolonise mathematics. Also, to situate indigenous communities and learners consciously in rural learning ecologies as a response to the inequities of a mathematics society with the goal to enhance social justice.

Furthermore, Dowling (1998), and Aikenhead and Elliott (2010) point out that teaching of school mathematics is conventionally Eurocentric or westernised mathematics. This echoes that the Eurocentric understanding of mathematics is exclusively a European product. This phenomenon of teaching caused learners and teachers to teach and learn mathematical content in an abstract way. Hence, the teaching of mathematical content is done in a drilling way, where learners only consume the procedural way of doing mathematics, without conceptual understanding. In addition, Aikenhead (2006) and Romm (2015) contend that the agenda to decolonise school mathematics calls for Indigenous communities and leaders to negotiate appropriate modifications to the provincial mathematics curricula in order to maintain the integrity of indigenous ontologies, epistemologies, axiologies and political realities, which resonate within transformative paradigm. As Mertens (2010) explicates,

transformative paradigm is the framework for mathematics decolonial thinkers to prioritise social justice in the teaching and learning of mathematics and the furtherance of human rights. As Raju (2017) puts it, transformative thinking will assist in stopping negative comments on the decolonisation of mathematics. Raju (2017, cited in Brodie 2006) suggests that 'to change the psyche of the Black students (and women), implicitly is to make them think more like the 'dead white men', who created the mathematics subject, and thus turn them into good mathematicians!' This line of thinking deprives black learners of being creative, and defeat the human rights project of recognising potentiality to all learners, irrespective of race, gender, ethnicity and culture. This assertion of Brodie resonates within coloniality of power (Ndlovu-Gatsheni 2015). Again, Raju (2017) maintains that this was the classic colonial line, namely to use colonial education to produce White minds in Black or Brown skins, 'enslaved minds who would hence help run colonial empires'. For instance, Higgins (2014) and Ndlovu-Gatsheni (2015) illuminate coloniality of power as 'constructed, constituted, and configured into a racially hierarchized, Euro-American-centric, Christian-centric, patriarchal, sexist, capitalist, hetero-normative, hegemonic, asymmetrical, modern, colonial and imperial power structure'. This suggests that the world is divided into 'Zones of Being'; that is, those that hold superior mathematical knowledge, located in the global North, and the world of slaves, in the global South, and victims of imperialism, colonialism and apartheid, referred to as the 'Zone of Non-Being'.

As a result, the paper argues the decolonisation of mathematics is possible by exploring the physical world of the child. Hence, *diketo* is used to unearth rich mathematical content embedded in them. This supports Raju's (2017) declaration that the simple way to decolonise the teaching and learning of mathematics is to have the courage to stand up to false Western history and bad Western philosophy, and focus on the practical value of mathematics. Furthermore, the Department of Basic Education (DBE 2011) and Barker (2012), in persuading the decolonisation agenda, perceive that mathematics is a human activity, which is practised by all cultures, irrespective of race or gender. It is then imperative that the teacher in the mathematics classroom draws on learners' daily life events; that is, engaging in various indigenous games to understand mathematical processes and learning the mathematical content.

Thus, for this reason, Ambrose *et al.* (2010) argue that this endows/ provides authentic, real-world activity and assigns hands-on activity that

allows learners to see the relevance and value of otherwise abstract mathematical concepts vividly and concretely, with class activities that allow learners to create a new understanding for themselves. The teacher coaches, scaffolds (Averill *et al.* 2009) and suggests alternative solutions, whilst at the same time giving the learners room to experiment, discover, ask questions and try things that seemingly do not work.

In the next discussion, an effort will be made to demonstrate how teachers fall into trap of teaching mathematics in a Eurocentric way, as well as suggest how they can be assisted to push the agenda of decolonisation.

Literature Review

Self-discovery of Problem-solving Skills Formulae and Processes

Averill *et al.* (2009) contend that successful teaching of mathematical content creates learning environments conducive to learners, and allows them to invent mathematical definitions and formulae (such as linear functions) on their own. In addition, teachers acknowledge and validate ways of interacting, learning and knowing, and the authors highlight the importance of collaboration among teachers, parents and other community members and leaders. A learning environment that uses indigenous games is central to learning the subject matter, to the extent that teachers teach to demonstrate how teaching mathematical content can incorporate indigenous games, such as *diketo*. They may enhance feelings of stimulation through activities that develop mathematical ideas; thinking and discovery of mathematical content conjectures, while drawing upon rich resources that learners bring with them to the classroom (Haylock 2010; Sheng & Basaruddi 2014; Yosso 2002; Yosso 2005).

The use of indigenous games in the teaching of mathematical content creates a learning environment conducive to learners to explore their abilities. The class interaction helps learners to learn many things among themselves without relying on the teacher. In most cases, the teacher is there to clarify misconceptions and validate their findings (Chinn 2012; Muijis & Reynolds 2011; Van de Walle, Karp & Bay-Williams 2010). Generally, they learn mathematical content through exploration and finally make their findings and draw mathematical conclusions. Ultimately, learners draw valid conclusions through their observations. The remarkable part of using mathematical content

to teach and learn problem skills is that the learners are not provided with formulae by the teacher, but they make the discovery on their own through interaction in small groups.

Lesson Planning in Using Diketo

According to Averill *et al.* (2009, in Calman & Sinclair 2001) and Glynn (1998), reflecting on a Maori worldview of the roles of learners and teachers, lesson planning is intertwined and interchangeable. Since the roles of learners and teachers are interlinked, the contributions made by learners in the planning will help the teacher to design activities that will stimulate learners' interest in mathematics problem solving. As shown by Van de Walle *et al.* (2010), such collaborative planning draws on rural learners' diverse background experiences and dispositions (The Australian Association of Mathematics Teachers 2006). The pedagogies of Maori learning of mathematics problem solving is through participation, song, storytelling, metaphor, repetition and observation, including routines and patterns of behaviour. The collaborative lesson planning (Averill *et al.* 2009; Van de Walle *et al*. 2010), including indigenous parents, learners and teachers, helps to bring together the richness of the marginalised knowledge. The metaphor that describes collaboration in lesson planning is the interaction shown in the playing of *diketo* as example of indigenous games, where participants work together with passion and focus to create a vibrant lesson presentation and activities.

For example, some resource materials can be prepared for learners to teach mathematical content using the *muyato* game. This Zambian game of stone throwing is played mostly by girls. It involves digging a hole into which small stones, seeds or round objects are thrown (Mukela 2006). The preparation of the resources can save time on tasks in the learning of mathematical content, as the resources are within the reach of everyone in the indigenous community.

Class Activity in Teaching Mathematical Content

When learners form part of the planning team, the resources and materials that are prepared by learners and teachers can help the teacher to design activities that stimulate learners' mathematical thinking. The teacher can include the learners' styles in the learning of mathematical content and help learners to

make connections between prior background knowledge and the new mathematical content to be presented (Haylock 2010). According to Chinn (2012), the involvement of learners in planning and full engagement in the learning of mathematical content has a ripple effect.

Learners are playing but learning at the same time (Pramling-Samuelsson 2008). In such cases, interaction amongst learners happens spontaneously. It alleviates mathematics anxiety among learners, as any mismatch between styles of learners and teaching is minimised. Further, Chinn (in Skemp 1971) recommends that over-reliance on rote learning as a dominant culture in teaching mathematical content be avoided, because learners learn mathematical content and concepts with no understanding and merely memorise the content, which in the long run results in anxiety. Ngugi wa Thiong'o (2009) illuminates that this approach of teaching mathematical content advances the 'dismemberment' agenda of the coloniality of knowledge, reiterated as *'*Get a few of the natives, empty their hard disk of previous memory, and download into them a software of European memory'. This suggests that indigenous communities have a wealth of knowledge with regard to the teaching and learning of mathematics. However, the Eurocentric and Westernise approach relegates it to the margins of 'superior' knowledge of the Euro-American philosophy. This confirms what Ndlovu-Gatsheni (2017) echoes, namely that Africa and South African people are saddled with irrelevant mathematical knowledge that continues to disempower, rather than empower indigenous communities. Ndlovu-Gatsheni emphasises that indigenous communities and leaders must seriously fight the mathematical knowledge that serves the present asymmetrical global power structure.

The Lens of the Article

The study is grounded in the theory of community cultural wealth, focusing on the wealth of knowledge that marginalised groups possess. Such knowledge is key to the teaching and learning of mathematical content. In addition, theoretical framework posits that teaching and learning of mathematical content are created by marginalised groups from their everyday lives' experiences, rather than being taught in a formal setting. Thus, Higgins (2014) and Raju (2017) contend that formal mathematics creates a *slave mentality*. It creates a person who blindly relies on Western authority and conflates it with infallible truth. It can be noted that Community Cultural wealth is compatible

with decolonisation processes in demanding the recognition of languages, cultures and knowledge of indigenous communities (Ndlovu-Gatsheni 2015) Lynn (2004) and Yosso (2002; 2005) argue that community cultural wealth concentrates on and learns from the range of cultural knowledge, skills, abilities and contacts held by subaltern groups that often go unrecognised and misunderstood. In this article, the use of *diketo* as an example of indigenous games in teaching mathematical content (that is, linear functions) is a way of recognising and acknowledging the cultural practices of indigenous communities. Again, Raju (2017) mentions that elementary mathematics of fractions was already known to black Egyptians 3 700 years ago, before the White man in Greece or Rome could invent them.

Van Oers (2010) agrees with Yosso by introducing the cultural-historical theory of Vygotsky, which views learning as a process of qualitative change of actions that may take place when people take part in cultural activities and receive guidance for refining or appropriating actions. Van Oers argues that within the cultural-historical context, mathematical content can be defined as a cultural activity that arose somewhere in cultural history and went through a rich and significant cultural-historical development, to end up in the multidimensional and highly advanced discipline as we know it today. On the other hand, Leonard (2008) contends that mathematical problem solving, like all other forms of knowledge, is located within a cultural context. Subsequently, counting and numeracy can conceptually be understood as both a knowledge form and a cultural practice that enable learners to manage and organise their world. Employing cultural norms in the mathematics classroom is at the heart of teaching cultural relevance.

Yosso (2005) argues that the theory of community cultural wealth has various forms of capital, such as aspirational, navigational, social, linguistic, familial and resistant. These draw on knowledge of learners from homes and communities being taken into the classroom environment. The researcher supports Yosso's theory of community cultural wealth and Van Oers's cultural-historical theory, in that using *diketo* to teach mathematical content is a way of bringing the immediate environment and experiences of the child to the classroom. Van Oers (2010) points out children learn mathematical content optimally when their learning is deep-rooted in playful activities.

Thus, it can be argued that the theory of community cultural wealth dispels the notion that epistemicides, which refer to the killing and expropriation of colonised people' knowledge and history); and linguicides,

which talk about the destruction of colonised people's languages and cultures and replacement with colonial names and foreign cultures (Ndlovu-Gatsheni 2015), are impossible to happen.

Research Methodology

The research study utilised participatory action research (PAR), which recognises community members as experts and is empowering for communities who are enabled to find their own solutions to local issues (Moana 2010:10). Miranda, Fine, Torre and Cabana (2018) claim that PAR is beyond a methodological approach; it is an ethical posture, an ethical way to build a relationship with the other. PAR focuses on non-traditional researchers, such as indigenous communities that have not been classically trained in research. It is interesting to realise that in PAR they switch roles and become the designers of research.

In the context of this study, the researcher and participants were empowered by using indigenous games to solve problems and identify mathematical concepts embedded in them. The marginalised capital was explored to understand problem solving by using cultural games, particularly indigenous ones. As Yosso (2005) argues, there is a lot of cultural capital in the communities that is not adequately utilised. In addition, Miranda *et al*. (2018) demonstrate that PAR creates spaces where different kinds of knowledge come together about the social problems and radical possibilities in addressing the identified challenge.

The researcher assembled a team of Grade 10 learners at one school located in the rural area of Qwaqwa. He further included one deputy principal, one head of department (HOD), three Grade 10 Mathematics teachers, two Life Orientation teachers, two district officials from the Department of Basic Education (DBE) – one in the sports section, two Mathematics subject advisors, 10 parents with knowledge of various indigenous games and two members of the royal family who are custodians of cultural games, as well as a lecturer in the School of Mathematics, Science and Technology Education from the University of the Free State (Qwaqwa Campus).

The framework was implemented at one school in the rural area of Qwaqwa, in the Thabo Mofutsanyana Education District. For confidentiality and anonymity, the school and participants were given pseudonyms. In stimulating the debate, the Free Attitude Interview (FAI), Maskene (2011) was

followed to ensure that participants were central to the research study and their voices heard, rather than being perceived as objects to be manipulated and regulated in a setting detached from the real world of their lived experiences and practices (McGregor & Murnane 2010; Stinson 2012).

Thus, PAR provides a new perspective called epistemic justice; that is, a commitment to a radical reimagination of where knowledge and expertise exist. Within the PAR spaces, various people (researchers/ co-researchers/ research participants) actively seek options for 'social change'. Indigenous peoples and scholars from marginalized communities have much to teach researchers about respect for culture and the generation of knowledge for social change (Miranda *et al*. 2018; Romm 2015)

Plan of Action Executed in Teaching Linear Functions Using Diketo

The research study demonstrated interdisciplinary notions by including Life Orientation subjects, Mathematics, Sport personnel, traditional leaders, parents and learners. This further demonstrates what Wane (2009) regards as the inclusion of indigenous voices in the main curriculum, signifying that the positivist forms of knowing, educating and doing science and research are challenged (Denzin 2010).

Phase One: Playing Diketo

In Phase One, the chosen group members played *diketo* (coordination game) as scheduled for that day. As Sancar-Tokmak (2013) states, this phase follows a juxtaposition model, with teachers and parents, while a group of learners watched another group of children during their free play and noted mathematical key points that could be used in designing a mathematics lesson. Vankúš (2008) states that learners' active involvement during the play of indigenous games is important for better comprehension of mathematical knowledge embedded within the games. This phase is conducted in such a way that the actual play is demonstrated, important observations are noted, and children are encouraged to explore new mathematical ideas and skills (Sancar-Tokmak 2013; Vankúš 2008). At the end of the phase, the teachers arrange activities to teach mathematical concepts or skills noted during play, or concepts identified by the learners, teachers and parents.

Phase Two: Reflection on the Lesson Learnt from Playing Diketo

At the end of the game, all members shared their observations and attitudes towards the playing of *diketo*. This is when teachers noted teachable moments or mathematical concepts, which became apparent during the children's free play or parents' play. Sancar-Tokmak (2013) and Vankus (2008) call this the 'integration model', when contextual issues demonstrated during play of *diketo* are linked to the mathematical knowledge identified. However, in the research study, the discussion was free for all participants to share observations. As Godino, Batanero and Font (2007) indicate, the discussions touched on various facets, such as sociocultural skills demonstrated by players and epistemological matters on how knowledge is accessed through play. All members in a group were on the same level during the discussion. Denzin (2010) propagates the decolonisation project, which supports the idea that all participants are on an equal level in terms of knowledge, and everyone is free to lead the discussions. This emphasises the importance of social wealth, sharing of which means participants can learn from one another.

During the reflection stage, the discussions are not limited to state of the play or likelihood of winning, but include children's conceptual understanding of intertwining the game structure and game play with the mathematical concepts (Booker 2004).

Phase Three: Presentation of the Lesson

The teacher prepared the presentation of the lesson in such a way that forms of the contextualisation of mathematics was taken into account. The teacher chose the mathematical content (that is, linear functions) from the ones, which were suggested in Phase Two as the main topic for the day, as that allowed the spontaneous integration of topics mentioned before. The class activities were designed in such a way that learners worked together in finding solutions to the activities assigned to them. Vankus (2008) and Alexander and James (2005) state that creating a conditions for the indigenous games in the classroom, in this study *diketo,* as the context in presenting the mathematics lesson in class, enhances learners' interest in mathematics. They can relate their understanding of their well-known and well-practiced usual games to mathematical content. In addition, this approach motivates and encourages them to take part in class discussions, and to come up with innovative, creative ideas; hence, resulting in a greater likelihood of success in mathematics.

Phase Four: Reflection on the Lesson Presented

Learners in small groups were given a chance to share what they have learnt in the activities with the whole class. Reflections and feedback on the onto-semiotic approach provides dual dimensions of extensive-intensive facet, wherein several observations are made to reach substantiated conclusions (extensive case) and vice versa (that is, intensive cases). These are key in the construction and application of mathematical knowledge (Godino *et al*. 2007). These are important mathematical practices, which provide learners with the means to develop mathematical arguments and justifications that lead to robust concepts and thinking (Booker 2004; Alexander & James 2005). In this study, the teachers and parents played a key role in guiding the process of reflection, and provided input on issues that were confusing to learners, the exciting moments during the session and when learners found ways to take centre stage in the learning and teaching, making excellent contributions. In essence, all parties need to be prepared for the lesson presentations, not only the teacher. This concurs with the claim by Alexander and James (2005) and Booker (2004), that this session of feedback encourages learners to work independently and enhances instructional group teaching. In this way, indigenous games such as *diketo* induce learners to make sense of their ideas and the interpretations of others. Significant for this research study, the learners were able to conceptualise and internalise the definition of mathematics, that 'it is human activity practised by all cultures' (DoE 2003; DBE 2011; Vilela 2010). It is a social process of sense-making, understanding, rather than a set of rules handed down from an authority on high (Booker 2004; Raju 2017).

Phase Five: Assessment

It is understood that assessment is conducted throughout the phases as a way of integrating all activity with teaching and assessment (DoE 2003). Booker (2004) regards it as essential that the game (in this instance, *diketo*) achieves the educational and mathematical outcomes to be assessed for it to be effective. Assessment tasks are performed as a way of reinforcing the understanding of certain mathematical concepts.

Generally, this was the plan of action, which was executed in collaboration with indigenous communities and learners in the rural learning ecology to teach linear functions, using the pupils' understanding and practice of *diketo*.

Discussions and Findings

Decolonising Pedagogies: Self-discovering of Linear Functions, in Formulas and Processes Using diketo

The teaching modes that mathematics teachers used in this study incorporated the indigenous knowledge learners possess from their social environment with the knowledge they were about to learn pertaining to linear functions. Thus, the teacher used various teaching methods to ensure that the learners were actively involved in the learning of linear functions (Assembly of Alaska Native Educators 2003; Assembly of Alaska Native Educators 2002; Kemp 2006).

The research study used *diketo* to teach linear functions to ensure that learners were fully engaged. This concurs with what Booker (2004) and Mosimege (2000) maintain, namely that the playing of these indigenous games should not be viewed from the narrow perspective of play, enjoyment and recreation, but rather ensure that the learning of mathematical contents is effective. Learners also showed full participation during the lesson presentations. The use of *diketo* in teaching derivations of linear functions contextualised the subject matter for learners to access it easily.

Lesson Presentation in Using *Diketo*

According to Kemp (2006), Mason (2010), Warren and Miller (2013) and Yosso (2005), the majority of learners enter school with huge knowledge on mathematical processes such as critical thinking, analysis, navigational reasoning, conjecturing, and extrapolation skills. The teacher has to use the teaching methods that will activate these skills to be relevant in understanding problem-solving skills. In this research study, *diketo* was used for rural learners to understand derivation of linear functions, thus encouraging learners to be actively involved throughout the learning sessions.

In Phase One, the team chose to play *diketo* (A coordination game) (refer to Picture 1 below). During Phase Two, when the collective reflection took place, one of the group reported their findings of mathematical concepts, skills embedded within *diketo*. Dikopi, the spokesperson of the group, reported as follows:

Dikopi: *re bona mokoti o rono, le majwe a chitja a tene. Ha o bapala o akgela keto hodimo o nto sutuletsa majwe ka mokoting. Ho seng one, kgetlo la pele o akgela keto hodimo, o ntano ntsha majwe a naene ka mokoting, jwalo-jwalo, ho fihlela o qeta seng one. Ha o qetile o fetela seng two, jwalo jwalo ho latela pattern, ho fihlela o fihla seng tene*.

(We see the round hole, ten small round stones and one big round stone (ghoen). In round one, you throw the ghoen into the air. At the same time, you scoop or lift all the stones in the hole; throw it into the air and place the nine round small stones. One follows this pattern until you complete round one and move on to round two, continuing till you reach round ten.)

Picture 1: One Team member plays *diketo*

Subsequently, the team summarised the concepts and skills in this fashion (see Fig.1 below). The following concepts and skills came out strongly in most of the groups.

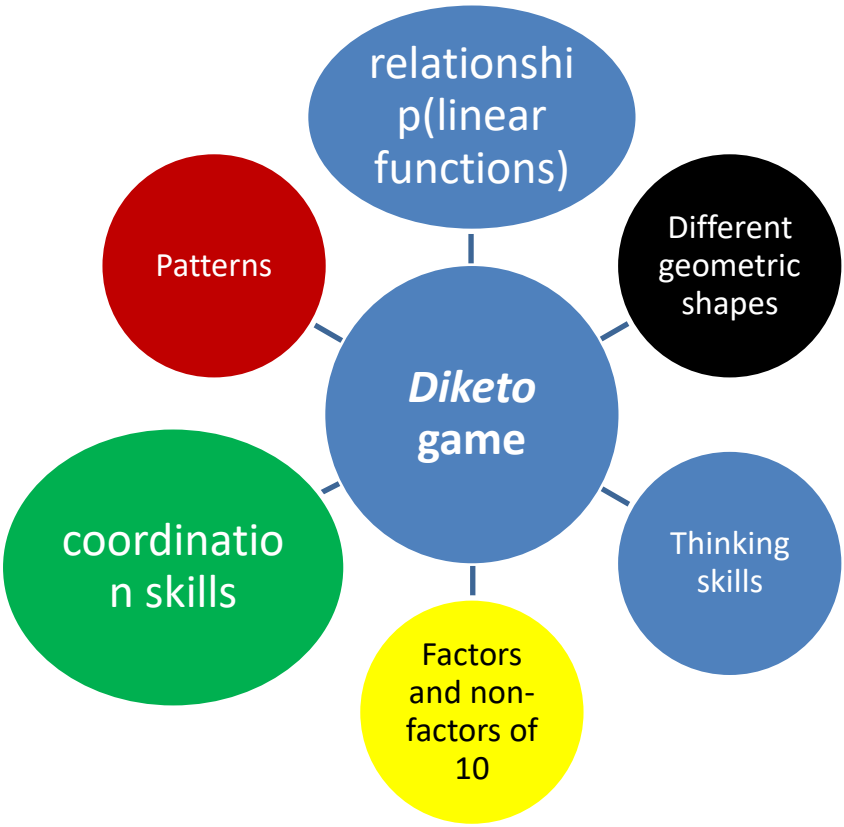

Fig. 1: Some mathematical concepts that emanated from *diketo*

The teacher, Ms Lejwe, who led the lesson presentation, took the patterns and linear functions (relationship) and the scenario painted by Dikopi's group to design the class activity (Worksheet 1 below). This allowed various groups to be fully involved. The teachers, other experts and parents facilitated discussions in various groups. They gave assistance by empowering learners to discover and reflect on their own. The modes they used in assisting the groups varied from scaffolding, modelling, facilitating, coaching and reflection, and any other suitable modes. The emphasis of their teaching modes was ensuring that learners discovered answers on their own.

WORKSHEET No. 1

Instructions:

With the help of the scenario, given by Dikopi's group, develop a strategy that will assist you to respond to the questions below:

(a) In the 2^{nd}, 12^{th}, and 16^{th} throw-ins, how many stones will be pushed into the hole?
(b) In round one (*seng* one), how many throws of the ghoen (*keto*) need to be made to complete round one
(c) At which throws, will one scoops 5 stones, 3 stones out of the hole.
(d) If there is two stones in holes, how many throws were done
(e) (1^{st} throw; 10), (2^{nd} throw; 9) … (20^{th} throw; 0). On the set of axes, plot these points.
(f) (i) Suppose, that there are 20 stones to be used, on the 6^{th} throw-in, how many stones will be put in the whole?
(ii) In round one (*seng* one) given that there are 20 stones (*diketwana*), how many throws need to be done to complete round one successfully.

After 30 minutes, the teacher, Ms Lejwe allowed various groups to report on their findings. The parent, Mma Sebereki, from Group A, give the feedback of their group in this manner:

> Mma Sebereki: *Kgotsong banabeso. Re leboha sebaka seo re se fuwang ho fana ka dikarabo tsa akthivithi eo re e fuweng. Haeba o hloka tlhakisetso kapa tlatsetso o ka etsa jwalo neng kapa neng. Re ile ra bapala diketo hape hore re arabe ditsopo. Ra fumana hore ka kgetlo la bodedi majwe a kenang ka mokoting ke 9, 12^{th} ke majwe a 4, and 16^{th} ke ketwana tse 2. Potso ya bobedi, hore o qete seng one o lokela ho ba le makgetlo a 19.*

> (Good morning colleagues. We want to thank the opportunity given to us to give feedback on our answers. If you need clarifications or you want to comment, feel free to do so at any point, my group members will assist to respond. To answer the questions, we demonstrated by playing *diketo* again. Through the play of *diketo* we deduce the following: for the 2nd throw, there are 9 stones to be pushed into the whole, 12th throw there are 4 stones and 16th throw there are 2 stones. The patterns can be followed in that way. To complete round one, there are 19 throws to be made.)

Everybody was so interested in the manner the presentation was done. The other group gave an alternative way of answering the very same question. Dinweng, from Group C, showed their appreciation in the following fashion:

> Dinweng: Thank you, Chair, let me thank the previous presenters, that is Group A for the wonderful manner they did their presentation. What we did in our group is, we also demonstrated the play of *diketo* for few minutes, as we do that we recorded the throws done is this manner. The table below assisted us to put our data in an orderly manner. It enabled us to respond to all the questions.
>
> Dinweng: Like the previous group, we used the table to respond to the questions, for the 2nd throw there are 9 stones placed into the hole; for the 12th throw, there are 4 stones to be placed in a hole, and for the 16th throw there are 2 stones to be placed in a hole. The strategy of drawing the table really assisted us a lot.

The extract, 'We see the round hole, ten small round stones and one big round stone (ghoen)', illustrates that learners were empowered to capacitate others in analysing *diketo* to demonstrate the existence of mathematical content in the play of *diketo*. Since learners were empowered to explain, mathematical concepts and skills infused in *diketo*, that action boosted their self-esteem and confidence.

Throwing up the ghoen	No. of stones scooped out of the hole	Throwing up the ghoen	No. of stones placed into the hole
1st throw	$= 10 - \frac{(1-1)}{2} = 10 - \frac{0}{2} = 10$	2nd throw	$10 - \frac{(2)}{2} = 10 - 1 = 9$
3rd throw	$= 10 - \frac{(3-1)}{2} = 10 - \frac{2}{2} = 10 - 1 = 9$	4th throw	$10 - \frac{(4)}{2} = 10 - 2 = 8$
5th throw	$= 10 - \frac{(5-1)}{2} = 10 - \frac{4}{2} = 10 - 2 = 8$	6th throw	$10 - \frac{(6)}{2} = 10 - 3 = 7$
7th throw	$= 10 - \frac{(7-1)}{2} = 10 - \frac{6}{2} = 10 - 3 = 7$	8th throw	$10 - \frac{(8)}{2} = 10 - 4 = 6$
9th throw	$= 10 - \frac{(9-1)}{2} = 10 - \frac{8}{2} = 10 - 4 = 6$	10th throw	$10 - \frac{(10)}{2} = 10 - 5 = 5$
11th throw	$= 10 - \frac{(11-1)}{2} = 10 - \frac{10}{2} = 10 - 5 = 5$	12th throw	$10 - \frac{(12)}{2} = 10 - 6 = 4$
13th throw	$= 10 - \frac{(13-1)}{2} = 10 - \frac{12}{2} = 10 - 6 = 4$	14th throw	$10 - \frac{(14)}{2} = 10 - 7 = 3$
15th throw	$= 10 - \frac{(15-1)}{2} = 10 - \frac{14}{2} = 10 - 7 = 3$	16th throw	$10 - \frac{(16)}{2} = 10 - 8 = 2$
17th throw	$= 10 - \frac{(17-1)}{2} = 10 - \frac{16}{2} = 10 - 8 = 2$	18th throw	$10 - \frac{(18)}{2} = 10 - 9 = 6$
19th throw	$= 10 - \frac{(19-1)}{2} = 10 - \frac{18}{2} = 10 - 9 = 1$		$10 - \frac{(20)}{2} = 10 - 10 = 0$
nth throw	$= 10 - \frac{(n-1)}{2}$	*mth throw*	$= 10 - \frac{(m)}{2}$
	$f(n) = -\frac{n}{2} + \frac{21}{2}$		$f(m) = -\frac{m}{2} + 10$

This is amplified by Dinweng's comment' … $\mathbf{10 - \frac{(2)}{2} = 10 - 1 = 9}$ …' as their alternative method used to get the nine stones which were put in the hole for the 2nd throw of the ghoen. This demonstrates that the power of teaching mathematical content and skills is no more limited to the teachers' input. Learners gained power on understanding mathematical content such as linear patterns and functions in simpler ways for learners to come up with various ways of answering the class activity, aided by their possession of navigational capitals.

They further displayed good interpersonal relations among team members, where they honestly shared their inputs with rest of the class. The phrase '… *let me thank the previous presenters, that is, group A for the wonderful manner they did their presentation*', symbolises that their interpersonal skills were good and that they were at peace with one another. This is in line with what Yosso (2005) refers to as learners' aspirational capital, where they are capable to maintain positive hope for the future. Everyone is given hope that he or she can manage to do well in understanding the derivation of linear functions, irrespective of their social class, age or gender. This is also supported by the transformative paradigm that axiological values are instilled. For effective interactions and networking to happen in understanding mathematical concepts and skills, this is because of the social capitals that learners have. In addition, the richness of linguistic capital allows them to be very clear in explaining the structural and the actual playing of the game. The manner in which they articulate responses to the class activity was marvellous. This approach of teaching is in line with decolonisation agenda, to such an extent that linguicide issues are destructed in the minds of rural learners (Ndlovu-Gatsheni 2015).

The arguments above relate to what the Assembly of Alaska Native Educators (2003) and D'Ambrosio (2009) established. As the research study confirms, they established that the use of curricular and various instructional methods enhances learners' understanding of mathematical concepts and skills. This encourages rural learners to work together, not heavily depending on the teacher. Likewise, the use of cultural practices (such as indigenous games, in particular *diketo*) known to learners helps to enrich and give meaning to what is taught in mathematics.

Again, learners engage in the experimentation and exploration processes in interacting with *diketo* to explore mathematical concepts and

skills. By carrying out experimentation and exploration processes, learners tend to discover funny things or options (which are referred to as wrong things), while and other processes or options that come right from the onset(Raju 2017). As Yosso (2005) indicates, learners possess aspirational and navigational capitals. This argument is justified by Warren and Miller (2013), who state that the alternative formulas, which might look funny, provoke learners to continue to explore or discover linear functions and formulas until reaching the correct conclusions. These explorations, experimentations and early patterning help learners to understand the derivations of linear function skills.

Conclusion

In a nutshell, the discussions and narratives portray that a decolonisation agenda can be achieved in the teaching and learning of mathematical concepts. Mathematical content embedded within *diketo* include patterns, factors and non-factors, geometric shapes and relationships of variables and many more. Teachers, as decolonial thinkers, need to tap into the physical world of learners, in order to stimulate mathematical knowledge. In addition, their teaching approaches should not suppress learners whose home culture often differs from the culture of school mathematics. In most cases, school mathematics is saddled with Euro-American mathematics knowledge systems. Aiken (2017) and Raju (2017) contend that school mathematics overtly and covertly marginalise indigenous communities and rural learners by its ideologies of neo-colonialism, where learners' cultural values are undermined in the learning of mathematics.

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Decolonising Practical Space in Rural Teacher Education: The Vehicle of Peer Assessment

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Abstract

Previous studies demonstrated positives and challenges related to assessment, including peer assessment. On a positive note, various authors perceive peer assessment as being more reliable as compared to self-assessment. While peer assessment has positive benefits, markers tend to either under-or over-score their peers. A dearth of literature that explores using peer assessment as a vehicle to decolonise the teacher education system exists. Informed by decolonisation, we generated data from one module presented at a rural university in South Africa. The module consisted of 90 students. We gave students who were doing the module online open-ended questions for them to comment. Of the 90 students, 59 students participated. Students had mixed feelings about peer assessment. Positive findings included peers being in accord of thinking as the assignments' authors and enabling pre-service teachers for the school environment. Peers under- and over-scored one another because of carelessness, not reading with an understanding and poor class attendance. The paper concludes by challenging peer assessment implementers to put mechanisms in place to curb peers from either under- or over-scoring themselves.

Keywords: Peer assessment, pre-service teacher education, rural university.

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Introduction

The quality of teacher education all over the world has a significant implication on the kind of teaching and learning that is obtainable in schools, most especially on the pre-service training and the main service process. This is why scholars and education stakeholders at all-times accord the success of educational institutions to teachers/ lecturers, which categorically affirms that no education system can rise beyond the quality of its teachers and handlers of teaching, learning and assessment activities (Barber & Mourshed 2007; Tsotetsi & Mahlomaholo 2013; Bamikole 2017; Omopariola 2017; Ekundayo, Omodan & Omodan 2018). Moreover, to ensure student academic achievement in schools, the pre-service teachers' preparation must be assertive to be able to meet up with the exigencies of the 21st century. According to Katitia (2015), teacher education preparation is symbolically crucial to the sustainability of education all over the world because the tenet of nation building specifically lies in the hands of its teachers. All these, successfully captures teachers as the heart of the education process at all levels, which according to Shiundu and Omulando (1992), is the most important human capital in educational organization that oversees the successful implementation of educational programmes by organizing and managing the learning experiences and environments.

For this trajectory to be maintained, teachers' production process needs to be solidified with informative background and encompassing trainings most especially for the pre-service teachers. This is essential because teachers need to be possessed with self-confidence and competence to enable them to discharge their duties according to their expertise (Isopahkala-Brunet 2004). Meanwhile, pre-service teacher education provides student teachers with various fundamental skills that are not limited to classroom management, lesson plans, lesson delivery including professional development (Mashau 2012) but also extended to pure understanding classroom administration and student assessments. Therefore, the programme of preparing pre-service teachers should be designed to enable pre-service teachers to take a full load, including marking learners' work after they assume duty following the pre-service period. The expectation is that the period will sufficiently prepare these pre-service teachers for this role (Moosa 2018). In line with the above expectations, a few questions arise such as, if the pre-service teachers are aware of this. To what extent are they prepared to execute these duties? In terms of assessment, how has the programme better prepared them for this mammoth task?

On the other hand, recently countries that were colonised in the past are looking for ways of detoxing colonial remnants. Given the current debate about decolonising teacher education in South Africa, an important ingredient is to look at practices that can contribute towards decolonising teacher education. With the production of teachers, the question is how can teacher education produce teachers that are anti-colonisation? What contribution can teacher education play in the decolonisation of education? How do we produce a crop of teachers that has critical skills in terms of assessment?

It is worth noting that various authors have explored the use of assessment and peer assessment at university level. Hassan, Fox and Hannah (2014) conducted a study in which they were focusing on the use of peer assessment with a focus on postgraduate students. Their findings demonstrated that peer assessment has a potential of being time consuming and challenging. It is however moderately valid as compared to self-assessment (ibid). Students benefit in that they gain an opportunity of seeing other students' work. Meaning both, those who receive feedback and those who provide feedback, gain. Abdulhamid (2017), investigated the lecturers' perceptions about peer assessment, including how they conceptualised peer assessment as well as enacting it. The paper also tried to look at affordances and constraints to the application of peer assessment. A dearth of literature that explores using peer assessment as a vehicle to decolonise the teacher education system exists. In line with the previous statement, the current paper explores the extent to which peer assessment can be used as a vehicle of decolonising teacher education. Therefore, this paper presents the experiences of pre-service teachers after they had undergone a four-week programme of peer assessment, to see if this kind of initiative has the potential for decolonising the practical space of teacher education.

Teacher Training

According to the government policy documents, there are expectations that university graduates at various levels should meet. The South African Qualifications Authority Level Descriptors (RSA 2012) National Level descriptors six, states the expectations as follows:

> Accessing, processing and managing information, in respect of which a learner is able to demonstrate the ability to evaluate different sources

> of information, to select information appropriate to the task, and to apply well-developed processes of analysis, synthesis and evaluation to that information. …demonstrates the ability to work effectively in a team or group, and to take responsibility for his or her decisions and actions.

Furthermore, amongst the competencies to be possessed by the newly qualified teachers is 'fair assessment' that is, they should be able to assess learners fairly. According to the Minimum Requirements for Teacher Qualification (RSA 2015), they should be able to use the assessment as a reflection and to improve their teaching. Accordingly, newly appointed teachers should be in a position to integrate theory alongside with practice.

The extent to which students are ready to respond to the needs of the society and their work environment is influenced by the extent to which lecturers are exposing students to the realities of their environment beyond the university scope of work. It is the duty of lecturers to take students by hand and expose them to the life beyond their university years during the theoretical and practical pre-service training period. According to Shagrir (2015), lecturers have an obligation of giving students guidance based on their (lecturers') experiences.

According to Wabule (2016), Aramsowan and Mashiya (2018) as well as Dlamini (2017), pre-service teachers are not well prepared to face work outside the university confinements. The researchers' observations revealed that the quality of university graduates in the field of education is below standard, as it appears there is a negative correlation between what was offered during pre-service training and the fieldwork practicality. Wabule (2015) elaborates by indicating that there is a mismatch between what the university offers and the realities pre-service teachers face beyond their university years. Accordingly, the universities' programmes are not sufficiently keeping up with the changes taking place at school level. As a result, some opt for early career leaving after a few years of assuming duty claiming that teaching is not self-fulfilling and that they were not well prepared to do their work as teachers (Wabule 2016).

Challenges regarding pre-service teachers' preparedness for the world of work include programmes that are teacher-centred and failure to execute assessment. According to Dlamini (2017), previous approaches of preparing teachers for the world of work, which were teacher-centred, failed to prepare

teachers that could collaborate according to the Critical Cross-Field Outcomes (CCFOs). Teachers are expected to collaborate according to CCFOs (SAQA 2000). Even at the University of the Free State in South Africa, low preparedness of students for the world of work has been reported (Status quo of assessment at the University of the Free State 2014).

Assessment, Peer Assessment and Engagement

Spiller (2012) mentions and differentiates between teacher assessment, self-assessment and peer assessment. In teacher assessment, the teacher has the overall duty of grading the students' work. In self-assessment, individual students grade themselves against the initial set standard. In peer assessment, other students grade their colleagues' work against the initially agreed upon criteria. Regarding assessment, Moosa (2018) found that amongst others, teachers who were mentoring pre-service teachers expected them to be able to assess learners. On the other hand, pre-service teachers, while on teaching practice, were unaware that they had to assess learners. In lieu of these contradictory expectations, we therefore believe as lecturers that pre-service teachers should be exposed to various experiences regarding assessment at university level.

According to Aramsowan and Mashiya (2018), there is a need to engage pre-service teachers in the process of assessment. It was against this backdrop that we thought that by learning about assessment and being given other students' work to assess; it would serve as a space for students to put into practice assessment; thereby integrating theory and practice (RSA DHET 2015). Putting into practice what the students had learnt and the created space necessitated engagement to the relevant theory when dealing with peer assessment.

The concept of engagement is a meta-construct that includes affective, behavioural and cognitive engagement (Moosa 2018; Fredricks, Blumenfeld, & Paris 2004). Students can be engaged in a lesson because of friends. *Behavioural engagement* refers to the engagement of students with the course content, such as assessing others. *Affectionate engagement* refers to the students' emotions and feelings about their peers, content and their lecturers. According to Barkley (2010), if students feel that the environment is conducive for them to learn there is a strong likelihood that they will learn more and vice versa. Their feelings and linkages with their experiences have an influence on

whether they will learn and forget or what they have learnt will stay longer in their memories. The students' feelings about their peers and their lecturer play an equally important role regarding the content they are engaged with (ibid). *Cognitive engagement* refers to the actual thinking about the course content (Moosa 2018; Fredricks, Blumenfeld & Paris 2004).

Theorising through Decoloniality

Chilisa, Major and Khudu-Petersen (2017) define decoloniality as being the ability to access the universal through one's own perspective – and not through the eyes of the coloniser framework. On the other hand, Mbebe (2016) refers to decoloniality as being the creation of a space where one can say this is my home and this is how I think things have to be done. Meaning this is how we think, as a pre-service teacher, curriculum delivery through assessment can be implantable. Taking a leaf out of these authors' definition of decoloniality, we consciously created a space for us as lecturers to say can we, as lecturers together with our students, re-look how we assess, and give comments about marking and learn from the same process of marking. In that way, creating a space to depower the lecturer from a bureaucratic status and allow students a space for their intellectual growth and debates. As argued by Quijano (2007) and Horsthemeke (2009), with colonisation, the colonised groups had to adopt knowledge and ways of doing from the coloniser's style. Colonisation promoted *monolingualism.* With decoloniality, the opposite of coloniality, we aimed at deconstructing and establishing the application of peer assessment, taking the context into perspective. As lecturers, we anticipated that through peer assessment, students would be able to justify their grading. In this way, the mark and comments become equally important. Graders had to give comments for particular marks regardless of whether they were high marks or low marks.

Epistemologically, decoloniality subscribes to the notion of 'we-ness' or 'us-ness' (Nyasini 2016; Chilisa, Major & Khudu-Petersen 2017). The students' final mark or grading of other students' work depends on the effort and agreement of the collectiveness. We further used decoloniality as a lens that would assist us to look at the ways in which peer assessment may serve as part of an epistemic platform (Mbembe 2016) and solution to the current debates of decolonising tertiary education. As argued by Horsthemeke (2009) by so doing, challenging the absolute status to the coloniser's ways of doing as

if colonisers were the only ones deserving prestige status.

Ontologically, by using decoloniality, we were also creating a platform of acknowledging multiple realities (Mbembe 2016). Accordingly, the gap between students and the lecturer was bridged. This assisted in moving away from objective knowledge creation, to getting the students' voices via dialogues and reflections. Being at the rural university, looking at the curriculum through decoloniality would also enable our campus to get context specific solutions. Decoloniality promotes multilingualism, which creates a platform for challenging the hegemonic ways of assessing students; thereby allowing them to air their voices as future teachers. A process of working together is seen as a necessity for the co-existence of human beings and students have to learn this during their pre-service years (Omodan, Dube & Tsotetsi 2018). In this way, co-existence of various stakeholders becomes possible. We embarked on the approach assuming that students have a valuable contribution in the presentation of a module, as opposed to viewing students as knowing 'nothing'. As stated by Chilisa, Major and Khudu-Petersen (2017) that students need to be seen as having some knowledge on which the tertiary institutions can build.

Riding on Mbebe's (2016) argument, such assessment recommend-dation may even go beyond the confines of the university under study. This can assist in theorising about peer assessment, supplementing with African voices, but not as an add-on. Thereby enabling Africa to stand on her own without being defined from a coloniser's perspective; instead, of having colonisers researching about Africans, as if Africans cannot do research on their own. Getting a shift from ring fencing how we implement peer assessment, but rather allow students to come to the party and air their views. Getting students' voices from the periphery and privileging them as well; thus, sharing findings that go beyond the boundaries of South Africa. In keeping up with Chilisa, Major and Khudu-Petersen (2017), decoloniality is aimed at affirming colonised human beings as people worth respecting.

Methodology

We obtained data from survey responses from third year pre-service Bachelor of Education students. Our approach, as researchers teaching them, was to use peer assessment to prepare them for the world of work by enabling them to experience teamwork and create debates around assessment.

Setting

The study took place at a South African rural university campus. The Traditional Leadership and Governance Framework of Act No 41 of 2003 (Republic of South Africa 2003) defines rural areas as areas presided over by traditional leaders. Such areas include densely populated ones derived from apartheid structures. Mukeredzi (2013) indicates that South Africa's former homelands are considered rural areas. These definitions are relevant to the location of the campus under study, which is in the former Bantustan servicing the previously marginalised groups in the Free State and KwaZulu-Natal Provinces.

Participants

In this study, participants were third year education students in a four-year degree course. We targeted a second semester education module, which consisted of 90 students, none of whom had any background of peer assessment. We divided them into 23 groups, each with a leader. The leader's duty included uploading the group's assignments as well as downloading and printing assignments for the group to assess.

Procedure

Over four consecutive weeks, we gave student teachers four different group assignments to complete. Each assignment consisted of a paragraph of 300 to 350 words; it had to refer to at least two scholarly sources, which were to be referenced within the text and within the list of references. On the Friday of each week, the group leaders had to upload their group's assignment onto Blackboard. The Blackboard staff members then re-allocated each assignment to two other groups on the following Monday. Each of the 23 leaders of the groups would receive two assignments from other groups, download and print them for the group members to mark in class on Tuesdays during the lecture period. The students' study guides contained the rubric to be used for marking. Each peer assessment involved grading the assignment and writing comments, after which the leaders would leave the marked assignments with the lecturers. The lecturers moderated randomly, recorded the students' marks and returned the marked assignments to the leaders of the groups who had written them on the same Tuesday, later in the afternoon. Before leaving the lecture hall, the

group leaders received details of their next assignment and the same cycle was followed until the fourth assignment had been completed.

Data Collection and Analysis

After four weeks, having completed four peer assessments in the 23 groups, individual students were asked to complete a survey, in which they had to reflect on their experiences of peer assessment. Five open-ended questions guided the reflections. Students could elaborate on their answers and it allowed a variety of responses from different students. They accessed reflection questions on Blackboard and then uploaded their responses on Blackboard. Of the 90, 59 students responded, which is a 65.6% response rate. This paper reports on their answers to the following three questions, which were specifically directed to their experiences and reactions to peer assessment:

- In what way were you assessed fairly?
- In what way were you assessed unfairly? and
- Any comments or recommendations for the future assessment of this module?

The Blackboard staff members assisted with retrieving the responses from the system. We then read the students' responses (Mokhele 2011) and analysed them thematically.

Ethical Consideration

Students received introductory information on Blackboard before participating in the survey. They received information sensitising them to the fact that they could withdraw at any stage without negative repercussions and that their identities would be kept confidential. They were also informed that their participation was voluntary. They gave consent to participate before answering the questions.

Methodological Implementation
Results and Discussion

The findings revealed that the students had mixed feelings about the use of peer assessment for their work. Twelve main themes were generated from the

analysis. These included students received quick and regular feedback, developing critical skills, peer assessment prepares students for the school environment and students understand one another's way of thinking. Additional theme include getting different perspectives about the same topic, peer assessments' fairness, easy and saves time, keeping students on track, students do not follow the rubric given (they just award marks), feedback that was not fruitful, lack of Blackboard skills and technical problem originating from the server and recommendation.

Students Received Quick and Regular Feedback

Students felt that through the peer assessment structure they received prompt and regular feedback. This is confirmed by comments such as:

> 'The feedback was brought regularly and it did not take long time'.
> 'Feedback is given promptly'.

Lecturers, dealing with large numbers of students often find that responses to students are often delayed. Having to deal with many students' challenges and needs at various times means that even marking and returning students' marked written work takes too long. Because of unbearable marking, teaching and administrative workloads with peer assessment, the marking load is shared with the students in a way that enables a prompt response. Lecturers had previously complained about their inability to give meaningful feedback within reasonable timeframes or to develop students' critical skills because of unbearable marking, teaching and administrative workloads even though students reported receiving satisfactory feedback for formative assessment (Status quo of assessment at the University of the Free State 2014). The four past peer assessment initiatives offered a better way to cover the work. After each unit, students had to write a formative assessment. This contradicts students' notion and they complained about the fact that it was not always common to get feedback immediately.

Developing Critical Skills

Most of the students reported that through peer assessment, they were marked critically, and their critical skills were developed through marking other stu-

dents' work. This is reflected in the following statements:

> 'Some assessors were critical in their feedback and fair'.
> 'We gained [a] lot of skills from it'.
> 'This module gives us a challenge to see ourselves how far we go, and how to mark'.

These statements illustrate student views that peer assessment had developed their analytical skills. This confirmed the conclusion of Bloxham and Boyd (2007) and Tighe-Mooney, Bracken and Dignam (2016) that peer assessment helps learners to develop their ability to make judgements and justify a point of view. We argue that this provides a positive step in the establishment of a questioning population that can rise in response when things are not good and shift from maintaining the status quo towards a post-colonial state. It can be seen as enabling students not only to learn facts (at surface level) but learn to dig deeper into the meaning of what they see and read thereby enhancing their findings with other students' findings; create debate and approve and disapprove other answers. In this way students learn from others and become aware of how other students view and attempt answers to the same question regardless of whether they agree or not.

Peer Assessment Prepares Students for the School Environment

University programmes that produce teachers have to produce teachers who can deal with learners who question and who do not merely accept. We argue that if, at university level, we embed experiences that are relevant for the students' life beyond their graduation, they will be better prepared to take on work-related duties after completing their qualifications. They will then have skills that are of value to them that can be used when they teach at school level. In this way, a nation of free thinkers can be groomed. Students expressed the view that through peer assessment, they were better prepared to mark the work of learners at school. Peer assessment had familiarised the students with the marking process they would face as teachers. This is reflected in statements such as those that follow.

> 'Usage of rubric helped us as prospective teachers to be familiar with the rating of the level of knowledge among ourselves and bearing in

> mind that in school learners are assessed most by using rubric'.
> 'By marking peer reviewed assessment made us to feel as if we were teachers. It made us to be aware on how to mark the learners'.
> 'We were assessing each other which gave us skills on how are we going to mark, as we will be teachers'.

These comments show that, through peer assessment, students were exposed to the world of work. Other authors such as Aramsowan and Mashiya (2018) have found that teachers were not properly prepared for the world of work; the students' responses show that assessment space can create an environment that prepares pre-service teachers for life beyond their studies. This serves as a positive step in the preparation of teachers and leads to what is called *learning to be* as distinct from *learning about* being a teacher. Through *learning to be,* pre-service teachers undergo a process that embeds the actual work the students will be doing in the workplace, meaning a deeper practical and active engagement with the course content.

Students Understand One Another's Way of Thinking

Most students felt peer assessment was a fair process. Unlike being marked by a lecturer whose academic experience and ways of thinking are at a higher level, their peers' ways of thinking were understandable and closer to theirs. This is reflected in statements such as:

> 'Our peers assessed us and this was fair because we are all students. So it's simple to understand another one`s writing'.
> 'Students of which we are at the same standards assessed me. Therefore, it was easy for them to understand the paragraphs'.
> 'The good way in which we were assessed it's because we were marked by our fellow students on the assignments'.

From the students' perspective, it appears that lecturers expect more of the students than their peers do. This may be because lecturers have a bigger picture with higher expectations than other students and, they up the game. Students, from their ways of seeing and doing, may have a different view. This is further confirmed the findings of Kearney, Perkins and Kennedy-Clark (2015) who examined the connectedness between marks and students in

tertiary institutions and concluded that students without previous peer assessment experience were able to assess and evaluate their peers with reasonable and accurate judgement. This may also result from similar levels of thinking, capacities and capabilities thereby seeing peer assessment as valuable to their success. Our findings also concur with Landry, Jacobs and Newton (2014) that peer assessment contributes significantly to improvement of students' performance after they had experienced it on a cumulative basis. The statistical analysis in their study revealed that over 90% of their student sample agreed and strongly agreed with the statement that peer assessment was a valuable learning experience.

Getting Different Perspectives about the Same Topic

Peer assessment gave students different angles from which they could understand and tackle the same question. It gave them the opportunity to understand the topics better on which they themselves had focused. This was reflected in some of their comments:

> 'I enjoyed peer reviewed assessment because you get to know how others think about the given task'.
> 'We had peer assessments therefore they helped us to understand more because when you read someone else's work you get even more different points and see how other people think. In addition, you get more information since we do not use the same sources to search for information'.
> 'We were given the opportunity to mark other students and see their own understanding of that particular topic and that help me to have a better understanding of some other things or concepts'.

These reports showed that students learnt to pull ideas in from different corners. Peer assessment created a space to enable students to supplement their initial thoughts about the assignment questions and allowed them to sift through other ideas. This created a platform from which to accept and reject other answers. It created a space to agree or disagree. This, in our view, serves as a space for action against colonisation, in which assessment is not often expected to be accepted uncritically. A further advantage was that students gave and received constructive feedback that enhances deep learning and

engagement. Furthermore, students also came to understand that learning and knowledge are neither fixed nor static and that question may be answered or responded to in various ways. In this way, deep learning and critical thinking were embedded in the presentation of the module by means of peer assessment. Blending the normal lecturing method with peer assessment inculcated active engagement with the course content, thereby creating a debating population as students had their ways of understanding tested by their peers. As observed by Gravet and Geyser (2004), knowledge gets the least enhancement when it is hidden; knowledge strengthening requires testing and debating.

Peer Assessments' Fairness

There were mixed feelings about peer assessments' fairness. Most students' feelings were that peer assessment was fair. That was demonstrated by their comments in how their peers could improve when writing their assessments. Good/positive aspects in students' assignments were highlighted as follows:

> 'The assessor read very well and gave appropriate feedback'.
> 'Blackboard Turnitin reduced plagiarism'.
> 'The assessment was simple and straightforward'.
> 'Good marks are given'.
> 'We were assessed fairly'.
> 'The rubric was understandable, and allows fair assessment'.
> 'The assessment were simple and straightforward'.
> 'On Blackboard having peers help evaluate is helpful as advice given can be used in future reference'.
> 'They assessed me in an effective manner'.
> 'Honest and fair, that is, the assessment was honestly fair'.
> 'There were no weaknesses in the way that we were assessed'.
> 'All papers were fair and reliable as it consist of every information we had covered during class. After mark allocation, the feedback was given so that everyone will correct his or her mistakes'.

On the other hand, findings also indicated that some students did not justify the marks allocated to their peers.

> 'Assessment was not fair at all. Some student did not read my assignment well just gave an unreasonable mark'.

> ‘In one of my assignments, I was assessed well but in others, fairness was not done’.
> ‘The peer assessment was rather threatening sometimes; because some students didn’t really read others' assignments at least the lecturer evaluated which is a saving grace’.
> ‘Sometimes other learners not even read the assessment when they are marking. They just allocate poor marks’.

The issue of unfairness in assessing was also raised, as some students lacked engagement with other students’ work (Hassan, Fox & Hannah 2014). The implycation is that peer assessment implementers need to monitor its enactment.

Easy and Saves Time

Students felt that it was easy and saved a lot of their time when submitting on Blackboard. This is in line with Chan (2017) where there is an indication of a massive increase in the usage of online submissions and marking. They could submit their work during and after normal working hours as their lecturer allowed submission even beyond the normal working hours. Furthermore, students also felt that marking during and after normal working hours was an advantage on their part.

> ‘The feedback was brought regularly and it did not take long time’.
> ‘Easy and save time when we submit the short assessments’.
> ‘Was assessed attentively and also in a well manner’.

Support through training by the Blackboard staff members acted as an enabling factor into the operationalization of the framework.

Keeping Students on Track

Consistency when giving students work keeps learners on track. They get used to the tune. Students confirmed that that worked very well for them.

> ‘Individual assessment in terms of weekly task to be uploaded on Blackboard to check whether we are following the content’.

> 'Good and excellent, using module, Blackboard and every after a class the lecturer gave us work to do to see if we understood'.
> 'We were given opportunity to evaluate what our fellows think about the issues discussed in class'.

Regular, weekly activities served to keep students on track. The uploaded activities served to confirm if students understood what they had been taught. It also served to get a different perspective from other students.

Students Do not Follow the Rubric Given; They Just Award Marks

It is expected of pre-service teachers to be able to set papers and draw memoranda linked to the question papers they have set. In line with such an idea, it is also expected for pre-service teachers to be in a position to use a rubric that has been set when they mark. Pre-service teachers confirmed that some of their peers did not use the rubric when grading their peers' work. There was a lack of alignment between their (graders') comments and the marks given to students.

> 'Sometimes other learners not even read the assessment when they are marking it they just allocate poor marks'.
> 'We are assessed by our peers and some does not know how to assess they just give us marks without even understanding what we have wrote about'.
> 'Our peers sometimes give us marks that we don't really deserve'.
> 'Peer assessment was not so good because sometimes, the one assessing you seems as if he or she himself or herself didn't understand what was required. I saw this by the feedbacks that was not corresponding with the marks given'.
> 'Learners were given opportunities to mark one another's work making it easier for favours to take place'.

Based on the above, students were able to identify the assignments' authors. As highlighted above, that on its own could influence the graders' allocation of marks. In this way, favours could take place. It can be assumed that others could also be robbed of their marks.

Feedback that was Not Fruitful

Students were expected to read their peers' work. Having read, they needed to allocate marks and give comments so that their peers could improve their work when doing the upcoming assignments. Some students' comments did not match their marks.

> 'Feedback was not fruitful nor relevant'.
> 'Being assessed by fellow students has not been a good form because the feedback does not correspond with my overall work on assignments'.

According to the above extractions, it was not only about mismatch between the allocated mark and the comments; some also presented comments that were neither fruitful nor relevant. This calls for closer monitoring by the implementers of this type of assessment. Aramsowan and Mashiya (2018) obtained similar results. Students claimed their lecturers were also not giving them clear feedback on their grades. In addition, some claimed that their scores were not justified. Barkley (2010) highlights this as another way in which the students' feelings could potentially be hurt. As a summarising activity for the ones that were written, Aramsowan and Mashiya (2018) recommend that they be read in class.

Lack of Blackboard Skills and Technical Problem Originating from the Server

Students attested that they sometimes had to lose marks because of problems originating from the server and them being computer illiterate.

> 'In terms of Blackboard sometimes system has problems and submitting can be difficult, especially when the server goes down without any notice given'.
> 'I had a problem with Blackboard and I had to forfeit the marks'.

A similar problem was raised in one study by a student indicating that people who are literate are unable to imagine the amount of time it takes for a lesser computer literate person to catch up/complete a particular task (Status quo of assessment at the University of the Free State 2014). The other challenge is

frequency of computer usage. When students use the above-mentioned tools less often, they tend to forget (ibid).

Participants' Recommendations

Students recommended that, by virtue of the fact that the rural campus has challenges in terms of Blackboard and server failure, they need to do the work online and submit hardcopies as a backup should they encounter the same problems. Students further recommended that for a few students who did not align themselves with what they needed to do, they were to be penalised by the lecturer. Hereunder follows their comments:

- The learners must submit on Blackboard and submit the hardcopy to the lecturer.
- Handing in both the hardcopy an softcopy of assignments
- There should be a penalty for those students who rob others on their marks

Conclusion

Inferences from the data, theories and literature explored in the course of this research stressed the important part of peer assessment towards inclusive and participatory teaching and learning that build assessment skills in pre-service teachers' training process. Therefore, making it very needful to be applied during pre-service training of teacher educators in universities. This is more adaptable to modern developments in the assessment of learning outcomes (Alzaid 2017). Hence, peer assessment is hereby adjudged as a strategy that performed dual responsibilities in the professional life of pre-service teachers. It serves as a collaborative oriented means of measuring and assessing students and on the other hand, contributes to the development of assessment skills of pre-service teachers to enable them to perform well in the field as a newly appointed teacher. Therefore, peer assessment contributed towards the development of personal, professional and critical skills that will enable pre-service teachers to be effective and efficient in the world of work. Their engagement would better prepare them for the world of work because they will be facing learners that will be more questioning and less easily accepting.

Based on the findings, peer assessment implementers should monitor

students' peer assessment results closely. If other issues are being discussed in class, implementers need to have a way of controlling class attendance. Thirdly, implementers should have a way of compensating for Blackboard challenges. Lastly, ongoing debates around peer assessment can limit shortcomings linked to it.

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Evoking Afrikan Grand-narratives as a Quest for Decoloniality to Champion Rural Knowledge Systems

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Abstract

This scholarly piece proposes to disrupt the inequalities in the discourse that tends to subjugate '*other*' forms of knowing and pushes these forms of knowing with vanity to the periphery in the corpus or pyramid of knowledge systems, and this regard, we zero in to rural epistemologies within the milieu of universities' knowledge creation. Knowledge systems have variances or a dichotomy informed by lived experiences which are not the same. Dominant discourses have been assertive in knowledge systems and domesticated other parameters for the interpretation of realities as historically out-of-date, irrational, and pre-modern. Through decoloniality theory and Grand Afrikan narratives, we challenge the hegemony in the knowledge industry where the tendency is to perpetuate injustices in knowledge systems especially when coming from the global south, more so in rural contexts. A consciousness of this intellectual piece aims to make an argument that over and above the hegemonic discourses of the global north over '*other*' forms of knowing, the boundaries could be ruptured in pursuance of equality and justice to '*other*' forms of knowing. We answer two questions; what is to decolonise the knowledge system in a higher institute, and how can rural knowledge gain access to mainstream knowledge production? This paper will probe difficult questions about hegemonic socio-political discourses in the knowledge industry, the line of argument is in pursuance of making an effort to refine,

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protect and defend 'other' knowledge systems and demystify knowledge as one thing that is presumed to be universal.

Keywords: decoloniality, epistemological decolonisation, rural knowledge systems,

Introduction

Let us interrogate these anecdotes as a starting point; if there were no apple trees where Sir Isaac Newton lived, where and when would the Laws of Gravity have been discovered? When one drives a Mercedes Benz or Bavaria Motor Works, one identifies with the best of German engineering. Why are Afrikans referring to fried potatoes as French-fries, whereas these are planted, garnered and prepared in Afrika? These anecdotes about Isaac Newton and German engineering discoveries are the fundamentals of knowledge construction, its meaning and context, its relevance, its inter-activeness, its use and its culture-relatedness. Significantly it is the demonstration that knowledge has roots where it originates, and moves from, the local to the universal (Makgoba 2005). With this in mind, people in the Global South who are located in the geopolitical spaces that are socio-economically marginalised such as rural context have knowledge reservoirs. Their knowledge systems are appropriate for sustainable development. Regrettably, hegemonic discourses have hard-pressed these forms of knowing to the margins, especially in academic-industrial complexes where knowledge construction is the order of the day (Dube & Hlalele 2017).

Through this paper, we position knowledge systems as defined by the sense of cultural and historical lived experiences which could not be categorised as universal laws. However, egotism and hegemonic praxis have paraded to the gallery at the expense of '*other*' forms of knowledge systems, causing contestation and rendering universities as captured sites to push the Global North agenda sugar-coated with portfolios of transformation and Afri-canisation. Thus, universities, even those rendered as rural universities have raised elitism in knowledge systems, where '*other'* forms are seen as hopeless, primitive, unscientific, and lacking rigour and vigour, thus, according to Shizha (2005: 5). This intellectual piece assumes such hegemonic praxis as a dishonoured praxis to the Africans, especially those located within a rural

context. The point we are making is that any form of knowing should not be disqualified either coming from either the Global South or a rural setting. In support, Odora-Hoppers (2000) notes that dominant discourses have continued to teach Africans that everything Afrikan is pitiful, despicable and embarrassing and should be subjected to cleansing with western or global north tools (Odora-Hoppers 2000). Again, according to Boaten (2010: 104) African people, through contact with the West, acquired a bruised cultural identity, a philosophy of the oppressed and as per Akinwale (2012: 1), Africa 'remains a gold mine of knowledge for sustainable development, although it has been suppressed since the advent of cultural imperialism colonialism and neo-colonialism'.

It is through this paper that we engage in a struggle for scientific knowing cleansing in a quest for politics of knowledge representation for rural dwellers. We are challenging universities to open an intense engagement with rurality as a means to produce knowledge which is socially appropriate and which reflects the lived realities of rural communities. It is, therefore, that this paper theorised within the discourses of decoloniality and Afrikan grand narratives.

Theoretical Framework

This paper adopts decoloniality as a theoretical resource, to refute the dominance of excessive epistemic power, as demonstrated in the corpus of knowledge production. This theoretical standpoint assists this intellectual piece in making sense of 'other' forms of knowing. Discourses related to post-colonialism and decoloniality are longstanding and differ in epistemic viewpoint. Post-colonialism traces its philosophical roots in the works of Edward W. Said, Homi K. Bhabha and Giyatri C. Spivak and is motivated by political movements and scholarly activists. Decoloniality draws its theoretical inspiration from diverse theories, including the Frankfurt School of critical social theory.

Decoloniality is a theory that embraces discourses from political, economic, discursive and epistemic perspectives. The political viewpoint of decoloniality is all about independence from exterior dominance or supremacy, to a comprehensive revolution of institutions, those critical to reproduction of racial and ethics subjectivities legally enforced by colonialism. The epistemological viewpoint of decolonisation focuses on categories with which construct, reconstruct, deconstruct the knowledge production. This helps us to

interrogate the definition of knowledge systems, and what is universal, a plurality of knowledge systems (Mamdani 2016). Decolonising of epistemology occurs in recognising the sources and geo-socio-political space of where knowledge is constructed and affirming modes of epistemological praxis that have been deprived by the dominance of a particular form of knowing. The argument is that any knowledge system is not ahistorical, but epistemology has to be geographical in its historicity (Mignolo 2009: 67).

This theoretical framework is not a singular school of thought, but a family of diverse positions that share a view of coloniality as being the fundamental problem of the modern age (Ndlovu-Gatsheni 2013: 13). Coloniality, as a residue of colonisation, is reminiscent of colonisation and its tendency to patronise black people (Tshaka & Makofane 2010:539), through being as argued by Ngugi wa Thiong'o (2009:28), disremembering the Global South people in power, labour and knowledge creation. Thus informed with this ambivalence, decoloniality, then, is a struggle to rejects modernity, which is located in the oppressed and exploited side of the 'colonial difference'. On the contrary, the move is towards a decolonialised liberation struggle to a world beyond eurocentric modernity (Ramón 2011:12) especially targeting spaces where African people, in particular, black people who have been exorcised, from a zone of being by being described as outdated, ancestral and irrelevant for modern-day civilisation. This modernity is evident in the organisation of power, of identity or humanity and humanism, and in the structures of knowledge (Zondi 2016:20).

According to Asante (cited in Hytten 1997), decoloniality in this paper should be understood as the orientation of the mind which aims at reconstructing consciousness that valorizes political strength, meaningful identity, and power to transform social and economic circumstances of 'others' and the world. Again, it should be understood as a counter-hegemonic discourse, which interrogates episteme and ontology which are dominant in cultural identities. An episteme of decolonisation is to make meaning and critiquing the dominant body of knowledge by affirming an 'other' way of knowing informed by their socio-political and cultural intellectual elements.

Then as we use the decoloniality approach, we explore new thinking and practices from people and parts of the world that have experienced the Enlightenment and see modernity that excludes rurality and their knowledge space as dehumanisation (Mpofu 2017). Thus, through this article, we join forces that are striving to work toward a vision of human life that is not

dependent upon or structured by the forced imposition of one ideal of society over those that differ (Mignolo 2007).

Arousing Afrikan Grand Narratives

MacKinlay and Barney (2014) remind us that evoking grand-narrative is a way of trying to know what was, what might be, what should be and what is not yet in epistemological reconstructing, and deconstructing as a way of knowing the counterattack of supremacy and hegemony in the knowledge systems dominated by the Global North with imperial forces in the postcolonial era. Amplifying grand-narratives by locating 'other' forms of knowing in the centre is a liberating experience and it is re-writing our own narratives as scientific knowledge in the aftermath of imperialism, colonisation crystalised in apartheid and hegemony of Global North discourses.

Complementing the argument of decoloniality from not so obvious an archangel, Afrikan grand narratives become vital. Therefore, African grand-narratives in this paper should be understood as dynamic and fluid epistemology drawn from lived experiences of Afrikans. Arousing Afrikan grand-narratives is about repositioning other forms of knowing from the historical past that was hard-pressed to the peripheries by shifting the topographies of sites of struggles in the knowledge industry. Increasing the discourses of the marginalised forms of knowing, necessitates the pushing of boundaries for harmonisation of knowledge systems.

This intellectual piece holds that the lived experiences of all human populaces of the world serve as sources for the construction of forms of knowledge. In this paper, we argue for the acknowledgement of different foundations that exist for the construction of pyramids of knowledge. We conclude by dismissing claims that hold the view that any pyramid of knowledge is by its nature eminently superior to all others. In our view, Afrikans' grand narratives must have their consciousness and identity from which they grow and celebrate their strengths and use these as their own comparative and competitive advantage in the global platform of the corpus of knowledge systems.

What does it Mean to Decolonise Institutions of Learning?

Decolonising the university has become a topical issue in many arenas. Depending on how one defines decolonisation, the basic struggle is how

universities can wean themselves from the modernity as imposed by global North influences. To this end, we are of the view that universities are in a struggle against coloniality, which is a residue of colonisation manifested marginalisation of the African knowledge domain. In answering this question, we evoke the need to have the Universities in Afrika to firmly ground communities with the knowledge that respond to people, especially those universities classified as African. These universities have the consciousness of an African identity from which they derive and celebrate their strengths and opportunities to their own comparative and competitive advantage on the global arena. Afrikan universities should draw their inspiration from the immediate environments, as an indigenous plant growing from a seed that is planted and nurtured in an Afrikan soil (see Makgoba 2005; Nkoane 2006). To this end, universities located in a rural geographical space gain their relevance in cultivating knowledge domains within that space.

Our argument is that Afrikan universities, especially located in rural areas to be useful to Afrika and the world, should not be a carbon copy of foreign institutions, but put conditions were knowledge emerges within the structure where they are located to address the lived realities and contribute to the betterment of life and work of ordinary rural people, who for long have been marginalised from all corners of life including in the knowledge domain, and in the process, dismemberment becomes inevitable. Cognisant of this, the universities become relevant and responsive when they reflect on the identity of their people, meaning Afrikan universities located in rural contexts should be rural oriented, in the same vein that Harvard is to America, Oxford is English, and Edinburg is Scottish.

What is interesting in this discussion is how the dominant discourse has created dominance over the subaltern, to use Spivak's (1988) words, this is similar to the discourse of evoking Afrikan grand-narratives for our own universities and curricula. Western and Eurocentric dominance in Afrika is due to various colonial footprints, managed to maintain dominance over the colonised Afrikan people. Africans were intellectually, socially, economically and politically marginalised from the centre of knowledge production (see Kallaway 1984; Nkomo 1990; Mahlomaholo 1998), and Rudebeck (1993:53) asserts that:

> … foreign domination, whether imperialist or not, would choose to liquidate the population of the dominated, eliminating possibilities of

> their existence; or …impose itself to the culture of the dominated ….

The subjugation of culture and knowledge systems is common knowledge due to colonisation and imperialism which have caused disturbances in the thoughts, emotions, and way of life for those who experience such a system. What we need to ask is what Afrikan rural universities could offer to populations of rural people, to the world, and the global corpus of knowledge just as Harvard, Oxford and Scottish universities have engaged and made their footprints on the world of knowledge (see Lavia & Nkoane 2012).

Is Decolonisation a Change in the Skin Tone of Academics?

In order to decolonise and pursue Afrikan grand narratives, there is a tendency for universities to increase black faces as a transformation agenda; however, this has not yielded results since being black does not mean decolonised since Eurocentric narratives have captured blacks and they are used as screensavers to push back the agenda of coloniality. Thus, our argument is that rural Afrikan universities should change and balance curricula content, striking a balance in knowledge systems and research approach, designs, methodology and postgraduate supervision. Afrikan universities should avoid imitation of the dominant discourse. Promoting 'other' forms of knowing and knowledge production is not about having 'black' faces in Afrikan universities, but it is about the grounds of the corpus of knowledge, epistemology, ontology, and objects of our intellectual aspiration. Decoloniality thus is much more than a change of management structures of the universities and the racial composition of both staff and students; it entails an interrogation of curricula and their relevance and appropriateness in responding to African objectives and demands (see Makgoba 1998; Mekoa 2004; and Nkoane 2006). This then requires a radical stance to derail all forces of coloniality which have been multi-faceted, including the black colour.

Is Rurality a Geo-socio-political Space?

Rurality is being constructed differently as a contested concept in the discourse of space and related socio-spatial transformation. It could be understood from a different lens as a type of locality and/or a social representation. The locality perspective makes a distinction of a rural place by virtue of the socio-spatial

features. Using this lens of defining rurality within the constraints of geospatial features is problematic since it is not just one thing.

According to Keating and Phillips (2013), rurality could take a socio-cultural stance that defines rurality as a social construct. This paper defines rurality as a reproduction of a set of discourses and viewpoints. This article embraces a social construction of rurality in order to comprehend how people articulate their experiences in relation to their social and physical environments. Such contextual approaches are dynamic, fluid in capturing the tangible and intangible aspects of the locality. This theoretical orientation of rurality assists us to understand that there are no universal rural attributes that amplify and magnify the difference. These are rhetorical manifestations of discourses within the definitions of rurality.

This paper, therefore, defines rurality with implications for knowledge construction. The intention is the treatment of domination, marginalisation, remoteness, peripheries and power exercised by dominant discourses. Struggles which exist in knowledge production and which have created a site of tension as the discourse is institutionalised. The socially constructed definition of rurality emerged from the contested terrain of social struggles. Meaning rurality could be understood within the context of social divisions and discursive praxis (Richardson 2000). This paper took a stance of defining rurality as a complex, fluid, dynamic entity of discourses, which intend to disrupt relations between power and knowledge systems.

Recentering Global North Rural Learning Epistemologies

In this section, we respond to the call of Shizha (2013: 6), that we need to design '*strategies to reclaim African cultural identities to counteract threats of cultural identity loss*'.

Validation of Rurality as a Treasure for Sustainable Development

The validation of 'others' lived experiences', or worldview may lead to empowerment and emancipation because it connects to 'others' historical traditions', and to a sense of community. Informed by decoloniality, we argue that there is no knowledge system by its very nature that is eminently superior to all the other ways of knowing. All knowledge is socially constructed and

must emancipate the constructors; thus, rural universities must begin to validate what is inside and outside their fences as legitimate and ideal. This is supported by Jaya (2006: 6), who proposes 'universities and other institutions of higher learning should raise awareness on the importance of IK through participation in a shared vision'. Cognisant of this, Nkoane (2016) asserts that decoloniality is a vehicle for defining, interpreting, promoting and transmitting 'other' ways of knowing, philosophy, identity and culture. We see it as a mindset shift from universal laws to corroborating different knowledge systems. Thus rural universities in the spirit of decoloniality should strive for incorporation, and adaptation of other cultures into and through 'others' visions and interpretations' to provide the fluidity and dynamism that is important for the success of people in the global arena, without negating the local epistemologies which must serve as a base where local people launch themselves in the academic space.

Spirited Struggle for Rural Acknowledgement

In a quest for decoloniality in favour of rural universities as harbingers for rurality in their epistemologies, we evoke the need of a continued spirited struggle until the coloniality and dominant discourses are weakened. Achebe (2001) spoke about '*African rural Identity'* as a process in the making and remaking. There isn't a final identity that is Afrikan. However, at the same time, there is an identity coming into existence, and it has a certain context and certain meaning, implying Afrika means something specific to some people (see Makgoba 2005; and Nkoane 2006).

To use this concept as a counter-discursive strategy, Afrikanness, similarly refer to the position from which peoples can assert themselves. In such positions, the historical experiences of this category of people (and the experiences they still have), cannot be denied, because to some extent it has come to define who they are, and it is an important position from which their basic human rights, privileges and interests can (and should) be argued, advocated and struggled for (Mahlomaholo 1998; & Nkoane 2006). There is a need for radicalism especially from the enlightened who value epistemological rurality, To achieve this struggle. This radicalness is aimed at disrupting, dismantling and invalidating the monolithic reasoning of the dominant operations of the Global North in knowledge systems. A radical academic revolution in striking a balance on the pendulum of knowledge systems (Global

North v/s Global South), would afford equity and social justice for all the inhabitants of the globe as their lived experiences (i.e. knowledge systems) would be validated as scientific (Mignolo 2011). Thus, the endeavour of a radical academic revolution is relatively a continuation of pressing discourses to rip to pieces the yoke of coloniality and neo-colonialisation in all its forms. Frantz Fanon reminds us that decoloniality is a radical revolutionary process for the creation of new humanity where all, regardless of their knowledge, are brought into the zone of being required to participate in both modernity and postmodernity. This formation of radicalism is about the creation of spaces for 'other' forms of knowing. The metamorphism of decoloniality is about the validation of other ways of knowing in the contested terrain of knowledge systems (Gordon 2013).

Validating Afrikan Rural Epistemological Oriented Knowledge Systems

In Afrikan nations, we are faced with numerous challenges not only of transforming our countries but of the revival, rebirth and renewal to signal a new Afrika. For the past years, we have enjoyed some important gains; however, we are faced with the challenges of positioning ourselves as a nation on an increasingly shrinking global stage. Whilst marked by traits of inequalities because of dominant discourses; the honour is on our side as Afrikans to position ourselves radically as equal partners in the global stage through validating our own experiences by beginning to speak and acknowledge local contexts. Unfortunately, Universities located in rural geographical contexts have promised relevance to the community through the scholarship of engagement but have done little to valorize and elevate rural epistemologies. Looking at initial teacher education, many student teachers often find themselves teaching in the rural context, yet their training speaks nothing about rurality unless only stressing and buttressing the misery of rural people with little or no solution to their trajectories. Thus, Bernstein (1970) is right to remind us that, '*how a society selects, clarifies, distributes, transmits and evaluates the educational knowledge it considers to be public, reflects both the distribution of power and the principle of social control*'.

Failure to validate rural epistemological oriented knowledge systems by rural universities has implications that those located within the rural contexts do not have control on their own experiences in the corpus of

knowledge systems. The dominant discourses speak volumes about how they interpret reality by trying to universalise the experiences of people, they are looking for what is acceptable in their social and natural worlds and not what might be unique in knowledge systems.

Given the foregoing argument, we note that dominant discourses from the Global North and urban epistemologies have monopolised the parameters for the interpretation of realities in rural universities, as such rural is excluded in the interpretation of reality. This is evident in Afrikan rural universities, where curricula are subjugating local indigenous values. Curricula become relevant and important to counter this neo-colonial mentality because knowledge is culture and context relative. If we acknowledge this, we will overcome the penalties of the colonial history that valorise and amplify western or global north academia, with little faith and pride in Afrikan achievements and heritage of sophisticated racial and cultural dynamics.

Makgoba (2005) asserts that as South Afrikan universities, we cannot afford to remain arrested or trapped in the stale dichotomies of north and south, developed and developing, traditional and modern. Afrikan universities should become part of new dialogues and play a pivotal role in setting a national and global scientific agenda in the corpus of knowledge. Afrikan universities should find the courage to claim place and space as trendsetters on the global stage.

Afrikan Universities in Pursuance of its Scholarship and Identity

Afrikan universities should move towards identification, integration and engagement with Afrikan society and its realities whether it is with languages and arts, music, culture, worldview and ethics. Rural universities and other Afrikan universities have a competitive and comparative advantage to preserve and develop these rich Afrikan knowledge systems and heritage into the future. This could be achieved through differentiated forms of partnership at the societal, regional, provincial and continental levels. This could be a set of interdependent, multidimensional interacting spheres on a geographical, socio-political, socio-cultural and economic basis. Afrikan universities could refine this model. Afrikan universities should entrench diversity and promote transformation. This has to be informed by social justice, equity, hope, democracy and peace as the foundational principles to enable Afrikans to pursue their scholarship and acknowledge diverse foundations of pyramids of knowledge.

Afrikan universities should be grounded in sound ethics; that respect life and the environment and is inspired by values of a diverse society pursuing trans-disciplinary approaches to advance our nations' global competitive edge and the quality of life. Universities in Afrika should be seen as building blocks towards settings standards and processes of corporate governance and ethics that have zero tolerance for corruption by staff and students. They have to redefine what an African knowledge system is and the relationship such a knowledge system bears to its context. Pursuing a Global South epistemological stance would mean taking the challenges of our society and weaving its scholarship into its fabric and vice-versa.

Amplifying rural/ Afrikanness, which is epistemologically oriented knowledge systems, would have to shift the paradigm from a discipline-based, esoteric-focus to a solution-based, highly relevant focus to its Afrikan community. Afrikanised knowledge systems would provide opportunities for responding to how the combined knowledge of Ethics, Biology, Education, Law, Psychology, Sociology, Government and Policy could address the impact and implications of social ills and diseases, the social impact of Corporate Governance and Sustainable Development.

Conclusion

We conclude this paper by tapping into Achebe's (2001) sentiments that diversity is '*not as an abnormality, but as the reality of our planet*'. Meaning, the nurturing of diverse cultures, ideas, perspectives, interpretations and world-views is what makes universities reflect and relate to their society. Said (1996) tells us that our main weapons in the struggle for openness and tolerance are today not military but moral. He reminds us about the struggle against colonisation and that apartheid was clear about its goals and methods, and the liberation and democratic movements were clear on their purposive social justice, inclusion and coexistence, and not accepting marginalisation and exclusion. This intellectual piece is an effort to disrupt, dismantle, deconstruct, unsettle all discursive praxis in epistemological knowledge systems for the recognition of Afrikan sovereignty in the corpus of knowledge systems. Having adopted decoloniality as a theoretical lens assist us to understand the process from different strata, firstly: from a political independence that moves from external domination to a broader transformation; secondly: from an epistemological understanding which centres on taxonomies with which to

create, reconstruct, critique, and grasp with the dynamics of the construction of knowledge systems. This has aided in provoking the questions: What is? Or what might be? Or what should be? – and is not yet Afrikan, Rural, Global South, and Decolonised.

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Grade Ten Teachers' Understanding of Multiple Intelligences in Teaching Physical Science in the Rural Context

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Abstract

Understanding multiple intelligences in teaching is very important in order to achieve effective teaching. The most important motivation for this research is to show some of the observable structures of a holistic and constructively enriched curriculum for physical science that shapes the strengths of learners within the classroom. Human intelligence varies so much that each learner has a unique combination of intelligences resulting in a unique personal profile for each learner. As a result, each learner learns in a unique way. The purpose of this study was to explore physical science teachers' understanding of multiple intelligences in teaching. It is then very important for teachers to understand multiple intelligences teaching, so that they may reach every learner when teaching. The traditional ways of teaching catered for only mathematical and linguistic intelligences, leaving learners with other intelligences behind. When traditional ways of teaching are used, physical science is viewed as a difficult subject, because most learners fail the subject. This article presents an interpretive case study of four research participants who are grade ten, physical science teachers in a rural school in Durban, KwaZulu Natal. For data generation, narratives, one on one semi-structured interviews and classroom observations were used. The study concluded that even though physical science teachers are showing the visibility of understanding multiple intelligences, they cannot articulate what multiple intelligences are. Yet, in their

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teaching there was visibility of the understanding of multiple intelligences, as they use multiple intelligences strategies unknowingly especially when they use visual aids.

Keywords: learning, multi-intelligence, physical science *teaching*, understanding, subject

Introduction

For effective teaching and learning of Physical Science, a school should have the following resources; teachers, learners, a laboratory, textbooks, science apparatuses and chemicals. Yet, in rural schools 'Everything connected with education, apart from learners has been in short supply, schools, classrooms, teachers, teaching materials indeed everything needed for proper education of youth is in short supply' (Ukeje as cited in Akinmade 1999). When the resources are a problem, teaching and learning is affected negatively, also impacting pass rates. Over the past years, the pass rate of Physical Science has been very low (DoE 2001). Some schools have laboratories but lack apparatuses and chemicals, because Physical Science is a practical, experimental subject. It then becomes difficult to teach it effectively. Although the DoE supplies some books, there is a great challenge in distribution. Some of these resources may be improvised to some degree. Yet, teachers cannot be improvised. They are in short supply as well.

In addition, rural communities are challenged because most of the parents are not working, and they cannot afford to support their children financially, in cases where there are school requirements to be bought. In the rural areas in South Africa, there are some schools that do remarkably well at producing good matric results in Physical Science and Mathematics. These schools achieve their success in spite of the poverty around them and lack of facilities and resources (Burney & Beilke 2008). The Department of Education (2001) suggests that the improvement of learner achievement in Physical Sciences and Mathematics depends on competent teaching. In this study it is assumed that, competent teaching can be realised if teachers would understand and employ multi intelligences teaching in Physical Science, which will cater for all learners with their different intellectual abilities.

Research Objectives

- To explore teachers' understanding of multiple intelligences, in teaching physical science.
- To explore why teachers understand multiple intelligences in physical science in particular ways.

Research Questions

- What are Grade ten teachers' understandings of multiple intelligences teaching in Physical Science?
- How do Grade ten teachers indeed understand multiple intelligences, and teaching in Physical Science in particular ways?

Research Design and Methodology

This is an interpretive qualitative case study of eight grade ten physical science teachers, *in a secondary school in Durban in a rural context*. The exploratory case study was suitable because this study was aimed at exploring Grade ten teachers' understanding of multiple intelligences teaching in Physical science.

Sampling

Purposive sampling was used in selecting all four participants. To recruit the participants, the principal of this rural secondary school was asked to identify the grade 10 physical science teachers, and then they were asked in writing to participate in the study. As Behi and Nolan (1995) maintains that every human being has a right to privacy, therefore each research participant was required to give written consent of participation. Research participants were guaranteed their anonymity and confidentiality at all times.

Literature

It is assumed that there is a correlation between the uses of multiple intelligences strategies and academic achievement. Therefore, it is hypothesised that learners who are taught using multiple intelligences strategies will have higher academic achievements than those learners who are taught in traditional ways.

Most learners find themselves in a classroom that places too much emphasis on linguistic, word-smart intelligence or mathematical, number-smart intelligence. Campbell, Campbell and Dickinson (1996) maintain that sometimes teachers unconsciously use MI theories in their teaching, like when they use visual aid or playing a song. If they fully understand MI theories and its benefits; it could be more beneficial to them in their teaching.

The Concepts of Understanding and Multiple Intelligences

Understanding is a psychological process related to a matter such as a person, situation, or message. Understanding is a relation between a person and an object of understanding. Understanding implies abilities and dispositions with respect to an object of knowledge that are sufficient to support intelligent behaviour. Understanding is related to learning concepts, and theories associated with those concepts. Thus, understanding is correlated with the ability to make inferences (Wikipedia). If you have an understanding of something, you know how it works or know what it means (Collins 2004). According to Gardner (1999) intelligence is the ability to solve problems and to create issues in the cultural medium in order to progress. Individual learners possess intellectual abilities which enable them to solve problems, create products or provide services that are valued in the larger society (Howard 1983). MI is concerned about, in what ways are learners smart, rather than, asking are they smart. MI theories brought new insights into education, helping students to identify and develop their strengths and discovering more effective teaching methods. Gardner (1983) states that all the eight intelligences are equally important and essential to an individual's development. Therefore, development in one area often increases the chances of development of another. Gardner asserts that when it comes to being smart, differences count. The theory takes individual differences seriously, appreciating the giftedness of each individual. It is highly important for teachers to understand MI theories and how to apply it to their teaching.

The Importance and Benefits of Understanding and Using Multiple Intelligences in Teaching Physical Science

Multiple Intelligences theory in the classroom has many benefits: the teacher and learners using it realise that there are many ways to be 'smart'. All forms

of intelligence are equally important. It is important for teachers to understand multiple intelligences. A sense of increased self-worth may be seen as learners develop their strengths and work towards being experts in certain areas. Learners may develop strong problem solving skills that they can use those skills in real life situations (Giles, Pitre & Womack 2003). Stanford (2003) explains that multiple intelligences teaching provides a way of being competent as a teacher. Multiple intelligence teaching provides many different ways for learners to learn and to show evidence of their learning. According to Kagan (2000), teachers should understand and use multiple intelligences in the classroom, because it will prepare learners for future's complex life challenges. Multiple Intelligence teaching makes the curriculum accessible to all learners. It also keeps the subject content exciting to all learners. Learners should be taught based on their capabilities of learning. Benefits of using multiple intelligences teaching includes reduced discipline and classroom management problems, it also increases learners engagement and enthusiasm for learning (Christensen, Johnson & Horn 2010). Teaching that includes non-academic intelligences is also beneficial, for learners from non-English-speaking backgrounds, who were not linguistically strong in English. Learners who had a low academic self-confidence demonstrated more confidence and competence when they were able to present what they had learned in their area of strength (Noble 2004). Benefits of using multiple intelligences teaching includes reduced discipline and classroom management problems, it also increases learners engagement and enthusiasm for learning (Christensen *et al.* 2010). *Multiple intelligences* teaching provides educators with a conceptual framework for organizing and reflecting on curriculum assessment and pedagogical practices. In turn, this reflection has led many educators to develop new approaches that might better meet the needs of the range of learners in their classrooms (Smith 2002). From what other scholars have written about multiple intelligences teaching, it is evident that there are many benefits from understanding and using multiple intelligences teaching.

Developing Multiple Intelligences in Learners

Gardner (1995) insists that everyone has the capacity to develop all eight intelligences to a competent level of performance, if appropriate encouragement, enrichment and instruction is given. Miller concurs that multiple intelligences can be developed to a level of competence depending

upon three factors: Hereditary, which has everything to do with one's genetic makeup. Experience, which includes experience with family, school, friends and all others who help in developing intelligence, keep them from developing or actively suppress them. Miller maintains that there are two types of experiences that can affect the development of intelligences: the crystallising experience and paralysing experience. Crystallising experience refers to an experience which acts as a spark that lights intelligence and starts its development towards an adequate level of competency. On the other hand paralysing experience refers to an experience that deactivates or discourages the development of intelligence. For an example a learner who confidently tries an experiment in chemistry class and it turn out to be a flop. Then the teacher humiliates him in front of the class. This particular learner will be filled with a lot of negative feelings (shame, anger, fear and guilt). This paralysing experience will hinder some of the learner's intelligences from developing. Therefore learners come into the classroom with different sets of developed intelligences, which means that each child will have his own unique set of intellectual strengths and weaknesses (Brualdi Timmins 1996). This will be mainly due to the experiences that learners have been exposed to prior to coming to the classrooms. History and culture, also historical background of an individual can awaken or hinder intelligences from being developed. This includes time and place of birth and where one is raised. As a result it is very important for teachers to understand the intelligences in their class, taking into account the context (in this study: the rural school).

Campbell and Linda (1996) agree that intelligences can be developed. They suggest that there are influences that can either promote or suppress the development of intelligences. They state that the development of intelligence can be influenced by: access to resources for example growing up in a home where there is no musical instrument, may suppress the child's development of musical intelligence. Geographic factors for example, a learner who grew up in a rural area will have more chances to develop naturalist intelligence as compared to a learner who grew up in urban setting, staying in a 32nd floor in a flat in Ballito. From what these Scholars have written, it is clear that it is important for teachers to understand multiple intelligences in their classes, so that they may be able to teach effectively. Teachers have to also understand their own dominant, well developed intelligences and their undeveloped intelligences so that they may work on developing them. If the teacher understands multiple intelligence teaching strategies, she may ask learners to

help her out when there is a need. It is possible that some learners may show expertise in an area where the teacher's particular intelligence is not well developed. For example a teacher might avoid drawing diagrams on the chalkboard or avoid using pictures as teaching aids, possibly because her spatial intelligence is not well developed. There might be learners who are well developed in this intelligence.

Multiple Intelligences in the Classroom

There are many ways to incorporate Multiple Intelligences theory into the physical science curriculum, and there is no set method by which to incorporate the theory. It is important for teachers to carefully select activities that not only teach to the intelligences, but also realistically match with the subject matter of the lesson. Multiple Intelligences theory should enhance, not detract from what is being taught (Giles *et al.* 2003). Teaching physical science is not just about giving out facts in the textbooks, it involves helping learners to understand the world. This includes helping learners to use their skills of observing, measuring, describing, classifying, experimenting and predicting. Douglas, Burton, and Reese-Durham (2008) contend that there is a need for teachers to adopt strategies that could lead to better performance in the academic achievements of learners. When teaching an individual, teachers should present the most difficult concepts in the learner's preferred style. Easier concepts should be introduced in a different style. When teaching the entire class, teachers should use different teaching methods to cater for all learning styles in their presentations, if they are to reach every learner (Giles *et al.* 2003). In an effort to maximise learners' interest in both the subject matter and their own learning inclination, teachers may wish to teach their students a little bit about Multiple Intelligences. Teachers can brief the class about each type of intelligence and then follow up with a self-assessment for each learner. In this way, learners will be able to capitalise on their strengths and work on their weaker areas (Giles *et al.* 2003). The multiple intelligence theory gives a clear guide on how teachers can plan their lessons to cater for all differences in learners' abilities. The MI theory also provides a guide on how teachers can help learners to develop the above-mentioned skills as physical science demands.

Multiple Intelligences teaching, is based on the idea that, intelligences are not singular but multiple. Every person has a unique blend of intelligences. Intelligences vary with regard to their development. All the intelligences are

not static but dynamic. The use of one intelligence can enhance another of the intelligences (Armstrong 1994). This means that intelligences can be developed. Intelligences vary with regard to their development. The Multiple Intelligences Theory suggests that learners learn in different ways. Knowing learners' learning strengths and weaknesses will assist teachers in trying new ways of teaching. It will also help teachers in planning according to the classroom's abilities.

Kegan and Kegan (1998) defines multiple intelligence teaching as a powerful catalyst in education: it is revitalising the search for more authentic, learner-centered approaches to the curriculum, instruction and assessment. Multiple Intelligences teaching, is based on the idea that, intelligences are not singular but multiple. Every person has a unique blend of intelligences. Intelligences vary with regard to their development. All the intelligences are not static but dynamic. The use of one intelligence can enhance another of the intelligences (Armstrong 1994). This means that intelligences can be developed. Intelligences vary with regard to their development. The Multiple Intelligences Theory suggests that learners learn in different ways. Knowing learners' learning strengths and weaknesses will assist teachers in trying new ways of teaching. It will also help teachers in planning according to the classroom's abilities.

In the traditional classroom, learners with different ways of learning are often labelled as learning disabled, as having attention deficit disorder (ADD) or simply as underachievers, when their unique ways of thinking and learning are not addressed by a heavily linguistic or mathematical classroom (Armstrong 2014) Multiple Intelligences teaching helps teachers realise how smart their learners are by providing them with different options of teaching. In order to get rid of the perception that science is abstract and difficult to be understood, instead of straight explanation methods, Multiple Intelligences teaching methods which get positive feedback should be used. (Ucak, Bag & Usak 2006).

The guiding principle for multiple intelligences is that, whatever one teaches, he has to link the teaching objective with words, numbers, pictures, music, the body, social interactions and personal experience (Armstrong 2009). When teaching an individual, teachers should present the most difficult concepts in the learner's preferred style. Easier concepts should be introduced in a different style. When teaching the entire class, teachers should use different teaching methods to cater for all learning styles in their presentations,

if they are to reach every learner (Giles *et al.* 2003).

A basic understanding of each of the intelligences shows that they can work together or separate. For example, a dancer can excel in his art only if he has also musical intelligence to distinguish the different rhythms and patterns in music, interpersonal intelligence to grasp how he can emotionally move his audience through his movements, as well as bodily intelligence to complete the movements successfully (Fogarty 2015).

The more thoroughly teachers understand the differences in learners, the better chance they have of meeting the diverse learning needs of all of their learners. There are three categories of diversity that have important implications for teaching and learning, they are; differences in learning styles, approaches to learning, and intellectual development levels (Felder & Brent 2005). The way in which a learner approaches or responds to the learning task comprises two aspects: first, cognitive style, which reflects the way in which the individual person thinks; second, learning strategy, which reflects those processes which are used by the learner to respond to the demands of a learning activity. A person's cognitive style is probably an in-built and automatic way of responding to information and situations. A learner's cognitive style influences his or her general achievement in learning situations (Riding & Rayner 2013).

Planning and Implementing Learner Centered Lessons

Giles (2003) suggests that teachers have to be careful when planning a lesson to use multiple intelligences strategies. He advised that teachers have to consider activities that can be integrated into the lesson that teach to the different intelligences. Teachers need not incorporate all eight intelligences into one lesson. When gathering resources and materials, they should consider those which will allow learners to explore their multiple intelligences. When designing activities and tasks for the intelligences, teachers have to design activities that are learner-centered.

Assessment in Multiple Intelligences

According to Lam (1995), a fair assessment is one in which students are given equitable opportunities to demonstrate what they know. Effective assessment is in alignment with instructional practices (Bellanca, Chapman & Swartz

1994). Changing teaching strategies and curricula without changing assessment methods will not bring about the full benefit of MI theory for teaching and learning. Thus, if MI theory is to be used in classrooms, teachers must change the way they assess learning (Chapman 1993). According to Stanford (2003) traditional assessment limits learners to a pencil-and-paper test as the primary means of demonstrating knowledge and skills. MI theory brings about an awareness of many assessment strategies that allow learners to show that they understand and can use new information in unique ways. Assessment alternatives include logs and journals, graphic organizers, observational checklists, video samples, rubrics, miscue analyses, and portfolios.

Such alternative forms of assessment offer learners the potential to demonstrate learning content in a variety of ways. In the multiple intelligence classroom, assessment and instruction are partners. The MI classroom provides the environment for teachers to use varied teaching strategies, expanded curricula, and authentic assessment to provide creative and active learning that engages all learners (Stanford 2003).

The Theoretical Framework of the Study

The (MI) theory was proposed by Howard Gardner, the Harvard University professor. Gardner introduced the MI theory in his book, The frames of mind: The theory of multiple intelligence (Howard 1983). He proposed that individuals possess intellectual abilities which enable them to solve problems, create products or provide services that are valued in the larger society (Howard 1983). In his theory Gardner argues that the intelligence is not a single entity which can be measured by an IQ test. He defines intelligence as the ability to solve problems. He suggested that everybody possess a different mind and each individual has a personal intelligence profile, which consists of eight different intelligence types. We all share the whole spectrum of intelligences and intellectual strengths which change over time depending on experience and practice (Gardner 1999). The Multiple Intelligences theory holds that each person possesses eight intelligences, and uses them to carry several kinds of tasks. *Although* individuals possess all eight intelligences, each has their own particular mix of intelligences, with some dominating over others, but they are not fixed and can change over time. This means each individual has his/her own intelligence profile.

Types on Intelligences

The eight intelligence types as explained by the MI theory are:

Multiple Intelligences	**Agreement with the theory and understanding multiple intelligences**
▪ Visual	Spatial intelligence, is the capacity to recognize and use the patterns of wide space and more limited areas (Howard Gardner 1999). It means being picture smart and having the ability to sense form, space, colour, line and shape. It includes the ability to graphically represent visual ideas. Learners, who have a well-developed spatial intelligence, enjoy art activities, reading maps, charts and diagrams, thinking in images and pictures. According to Armstrong (1994) these students have highly developed senses for color, line, shape, form, space. They also have the ability to visualize ideas.
▪ Mathematical intelligence	Mathematical intelligence, according to Gardner (1999) this intelligence is based on the sensitivity and capacity to perceive logical or quantitative matters. This intelligence is comprised of classification and categorization of logical patterns, the ability to deduce clear information, numerical and logic. Learners with mathematical intelligence enjoy mathematics.
▪ Musical	Musical intelligence means being able to sense rhythm, pitch, and melody. Musical intelligence includes skills like the ability to recognize simple songs and to vary speed, tempo, and rhythm in simple melodies. Linguistic intelligence-Gardner (1999) defines linguistic intelligence as; the ability to effectively use the words, both orally and in writing. It has to do with being word smart. It includes the ability to remember information.
▪ Naturalistic	The research participant no. 4 contradicted himself, in his narrative he expressed that MI techniques are not applicable to physical science. Also when he was interviewed, he explained that he does not consider using multiple intelligences strategies because they consume a lot of time.

▪ Verbal linguistic	Spatial intelligence, is the capacity to recognize and use the patterns of wide space and more limited areas (Howard Gardner 1999). It means being picture smart and having the ability to sense form, space, colour, line and shape. It includes the ability to graphically represent visual ideas. Learners, who have a well-developed spatial intelligence, enjoy art activities, reading maps, charts and diagrams, thinking in images and pictures.
▪ Kinetic	Spatial intelligence, is the capacity to recognize and use the patterns of wide space and more limited areas (Howard Gardner 1999). It means being picture smart and having the ability to sense form, space, colour, line and shape.
▪ Interpersonal	An intrapersonal intelligent person is someone with the ability to understand himself, his strengths, his weaknesses, moods, desires, and intentions. This includes understanding how one is similar to or different from others. Knowing how to handle one's feelings, such as what to do, and how to behave in any situation. Intrapersonal intelligence is based on the capacity to reflect introspectively, and is the ability to find meaning in the actions of the individual.
▪ Intrapersonal	Learners with a well-developed intrapersonal intelligence establish and maintain good social relationships; they are friendly and have a good sense of humor. They perceive the feelings, thoughts, motivations, behaviors and lifestyles of others through listening, engaging with others' problems and are interested in helping. They assume different roles within the group and are open to understanding other's points of view. Bodily intelligence is the ability to use the body expressively in different ways. It means being body smart. It means being able to co-ordinate mind with body. This includes the ability to use one's body to express ideas and feelings. It also includes physical skills such as co-ordination, flexibility, speed, and balance.

▪ Existential	Learning is reflecting on and observing one's thoughts feelings and regulating ideas effectively.

Learners with a dominant linguistic intelligence like to learn new words and play with language crosswords puzzles. They are enchanted by stories and are able to relate occurrences. They have a passion for the meaning of the words, lyrics of songs. Learners with linguistic intelligence can tell stories. They are able to start conversations or discussions and they are well expressed both orally and in writing. They also like reading books.

Mathematical intelligence, according to Gardner (1999) this intelligence is based on the sensitivity and capacity to perceive logical or quantitative matters. This intelligence is comprised of classification and categorization of logical patterns, the ability to deduce clear information, numerical and logic. Learners with mathematical intelligence enjoy mathematics. They like to discover how things work and they create personal strategies to solve problems. They are able to breakdown events into various stages, and they enjoy the computer. Learners with this type of intelligence have sharp analytical skills, and find it easy to synthesise, deduct and compare information.

Musical intelligence means being able to sense rhythm, pitch, and melody. Musical intelligence includes skills like the ability to recognize simple songs and to vary speed, tempo, and rhythm in simple melodies. Musical intelligence is the skill to do and appreciate the performances, and composition of musical patterns. It involves the capacity to recognize and compose music, understand tones, and rhythms. According to Gardner (1999) musical intelligence is parallel to linguistic intelligence. He explains that learners with dominant musical intelligence enjoy music and this gives them an advantage in reading and writing better because similar sounds and speech are present in linguistic intelligence. They also can create music and enjoy singing songs. The musical part of their brains can be motivated by clapping hands, snapping fingers, chanting words or moving rhythmically.

Spatial intelligence, is the capacity to recognize and use the patterns of wide space and more limited areas (Howard Gardner 1999). It means being picture smart and having the ability to sense form, space, colour, line and shape. It includes the ability to graphically represent visual ideas. Learners, who have a

well-developed spatial intelligence, enjoy art activities, reading maps, charts and diagrams, thinking in images and pictures. According to Armstrong (1994) these students have highly developed senses for color, line, shape, form, space. They also have the ability to visualize ideas. Learners with a well-developed spatial intelligence, have very unique ability of using imagination. They are also very aware of the space around them and are very good at recognising images.

Interpersonal intelligence is the capacity to understand the intentions, motivations and desires of others. It means being people smart. It is the ability to understand another person's moods, feelings, and intentions. It includes such skills as responding effectively to other people. It allows people to work effectively with others and for that reason cooperative learning is effective. The people with this type of intelligence make good educators, salespeople, religious and political leaders (Howard Gardner 1999). Learners with dominant interpersonal intelligence prefer to be with people. They are friendly and can get on well with others, so they can easily take part in social activities. These learners are assertive, express their feelings, they make their ideas clear, and can empathise with others in the group. Learners with interpersonal intelligence manifest their ability to work in group with their classmates. They have the ability to resolve conflicts and to integrate different personalities.

Learners with a well-developed intrapersonal intelligence establish and maintain good social relationships; they are friendly and have a good sense of humor. They perceive the feelings, thoughts, motivations, behaviors and lifestyles of others through listening, engaging with others' problems and are interested in helping. They assume different roles within the group and are open to understanding other's points of view. Bodily intelligence is the ability to use the body expressively in different ways. It means being body smart. It means being able to co-ordinate mind with body. This includes the ability to use one's body to express ideas and feelings. It also includes physical skills such as co-ordination, flexibility, speed, and balance. This is the ability humans have to perform physical movements such as dance, theater, aerobics, athletics, etc. and is related to both working and developing aspects such as flexibility, balance, speed, coordination, strength and perception.

The **naturalist intelligence**, according to Gardner (1999) is the intelligence that is associated with students who are in harmony with nature. It is the ability

to distinguish, categorise and analyse elements of the environment such as urban and rural objects, animals, and plants. It is well-developed in learners who are sensitive to environmental problems and who are able to recognise and classify plants, animals and minerals including rocks. Learners who are dominant in this type of intelligence like participating in outdoor activities in natural settings. They are nature smart and are respectful with the environment. Gardner (1999) also argues that most tasks require more than one intelligences working together.

Data Presentation

Initially participants were asked to write narratives on their understanding of multiple intelligences in teaching physical science. Later semi structured interviews were conducted. Lastly classroom observations were done.

On the question asked: What is your understanding of multiple intelligences in teaching physical science?

The research participant 1 responded:

I think multiple intelligences teaching is used when the teacher recognises that every student is special and unique. The teacher needs to teach in such a way that all learners benefit from his or her teaching. The physical science teacher has to involve all learners when teaching. There are learners that are active in answering verbally in class and there are those that will surprise you during the test or exam. It is important to have different level tasks in an assessment, like multiple choice, one word answers, and also long questions requiring calculations, discussion and describe. It is important at times to allow learners to teach one another in groups or in pairs because some learners are shy to ask in class even when they do not understand. Such learners might find it easy to ask from other learners. The other important thing is that the teacher must prepare and explain nicely for all learners to understand. The teacher has to give extra work to the fast learners while repeating and answering questions from those that are not as fast. Multiple intelligence teaching should be done in all classed not in grade 10 only. The danger in not taking multiple intelligences into consideration is that some learners may find your lessons boring and could end up failing the subject or dropping it altogether.

On the same question research participant 2 responded:

> *I understand that learners have different ways of understanding what they are taught due to their different intelligences which vary from learner to learner. From what I know learners may be visual, auditory or kinesthetic. These three types of learners happen to be in one class which makes it difficult to reach out to all of them at the same time. For physical science in grade 10, we as teachers are guided by the Annual Teaching Plan (ATP), as a result due to trying to keep up with the ATP, we end up focusing to one or two types of intelligences. We as teachers, also fall amongst certain type of intelligences, so we tend to make our lessons focus on more on that intelligence, especially in subjects like physical science. For instance, if a teacher is more kinesthetic he or she will make his or her lessons more practical without noticing that learners who are auditory are sacrificed in that process. In conclusion, I think incorporating different multiple intelligences in our teaching of physical can make learners understand better. It would be convenient if the curriculum can be shaped in a manner that will allow teachers to use multiple intelligences.*

On the research question about understanding multiple intelligences in teaching physical science, research participant 3 responded:

> *My understanding of multiple intelligences in teaching physical science is that to teach physical science one has to deal with diverse class of learners with different learning styles. What causes this is the fact that learners' backgrounds are different. Some are from homes where parents can afford to buy everything the learner needs whereas some are from homes where no one is working, and parents are struggling to put food on the table, not to mention school needs. The physical science teacher has to teach in such a way that she accommodates all learners. There are learners that are active in answering questions in class; there are also those that will surprise you in a test. It is important to make different tasks when assessing, like multiple choice, one word and also long questions that will require one to describe, explain or discuss. It is also important to allow learners to learn from each other, by letting them have group*

> *discussions or discuss in pairs. This is important because some learners are shy to ask in class, even when they do not understand. Such learners may find it easy to ask from other learners. Team teaching also helps to achieve multiple intelligences in teaching. If you are not comfortable with the topic, you have to ask your colleague who is comfortable to do it.*

Surprisingly on the same research question, research participant 4 s' response was:

> *Multiple intelligences is about using all different intelligences in a learner to make sure he understands what is taught. The multiple intelligence way of teaching is applicable when the class has few learners. Multiple intelligences teaching is not applicable to physical science because, physical science is a formal subject. It needs learners to focus, unlike the languages and L.O. which can be taught in the sports field. What I understand is that there are learners who are gifted in music but they cannot use it in physical science, because it is irrelevant to physical science. Physical science cannot be done by all learners; it requires skills that not all learners possess. It demands skills such as scientific reasoning, which cannot be taught. Learners should know themselves well and know their abilities. They should know what they can do and what they cannot do, so that they make a wise choice of subjects. It is also critical that the school provide proper guidance to grade 9 on subject choices. The most important thing is that the teacher must know the subject matter. He must be able to explain any concept. The teacher must give extra work to fast learners while doing remedial work with the slow learners. Multiple intelligence teaching is one of the new methods of teaching, it consumes a lot of time, doing all activities. There is a lot of content to be done in physical science, if one would follow multiple intelligence teaching, I am sure only half a year's work would be taught by end of the year.*

The recorded semi-structured interviews were transcribed into The main question in this section was: what are teachers' understandings of multiple intelligences in teaching physical science in grade ten? During the semi-

structured interviews, after the rapport was established, the above question was asked to initiate the semi-structured interviews and to direct it. The semi-structured interview was then allowed to flow natural. All questions asked were seeking to determine whether grade ten physical science teachers understand multiple intelligence teaching or not, whether they use the MI strategies in their teaching and why they understand multiple intelligences in particular ways. Interview questions also tried to determine whether teachers are willing to use MI strategies in their teaching.

Data Analysis

Dawson (2010) states that in qualitative research, data is based on human experiences and observations. As this study explored teachers' understanding, I was more interested in the experiences of the participants. Information was generated using narratives, semi-structured interviews and classroom observations. The study focused on grade 10 physical science teachers. Participants were interviewed (one on one) for approximately 40-60 minutes per session. Semi-structured interview were voice-recorded for convenience of transcription. To analyse data the recordings were transcribed into written form, notes were analysed by selecting what is significant to the research topic. The researcher synthesised using coding, highlighting different concepts organising codes into themes and categories

Findings

Physical science teachers do not take multiple intelligences as a serious and significant part of learning. Gardner (1983) states that all the eight intelligences are equally important and essential to an individual's development. Therefore, development in one area often increases the chances of development of another. Gardner (1999) asserts that when it comes to being smart, differences count. Some research participants' responses were surprising, for an example; that some teachers felt focusing on multiple intelligences was a waste of time, and there were no resources to assist them with the different skills. Participants showed a lack of understanding of multiple intelligences teaching because they blamed failure to incorporate MI teaching to lack of resources, whereas multiple intelligences require teachers to be aware of different intelligences in the classroom, but in terms of resources- there is nothing special needed.

Gardner (1999) intelligence is the ability to solve problems and to create issues in the cultural medium in order to progress. The participants' common response was that the method is time consuming. The participants' opinion that multiple intelligences teaching consume a lot of time and the pressure to produce good results is the main reason for teachers not using multiple intelligences teaching in their classrooms. The fear to lose their jobs if learners do not pass physical science pushes them to desperately teach only guidelines for exams, with the hope of teaching exactly what will be asked during exams.

Conclusion

The data generated from four grade ten physical science teachers revealed that there are non-understandings, limited understandings and misunderstandings of multiple intelligences in teaching physical science in grade ten teachers in the rural schools.. Almost all research participants acknowledged that, they have little, non-understanding or misunderstanding of multiple intelligences teaching. Teachers blamed high failure rate to lack of resources which is a serious challenge in the rural schools. It was noted that some of the qualified teachers were not retained in rural areas as the schools in townships and urban were attracting the qualified teachers.

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Shaping a Pedagogical Framework to Guide Pre-service Teachers' Facilitation of Inquiry-based Practical Work in Multiple-deprived Environments

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Abstract

Schools in multiple-deprived environments such as rural areas face a number of unmet needs. The unmet needs extend to science classroom practices in the form of pedagogies that continue to defy curriculum reform impetuses undergirded by important transformation agendas. Such is the case with the teaching and learning of physical sciences in schools located in multiple-deprived environments through inquiry-based practical work (IBPW). The instructional strategy is reform-oriented and also heavily sustained by both material and human specialist capital. Often one or both of these forms of capital are lacking in schools located in multiple-deprived environments. The lack of one of the capitals also restricts the function of the other. Using Sen's capability theory, this study teased out the shaping of a pedagogical framework to guide pre-service teachers as they facilitate IBPW in multiple-deprived physical sciences classrooms as part of a practical response to calls for the decolonisation of higher education. For this qualitative case study of one South African University, data were collected by means of semi-structured interviews with two science teacher educators. In addition, secondary data were also collected by means of document analysis of a secondary school chemistry syllabus to determine the pedagogical demands for IBPW. The findings indicated that methods courses for IBPW prepare pre-service teachers for ideal science classrooms and not to function in multiple-deprived conditions. The study identified three crucial capabilities for the pre-service teachers to make IBPW accessible in multiple-deprived classrooms and opportunities for the

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decolonisation of the curriculum. A recommendation is made for methods curriculums to include courses to prepare pre-service teachers to function in multiple-deprived science classrooms.

Keywords: capability approach, inquiry-based practical work, multiple-deprived environments, pedagogical framework, pre-service teachers

Introduction

Inquiry is one of the underlying philosophies of most school science curriculums in the 21st century. Practical work is also central to the teaching and learning of science. The use of inquiry-based practical work in science classrooms is an area fraught with numerous challenges. One of the challenges pertains to teacher identities in terms of their knowledge and skills in using the instructional strategy (Kidman 2012; Cheung 2007). Classroom practices have social implications in terms of making available justice through education to learners. Tsakeni (2018b), demonstrates how some instructional strategies especially the failure to implement policy impetus on inquiry work to marginalise learners. The marginalisation is based on the premise that some school subjects are gateways to certain career choices. The inequitable exposure of learners to meaningful science classroom experiences result in inequitable access to life opportunities such as careers. Lack of laboratory facilities, materials and equipment is also one of the challenges that stand in the way of effective practice of inquiry-based practical work in schools (Kim & Tan 2011). The lack of materials and equipment is most prevalent in schools located in multiple-deprived environments which include rural areas. Multiple-deprived environments face a number of unmet needs which include lack of resources (Noble, Zembe, Wright & Avenell 2013). Schools in South Africa are located in a mix of contexts that can be placed on a continuum characterised by multiple-deprivation on one end and rich environments on the other (Chikoko, Naicker & Mthiyane 2015). In addition to rural areas, some of the multiple-deprived school contexts in South Africa include farm and township schools (Maringe, Masinire & Nkambule 2015).

Pre-service science teachers learn how to facilitate inquiry-based practical work in methods courses. Upon completion of the science teacher programmes some of them will be deployed in multiple-deprived schools.

These schools are nothing compared to the universities in which the pre-service teachers had undergone teacher training in terms of laboratory facilities, materials and equipment at their disposal. A puzzle arises on whether the pre-service teachers who complete their programmes have been holistically prepared to function in every situation including schools in multiple-deprived environments. Christie, Carey, Robertson, and Grainger (2007) report that some learners in South Africa learn school science without engaging in practical work. The implication is that they also never engage in inquiry-based practical work.

However, the science curriculums introduced in 2011 such as the Curriculum and Assessment Policy Statement (CAPS) for physical sciences contain prescribed practical work activities for formal assessment and also recommended practical work activities for informal assessment. In addition, the physical sciences content should be learnt through scientific inquiry in order for learners to develop skills of investigation (Department of Basic Education 2011). The prescription of practical work activities in the curriculum policy compels teachers in all school contexts to utilise forms of practical work teaching strategies. The compelling of teachers to use practical work strategies in science classrooms also applies to schools in multiple-deprived environments. According to Maringe *et al.* (2015) the key elements characterising schools facing multiple deprivation include,

> (1) high teacher - learner ratios;
> (2) poorly equipped and non-existent special teaching and learning facilities; and
> (3) marginal-to-dysfunctional status in terms of learner performance measured against the 40% performance mark.

Maringe and Moletsane (2015) point out that the concept of multiple-deprivation is recently being applied to education and therefore it has not been significantly theorised in the context. There is a growing research interest involving schools in deprived contexts. The interest of study however has been in the area of school leadership and school improvement (Maringe & Moletsane 2015; Bengu & Myende 2016).

In the absence of immediate solutions to improve multiple-deprived conditions, a teacher training programme that takes cognisance that some of the graduates will work in multiple-deprived conditions might go a long way

in preparing the teachers. Fomunyam (2017) notes the vigorous calls to decolonise the higher education curriculum in South Africa and in response this study used a practical approach to develop a responsive pedagogical framework for pre-service teachers. The conditions of unmet needs which include some classroom practices that work to marginalise learners speak to the arrangements and availability of social justice. The calls to decolonise the curriculum allows local players to develop an education that is relevant to local contexts and are also social justice concerns. Ndlovu-Gatsheni (2013: 14) sums up decolonisation as follows, 'At the core of decoloniality is the agenda of shifting the geography and bibliography of knowledge – who generates knowledge and from where?' Therefore, in this paper I explore a pedagogical framework that empowers pre-service teachers to facilitate inquiry-based practical work in multiple-deprived environments. Using Sen's capability approach and social justice I look at how teachers can be empowered to ensure that learners in multiple deprived environments have access to inquiry-based practical work activities. In a similar way in which Greco, Skordis-Worrall, Mkandawire and Mills (2015) ask, 'what is a good life' in this paper I ask 'what is a good pedagogical framework to guide pre-service teachers' facilitation of inquiry-based practical work in multiple-deprived environments?' The following sub-questions have been addressed,

> (1) what are the pedagogical demands of facilitating inquiry-based practical work in multiple deprived environments; and
> (2) how do the pre-service teachers meet the pedagogical demands of facilitating inquiry-based practical work in multiple-deprived environments?

From the physical sciences syllabus, I used the chemistry component as a case study.

Social Justice and Capabilities for Multiple-deprived Science Classrooms

Multiple-deprived environments are characterised by a number of unmet social needs (Noble, Zembe, Wright & Avenell 2013). The realisation that people may experience a number of unmet needs has led to the re-conceptualisation of what constitutes poverty. Capellari and Jenkins (2006) propound that

poverty does not only imply lack of wealth or money but may also extent to the lack of other basic needs essential for the well-being of an individual or the society. Therefore, as I propound in this paper, the deficiencies or shortfalls in basic needs may encompass numerous dimensions in the society that include access to reform-oriented pedagogies. The unmet needs can be identified by means of suitable indicators for the purpose of multiple-deprivation characterisation. Greif (2012) alludes to the economic nature of multiple-deprivation in which individuals experience poverty and inequality. It can be observed that, the reference to poverty implies the nature of unmet need whilst the reference to inequality is suggestive to the context in which the poverty may be experienced. The issue of context begs to elucidate the conditions underlying the state of poverty. The issue of context in terms of equality allows the exploration of the state of justice in a society.

Social justice is defined in Ayala, Hage and Lantz (2011: 2795) as the 'fair and equitable distribution of power, resources, and obligations in society to all people, regardless of race or ethnicity, age, gender, ability status, sexual orientation, and religious or spiritual background'. The power, resources and obligations are referred to by Ratts (2010) as life goods that must be accessed equitably by all individuals in the society without discrimination. The idea of social justice is of immense value to progressive forces since it is an underlying principle of democratic societies (Ayala *et al.* 2011). The principles of social justice permeate all spheres in society including education.

In South Africa, the National Curriculum Statement (NCS) outlines principles that seek to address the context and the underlying forces that lead to conditions of multiple-deprivation and compromise the state of social justice. One of the guiding principles of the NCS highlights human rights, inclusivity, environmental and social justice in pursuit of equitable access and equality in society. The principle says, 'Human rights, inclusivity, environmental and social justice: infusing the principles and practices of social and environmental justice and human rights as defined in the Constitution of the Republic of South Africa. The National Curriculum Statement Grades 10 – 12 (General) is sensitive to issues of diversity such as poverty, inequality, race, gender, language, age, disability and other factors' (Department of Basic Education 2011). By addressing the issues of human rights, inclusivity, environmental and social justice, equitable access and equality, freedoms are made available to members of the society.

On the one hand, education may represent a dimension in society in

which individuals may experience states of multiple-deprivation and issues of social justice. On the other hand, education may be a tool to bring or deny social justice. Walker (2010: 156) says the following about education, 'Having the advantage of being educated affects the development and the expansion of other capabilities because an education capability expands human freedoms'. The implication is that it may not be sufficient to outline social justice expected outcomes through policies such as the NCS. Despite the well-meaning policies to ensure justice and poverty reduction, conditions of multiple-deprivation persist decades after the establishment of democratic dispensations (Tsakeni 2016).

One way to further understand the praxis issues in terms of policy implementation is to search for theories that permit further examination of how the multiple-deprived conditions and injustices come about. One such theory is the capability approach by Sen (1979). The capability theory focuses on the actual freedoms that individuals have to access social justice. The freedoms include political freedoms, social opportunities, economic facilities, transparency guarantees and protective securities. Applied to teacher preparation, physical sciences pre-service teachers are facilitators of freedoms through innovative instructional strategies. The freedoms include the education outcomes through reform-oriented approaches such as inquiry learning. Through inquiry learning, learners develop 21st century skills such as independent learning, knowledge generation, critical thinking, problem solving, creativity and teamwork among others. The pre-service teachers should enable learners in multiple-deprived environments to access pedagogical experiences as pronounced by underlying philosophies in science curriculums so that that can develop the capability to enjoy freedoms through equal access.

The capability theory redefines the goals of justice and poverty (multiple-deprivation) reduction. The theory explores the freedoms that the deprived society and individuals have in order to access and enjoy life goods. The enduring conditions of multiple-deprivation and the inequitable access in the wake of policies promoting justice and poverty reduction calls for lenses or frameworks that further support implementation efforts. Similarly, Lozano, Boni, Peris and Hueso (2012) critically analysed the competences approach from a capability lens and deduced some important points about teaching and learning in higher education. First, it is observed that unlike the competencies model, the capability approach results in a more integral, holistic and

transformative higher education curriculum since it is not constrained by pre-determined prescriptions. Second**,** through the capability approach higher education students should develop critical and reflective abilities. These abilities enable them to critically interpret and give meaning to aspects of their daily life which include not only their professional life. These abilities are referred to as 'functionings' in Lozano *et al.* (2012). Similarly, pre-service physical sciences teachers should develop 'functionings' to facilitate IBPW in different school contexts including multiple-deprived classrooms.

Methodology

This exploratory qualitative case study used at one South African university as a research site through convenience sampling techniques. Data were collected from two science teacher educators in the form of narratives. In addition, document analysis was conducted on the CAPS for physical sciences document. The document analysis only focused on the chemistry practical work component of the physical sciences syllabus. The use of only one component of physical sciences (chemistry) was to ensure the dependability (reliability) of the findings as opposed to the conflation of physics and chemistry as one discipline. In efforts to ensure credibility (validity) experts (lecturers who were qualified up to the PhD level) were used as study participants. The lecturers are referred to as Lecturer 1 and Lecturer 2 in the discussions. Furthermore, the development of a conceptual framework based on the capability approach and characteristics of multiple-deprived classrooms was another way to content validity of the findings.

The document analysis focused on the prescribed chemistry practical work activities for formal assessment. There are other types of practical work activities in the curriculum policy such as recommended practical work activities for informal assessment and more under the different topics. The choice of the prescribed practical work activities for analysis was considered most relevant based on their compelling nature for implementation. Since these practical work activities are set apart for formal assessment, it is expected that teachers will facilitate them in most physical sciences classrooms. Table 1 below shows how the document analysis through determining the pedagogical capability demands (functionings) of facilitating the practical work activities in multiple-deprived classrooms.

Table 1: The pedagogical capability demands in multiple-deprived classrooms

Practical work activity	Grade	Material demands	Equipment demands	Pedagogical capability demands
Heating and cooling curve of water	10	Water is readily available	Requires material capital for equipment to setup the apparatus	Re-designing of experimental procedures Finding alternatives to hands-on
Purification and quality of water	10	Samples of water from different sources can be obtained	Some of the experiments require material capital for equipment to setup the apparatus	Re-designing of experimental procedures Finding alternatives to hands-on
The effects of intermolecular forces: BP, MP, effectiveness as a solvent ….	11	Some household materials such as water, cooking oil, alcohol can be used	Some of the experiments require material capital for equipment to setup the apparatus	Use of locally available materials and substances Re-designing of experimental procedures Finding alternatives to hands-on
Exothermic and endothermic reactions (examples and application)	11	Some household materials such as water, white vinegar, baking soda, steel wool, Epsom salts	Requires thermometers as equipment capital	Use of locally available materials and substances Re-designing of experimental procedures

		and hydrogen peroxide can be used		Finding alternatives to hands-on
Preparation of esters	12	Requires materials capital	Requires material capital for equipment to setup the apparatus	Use of locally available materials and substances Re-designing of experimen tal procedures Finding alternatives to hands-on
Titration of oxalic acid against sodium hydroxide to determine concentration	12	Requires material capital	Requires material capital for equipment to setup the apparatus	Use of locally available materials and substances Re-designing of experimen-tal procedures Finding alternatives to hands-on

The narratives from the lecturers (who were the science teacher educators at the university) were elicited through one hour long semi-structured interviews. The lecturers were prompted to narrate how they prepare pre-service physical sciences teachers to facilitate practical work and inquiry-based practical work.

Data analysis

Data analysis was conducted through the process of thematic content analysis. Themes were built from the data in order to respond to the sub-research questions. The main research question was addressed by using the findings from the two sub-research questions through higher order analysis and interpretation processes of inferring and abstraction.

Findings

The findings are presented under four themes that emerged from the data. These themes are:

(1) pedagogical capability demands in multiple-deprived environments;
(2) developing content knowledge (CK) and pedagogical content knowledge (PCK) for the school curriculum practical work activities;
(3) assumption that all school contexts have laboratory facilities; and
(4) readiness of pre-service teachers to facilitate practical work.

Inquiry-based practical work was understood according to the interpretation of the specialists (the two science teacher educators). The inquiry through practical work was guided by the use of the steps of the scientific method which included process skills such as posing the question, conducting background research and hypothesising. Lecturer 1 refers to these skills as practical skills. These assertions could be gleaned from an interview excerpt below.

> **Lecturer 1:** On my part I also developed a worksheet on practical skills which teachers must teach the learners, they are basically your scientific method. So I put them on a worksheet for every demonstration or practical they do, they must go read and complete it as far as possible before they prepare for the experiment, meaning when they come to the laboratory when one has read the theory about what to do and so on, the method of doing the practical which must be done first and must engage why they do, why they do that first and then they come and the first thing I check if they have read. Then I check the checklist on which it must be completed on the aim and the title of the experiment, the investigative question and the application of variables, the hypothesis then the background research given the theory that informs the practicals [practical work]. Then the method must be clearly indicated, I always prefer them to write short sentences so that the sequence, in some experiments the sequence is critical that one should be before two and two before three and that's what happens.

Pedagogical Capability Demands in Multiple-deprived Environments

According to analysis grid in Table 1 above a number of pedagogical capability demands could be identified for the facilitation of inquiry-based practical work in multiple-deprived science classrooms. The assumption here is that classes in multiple-deprived environments do not have laboratory facilities, equipment and materials (Christie *et al.* 2017; Maringe *et al.* 2015). First, the pre-service teachers should be able to identify locally available materials for example household chemicals to replace some of the conventional laboratory materials and chemicals. Some of the household chemicals include baking soda, vinegar, natural indicators (turmeric water), table salt among others (Tsakeni 2018a). In some instances, it is very difficult to find replacements for some of the chemicals for example if the prescribed practical work activities specify chemicals to be used. Such is the case of the titration of oxalic acid by sodium hydroxide of a known concentration. Second, the pre-service should be able to redesign some of the experiment procedures that use conventional laboratory equipment and materials. Such is the case with experiments on water purification processes that include filtration. Filter papers can be replaced by sand filters example. Third, if the material and equipment demands cannot be met locally, then alternatives to hand-on activities should be explored. These include the use of information and communications technologies (ICTs) for example videos and virtual laboratories. The integration of ICTs in practical may however be a challenge in conditions of multiple-deprivation. In those cases, specially designed worksheets may be designed for simulated practical work activities. Such worksheets may include pictures of materials and measuring instruments for learners to take the readings. The approach is similar to the one used by the Zimbabwe Ordinary level physical science 5009 syllabus (Zimbabwe School Examinations Council, ZIMSEC 2013). Values of measurements taken prior may also be included so that the learners can represent them in graphs and charts to enable analysis and interpretation.

Developing CK and PCK on the CAPS Practical Work Activities (Competencies)

The two lecturers revealed that practical work was integral in the teaching and learning of science and therefore the instructional strategy was usually

integrated in the methods courses. Accordingly, in the methods courses the aim was to develop the pre-service CK on practical work and PCK for facilitating practical work. The emphasis put on practical work was deduced from the following interview excerpts.

> **Interviewer:** What can you say is the place of laboratory instruction during the initial science teacher training, the role of laboratory instruction and how is it important?
>
> **Lecturer 1:** I think it's very tricky, with me I'm even proposing that even before you teach the theory you do some laboratory work, either in a form of demonstration or where they actually do the practicals [practical work] or the experiment. But at this institution I think it is also acknowledged that it is important, if you look at the fact that we are teaching even in the laboratory and students come to the laboratory so that if there is anything that crops up you can be able to say for instance we will be talking about this and that, this is the thing if it is there, even it was not part of the initial plan but I find it very critical, very central. I think the laboratory instruction is very critical.

While Lecturer 1 alluded to the integration of practical through frequent demonstrations, Lecturer 2 mentioned how pre-service teachers practised how to facilitate practical work with learners invited from surrounding schools. The practice was revealed in the following interview excerpt.

> **Lecturer 2:** I want them when they teach that they must make sure that practical work is integrated into that and also their prescribed CAPS also forms part of their practicals. So we try to train them in every week we have a two-hour session, strictly for practical work only. So the students are practising the experiments and in some other instances we get students from the schools, we have a partnership with one of the secondary schools in QwaQwa so they come here and the students do the practicals for them. The teachers tell us which practicals they want to do and then the learners prepare them and do them in the presence of the students with the students.

Lecturer 1 seemed to use a different approach because the pre-service teachers

were made to practise how to conduct the practical work activities with the hope that they would learn how to facilitate the same activities for learners. This finding was gleaned from the interview excerpt below.

> **Lecturer 1:** Then they will do the experiments because they are few, I don't set their apparatus for them from their reading I only ask for certain things so that they take them up, so that they do the setup what do I do and where but I will support. If there are problems it is where I intervene like when you do this, it might not work, especially when risks are involved I don't wait. But I want them to know that it will not work if you go a different route, then you allow them to do the experiment and only for them to improve on it later.

The practical work activities were facilitated for the pre-service physical sciences teachers in order for them to develop CK and hopefully PCK for practical work.

Assumption that All School Contexts have Laboratory Facilities

It could be noted that as the science teacher educators worked with the pre-service teachers they prepared them in environments that have laboratory facilities and materials. Their aim seemed to encourage the pre-service teachers to gain the skills and knowledge to facilitate inquiry-based practical work in laboratory settings and be able to use the materials and equipment. Below is an extract from Lecturer 2 suggesting that teachers and pre-service teachers do not make full use of the materials and laboratory facilities.

> **Lecturer 2:** I wish when the students leave this place [university] and go and teach, I would want a product that will do well in the schools. Most of the schools around here when you visit them they do have labs however teachers do not make use of them and they make all sorts of excuses like laboratory work is time consuming, the lab is dangerous and learners are not safe, sometimes they say there are low facilities whereas the facilities are there.

Lecturer 1 explained that efforts were made to align the materials in the methods course laboratory with the materials found in schools. However, the

adaptations of the methods course laboratory was made on the assumption of availability of materials and equipment. The observations made here were gleaned from the interview excerpt below.

> **Lecturer 1:** First thing that I noted which I want to respond to is the fact that what we have in the laboratory here in the labs are what we see in schools. For instance, with the practicals on momentum and so on, here we use an air track but there are no air tracks at schools. So what I then did is to first go to the prescribed schedules, identify the experiments which are being done at schools and I bring them to the laboratory in other words I want to do them in this laboratory with the teachers or let the teachers do them, that's the first thing. What I do I would go to a school, where I have this access then I borrow their track and the trolley.

It could be noted that pre-service teachers were being prepared to function in environments in which practical work equipment and materials were available.

Readiness of Pre-service Teachers to Facilitate Practical Work

The lecturers did not seem to think that the some of the pre-service teachers would be well prepared for inquiry-based practical work facilitation when they complete teacher training. The pre-service teachers were reported to be struggling with aspects of the scientific method content knowledge such as identifying variables. Below are excerpts from the interview transcripts.

> **Interviewer:** So, if your students leave this place [university] can you be assured that they will be able to facilitate practical work activities? Is it possible to make a follow up on the students' progress once they reach the world of work?
>
> **Lecturer 1:** The challenges that pertains to this is content based for instance if you say to the students here is the practical and do the practical, maybe when you ask questions they must give you variables in a statement. Most of the time they give you devices, for instance they would say in the experiment where you have used the rate of dissolution as a function of temperature. They would say the glass beaker is a

> dependent variable, when you are actually talking about the amount of water in the glass which is bigger because you would have taken 500 ml in experiment A and 200ml in experiment B so what has varied is the millilitres of water and not the glass beaker or water. The water is not varied it is still H_2O, the amount the volume, so that comprehension of concepts becomes challenging

Lecturer 2 acknowledged that there are some experiments that the pre-service teachers found to be challenging. Below is an extract from the interview to support that the pre-service teachers did not have mastery of some of the content in the CAPS syllabus for physical sciences. He was responding to the same question above.

> **Lecturer 2:** No it is not possible but I encourage them as much as possible to do their best in the schools. Like in our case we only have two hours per week so it is not possible for them to do all the experiments, sometimes I select those students who I see are being challenged by the different experiments so that they can be used to such experiments, because some of these experiments are complex more than others. I make sure I choose the challenging experiments first and then come to the simple once for the students to do. For instance, electrical circuits are simple and then we have the others which are more complicated.
>
> **Interviewer:** How are they complicated, is it in their designs or in the content?
>
> **Lecturer 2:** In the content and how to design experiments. For instance, in Chemistry there are those experiments that are dealing with Le Chatelier's principle, it is interesting and it is not an easy one but it is quite popular with the examiners in grade 12. In most cases teachers run away from experiments like that and want the easy ones.

Lecturer 2 also singled out time-constraints as one of factors that prevented a complete coverage of all the practical work activities in the school syllabus. In addition, pre-service teachers also faced challenges when it to the designing of experiment procedures.

Discussion

The study set out to shape a pedagogical framework that could guide pre-service teachers to be functional in multiple-deprived classrooms when facilitating IBPW using high school chemistry as a case study. The study was premised on the assumptions that many science classrooms in South Africa are characterised by multiple-deprived conditions and that the lack of materials (Christie *et al.* 2007; Maringe *et al.* 2015) and that teacher inabilities to cope in multiple-deprived classrooms deny learners access to reform-oriented IBPW. However, the science laboratories at university in this study were not characterised by multiple-deprivation as far as materials and equipment are concerned. By implication, it was assumed that good science teachers for practical work facilitation should be exposed to ideal conditions in terms of the availability of materials and laboratory equipment. However, Lozano *et al.* (2015) assert that the capability approach enables higher education to be more holistic, integral and transformative.

Likewise, the training of physical sciences pre-service teachers for IBPW should empower them to function in any school context including multiple-deprived science classrooms such as rural areas. Since the multiple-deprived conditions continue to persist in some environments it is important for teacher training programmes to consider how to prepare teachers who are functional in those environments. According to the capability approach, the aim of reducing poverty (improving and enhancing life experiences) is to expand the freedoms that the poor have to enjoy the life goods (Alkire 2005). It may seem that the training of pre-service teachers for ideal conditions in terms of material and equipment availability is in fact working against learners in multiple-deprived classrooms. Pre-service teachers would not have developed 'functionings' to be effective in those environments. Based on the disjuncture between the pre-service teachers' experiences with IBPW during teacher training and the experiences they will have in multiple-deprived classrooms the study identified a number of pedagogical demands required by the high school chemistry in the case study. These pedagogical demands require particular pedagogical capabilities and 'functionings' on the part of the physical sciences pre-service teachers. The 'functionings' require the pre-service teachers to circumvent the risk posed by lack of materials and equipment to provide learners access to IBPW using a pedagogical capability developed in methods courses. First, in some practical work activities, the pre-

service teachers should develop the capability to adapt the chemistry curriculum by replacing recommended materials by locally and readily available materials. These materials may include household chemicals and materials which both the teachers and the learners can access. The pedagogical demand requires that the pre-service teachers identify materials which can be used to demonstrate the same scientific phenomena as the one intended in the chemistry curriculum. Second, for some practical work activities, the pre-service teachers would need to use the capability to redesign experimental procedures and apparatus setups. The capability would be required in cases where there are shortages of equipment and materials for apparatus setups. Third, pre-service teachers should have capabilities to find alternatives to practical work activities that offer similar authentic experiences. The finding of alternatives can be used for practical work activities in which the materials and equipment demands are very difficult to circumvent by redesigning experiment procedures and using locally available materials. These alternatives may include simulation-based assessments through the integration of ICTs and virtual laboratories in practical work activities (Harrison 2014). The alternatives to practical work include some worksheets that allow learners to take readings indicated in pictures of instruments, analyse data given in tables among other activities as part inquiry activities (ZIMSEC 2013).

In addition to the above mentioned pedagogical capabilities for pre-service teachers to be functional in multiple-deprived science classrooms the findings revealed that the pre-service also struggled with the general CK and PCK for IBPW in any context. It is likely to be very difficult for the pre-service teachers to develop the pedagogical 'functionings' for multiple-deprived environments if they have not mastered the CK and PCK for IBPW in ideal conditions. In the same way in which pre-service teachers develop PCK based on the acquired CK (Davidowitz & Potgieter 2016), it is argued in this study that pre-service teachers can only develop the pedagogical capabilities for practical work for multiple-deprived classrooms based on the general CK and PCK developed for ideal conditions. Similarly, Fomunyam (2017) explains that the higher education curriculum should be responsive to decolonisation calls. The implication is that curriculums should be responsive to the needs of the people for whom they are intended in order to break the cycle of colonialization. I propose that the traditional practical work activities in the science text books can be innovated in line with the decoloniality agenda and multiple-deprived environments. Rural areas are conducive as implementation

places for the decolonised science curriculum because they do not enjoy the conditions of sufficiency in the availability of equipment and materials for practical work instructional strategies.

Conclusion

In conclusion, the multiple-deprived classroom conditions coupled with the default settings of teacher training programmes to prepare science teachers for ideal classrooms (traditional practical work activities), work to deny learners access to IBPW and its outcomes (problem-solving, knowledge generation, collaboration, critical thinking, independent thinking and creativity among others). Pre-service teachers should be prepared to develop capabilities to be effective in multiple-deprived classrooms when facilitating IBPW. The capabilities should allow pre-service to exercise freedoms to circumvent the risks posed by multiple-deprived conditions to IBPW. This study recommends that the methods curriculum should include courses that prepare the pre-service teachers to develop 'functionings' for multiple-deprived science classrooms that are still very prevalent in South Africa.

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Indigenizing English in the ESL Classroom: Decolonizing Knowledge for Epistemic Access in Spaces of Rurality

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Abstract

The endeavour to impart sustainable knowledge in a postcolonial state is significantly hindered by legacies and cultures of subjectivity that are perpetuated long after declarations of independence. In the absence of the urban advantage, learners in educational institutions located in the margins tend to experience the heightened challenges of acquiring a sustainable education amid rurality. Learning English as a second language in former colonial spaces poses complex challenges for both the teacher and, especially, the learner due to the hegemony of English that thwarts epistemic access in various ways. This paper interrogates the possibilities of decolonizing the educational experience in the language classroom to maximize epistemic access through indigenizing English using translanguaging. The study engaged in a participatory observation of a purposively sampled first year class of university students doing an English for Specific Purposes course at the University of Fort Hare. While acknowledging the largely rural background of students in the sample, translanguaging was employed in the teaching of selected topics to measure content receptivity and student outcomes. The languages involved were English, isiXhosa and isiZulu. Through translang-uaging, students participated with enthusiasm during discussions. In the

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absence of a negative affective filter and cognitive linguistic monitor that is characteristic of learning and speaking in English, students registered positive learning outcomes in both spoken and written assignments. During learning activities, facilitative crosslinguistic influence was acknowledged and explained. The findings established that students were conscious of the discriminatory and xenophobic nuances of scripted curricula as enacted by educators. Therefore, an attempt to redress this injustice through inclusion of, and appreciation for indigenous languages during learning through indigenizing English affirms students' identity, resulting in positive learning outcomes for marginalized and student populations in spaces of rurality.

Keywords; English, hegemony, indigenous languages, rurality, translanguaging; crosslinguistic influence; English classroom

Introduction and Background

Imparting sustainable knowledge in postcolonial settings is hindered by legacies and cultures of subjectivity that are perpetuated long after declarations of independence. Education systems in many African nation states are victim to these toxic legacies. Learners in the rural settings, who have suffered injustices since the colonial era, have remained in the margins and marginalised in terms of epistemic access. Rural schools have continued to be subject to inadequate resources and poorly trained teachers (Maforah & Schulze 2012; Christie 2008). This presents a case of heightened challenges of acquiring a sustainable education, even when these learners present themselves for higher education in the universities. Research by Hurst (2017) and Zinn and Rodgers (2012) on colonial wounds and going beyond policy rhetoric, and The Soudien report (2008) on colonial practices embedded in learning and teaching illustrates these issues.

The curricula offered by higher educational institutions in South Africa do not adequately and practically address inequalities through pedagogic practices. Given the hegemony of English over indigenous languages, particularly in the rural classroom, there is an ever-urgent need to decolonize pedagogic practices; specifically, to align practice with the reality in the learning space. Central to that reality is the multilingual nature of the learning environment in South Africa (Prah 2007) and elsewhere (European Commission 2005; Cenoz and Gorter 2015; Portolés 2015). How do we

decolonize the classroom, especially where measures like using indigenous languages for instruction are perceived with suspicion and fear, and where learners look down on their home language? One of the practical ways is embracing diversity: the language challenge. We attempt, in this paper, to synergise Euro-Western and African indigenous vehicles of epistemic access to reverse the disadvantages of rurality.

The Problem of Epistemic Access

Research indicates that approximately 10,000 hours are spent on the acquisition of the mother tongue up to the age of five years. In South Africa, the language of learning at university is largely English, yet only about 10% of the population cite English as their home language. Already, there is discord as learners' home language is not the language of learning. This can dehumanize the learning experience (Childs 2016), especially in cases where the home language of the learners is not tolerated or is forbidden (Mda 2004; Probyn 2001). This is despite research indicating that advantages abound where learners are free to use their home language in the learning space (Heugh 2008; Simkins & Patterson 2005). How then can we facilitate access to knowledge in a case where the medium is not familiar? This is a huge question in Africa, which comprises multilingual, multicultural and multi-ethnic societies (Wolff 2017).

Colonial and apartheid history proved that language can be used to exclude, subjugate and oppress. These practices have continued in the postcolonial learning space (Prah 2007). Insisting on Standard English, and exclusive use of English in the classroom in spaces where the students' home language is, for example, isiXhosa or IsiZulu or SeSotho not only takes away the students' voice and power but also emasculates and silences a whole culture. It disempowers the learner (Alexander 2012). Singular elevation of English marginalises the indigenous knowledges that are embodied and embedded in languages sharing space with English. However, as Phaahla (2014) cautions, it is not a simple matter of eliminating English and replacing it with an indigenous language as this has the danger of replacing colonial monolingualism with African monolingualism; a practice that would obviously continue to subjugate other learners.

Since language equals identity, languaging is a process that both constructs and reflects the total person hence the need to acknowledge all the

languages in the learning space through indigenizing English. In this paper, we sought innovative trajectories that go beyond theory in an attempt to influence classroom practice. The fundamental stakeholder in our quest for decolonizing the classroom is the student. The study disrupts hegemonic discourses of English as the superstrate and indigenous languages as substrates, thus the crosslinguistic influence (CLI) discourse that gives credence to other Englishes and other ways of interpretation. The objective is to terminate practices around language use that perpetuate the narrative of oppression and exclusion. Learning English as a second language in former colonial spaces poses complex challenges for both the teacher and, especially, the learner, due to the hegemony of English that thwarts epistemic access in various ways. This paper interrogates the possibilities of decolonizing the educational experience in the language classroom to maximize epistemic access through indigenizing English using translanguaging.

Literature Review

While education reforms have been central to the political agendas of the post-colonial states in Africa (Phaahla 2014) for several decades now, not much has been achieved. Among other spheres, this lack of meaningful reform has manifested in the language sector, especially in relation to the question of language of instruction. English has remained the major, and in other instances the only, medium of instruction for many post-colonial Southern African states. In Zimbabwe it has retained the prestigious position of language of wider communication (Nhongo *et al.* 2017). In South Africa, English remains the language of assessment even in those institutions of higher learning that claim to have adopted indigenous African languages for classroom instruction. With dwindling economies in most of Africa, the need to migrate for labour issues has also reinforced the position of English in the education systems of these nation states. Parents even prefer that their children learn English and in English (Peresuh & Masuku 2002). This state of affairs mismatches the multilingual realities in Africa (Wolff 2017), especially in the postcolonial African learning spaces. Curriculum responsiveness (Slonimsky & Shalem 2006; Moll 2004) remains elusive in the multilingual learning space that the South African university is.

The continued debate on the best medium of instruction for learners in post-colonial spaces in Africa has been due to findings of studies that indicate

that learning in the mother tongue improves epistemic access (Web 2002; Prah 2002). The language question is not '…just about how we talk; it also impacts on *what we talk about*' (Wickham 2004:192). Thus, it impacts on knowledge systems and knowledge legitimation.

The persisting hegemony of English in former colonial spaces could easily be used to explain the undervaluing of knowledges from Africa and from Africans in South African Universities that Morreira (2015) points out. This is obviously the perpetuation of the injustices and inequalities of the pre-independence apartness regime, where knowledge systems are hierarchicalised, and African knowledges and knowledge systems always occupy the foot of the ladder in that hierarchy. Morreira (2015:5) indicates that in African universities, knowledge production and knowledge legitimation in the humanities are still significantly linked to knowledge producer identity; 'While in the natural sciences the social position of the scientist is (supposedly) irrelevant to the possibility of scientific insight, in the humanities the ideal knower is always constructed socially'. This has resulted in the reproduction of Eurocentrism in the academy (Ndlovu-Gatsheni 2013/2016), and, at the same time, a perpetual disregard of knowledges from non-Eurocentric and non-Anglo-American sources.

Black learners often find themselves considered deficient in institutions where apartheid legacies still persist (Morreira 2015; Smit 2012). Learners in rural high schools who later attend universities in rural locations face compounded challenges. This translates to a much lower percentage of black South African students graduating than their white counterparts in South African Universities, and three times higher the percentage of black students dropping out than the white students (Council for Higher Education 2012). The challenge is that what Bourdieu (1986) points out that beyond socio-economic background of learners there are learners who fall victim to negative institutional cultures seems to still hold true in the post-colonial university; keeping the colonial wounds discussed by Hurst (2016) fresh.

As Morreira (2015:4) indicates, institutions of higher learning in South Africa have failed to adapt 'their teaching and learning to the cultural resources that (such) students bring' to the learning space. The whole system disregards the knowledges that permeate the learning environment as long as they are not the norm. Rural settings are equipped with rural epistemologies that would enrich the classroom if utilised. The first logical step to address these instances of 'hermeneutic injustice' (Fricker 2007) is dealing with the language question.

Languaging plays a critical role in the legitimation of knowledges and knowledge systems, and, therefore, a central determinant of the success of epistemic access in the post-colonial education system.

This study explores the potential of translanguaging to change the state of affairs in the rural post-colonial classroom in South African universities. Translanguaging carries the promise of recognizing all the languages and linguistic resources presenting in the learning space; all the politically and historically situated sets of resources (Blommaert & Rampton 2011; Heller 2007). It promises to bring to an end a 'hidden curriculum that favors some and excludes others' (Gamede 2005:58). Language can be perceived as part of a multi-modal repertoire for meaning construction (McKinney 2017). Therefore, if it is a resource, we can exploit it to our advantage to redress past injustices through translanguaging, a socially just pedagogy (Hurst & Mona 2017) that questions the anglonormativity of higher education (Mckinney 2017) and humanizes the experiences of both the learners and teachers in the learning space (Childs 2016). Research (Heugh 2015; Garcia & Wei 2015; Probyn 2015) indicates that translanguaging has strategies for improving epistemological access, and does so in a pedagogically sensitive manner (Lewis, Jones and Baker 2012). The study disrupts the norm of English as a superstrate and embraces the contribution of crosslinguistic influence in African Englishes (Zhou 2015).

This paper argues for indigenization of English using translanguaging in the English language classroom as a humanizing methodology in the 21st century. It grapples with the question of how we can use crosslinguistic influence and translanguaging to humanize the learning experience for optimal epistemic access in spaces of rurality. We explore strategies that can be used in the classroom to nurture humanity while learning; to empower learners with a multiplicity of linguistic resources for epistemic access in the absence of the urban advantage.

Theoretical Framework

The study uses translanguaging as the theoretical lens to understand nuances of epistemic access. Translanguaging attempts to describe the ability of multilingual speakers to shuttle between languages, treating the diverse languages that form their repertoire as an integrated system (Canagarajah 2011). It involves planned use of the home languages of learners alongside the

official language of learning (Childs 2016) to boost access to content (Heugh 2015; Garcia & Wei 2015). The translanguaging pedagogic approach is in response to the language practices of the students, which include many dialects, accents, and high levels of multilingualism.

Translanguaging pedagogy goes beyond code switching to encourage students to cross between all known languages in multilingual classroom contexts (Makalela 2015); using code-meshing varieties and languages in essay writing (Canagarajah 2013); and developing 'concept glossaries' which stage the development of terms in African languages through translingual discussions (Madiba 2014). When students speak in their bilingual (even multilingual) homes, they use their full repertoire because no one is monitoring or hierarchizing their language practices. They simply use all of the features at their disposal. This is a common pattern of using language in all bilingual communities. Humanity can only be realised through repeated exposure to humanising practices that create an alternative narrative, construct a new identity and tell a new story. Translanguaging carries this potential to humanise the learning experience for both learners and instructors.

Methodology

The study used the qualitative approach. We engaged in a participatory observation of a purposively sampled first year class of university students doing an English for Specific Purposes course at the University of Fort Hare. The University of Fort Hare is located in Eastern Cape, South Africa. Eastern Cape is known as a rural province, and one of South Africa's poorest provinces (Matavire 2018). While acknowledging the largely rural background of students in the sample, translanguaging was employed in the teaching of selected topics to measure content receptivity and student outcomes. The languages involved were isiZulu, isiXhosa and English. The dominant language of learning at the University of Fort Hare is English while the dominant home language of the learners is isiXhosa. The other Southern African languages that were not part of the sampling but are significantly available in the learning environment are Afrikaans, SeSotho, Northern isiNdebele and Shona. The ESP class in the sample was a first year class of 150 students split into manageable groups of 50 for purposes of the study. Data was collected over a period of two months in the second semester of 2017. Six lectures were observed with two of the authors also participating in activities.

The topics of focus were all centred on academic writing. The choice of academic writing as the overarching theme was prompted by the reality that university education is hinged on academic writing. However differently we may categorize and compartmentalize knowledges and the mode of their production, academia brings it all together through accountability and responsibility of the written report that presents, details and sums it all up for public consumption. It is, therefore, inevitably important that a student acquires the fundamentals of writing for them to survive and succeed in tertiary education. With that understanding in mind, academic writing was broken into the following; Writing an introduction, argumentation, your voice versus authorities and concluding an academic essay.

As put forward by Zhou (2015), English is indigenized by being allowed to express Zimbabwean and African identities and ideologies. According to Constant and Zimmerman (2007), ethnic identity is what makes a group of individuals different or the same in comparison to other groups. The expression of one's identity is key to self-worth that facilitates positive learning outcomes in the classroom. Two issues prompted our choice of sample for the exploration of the concept of indigenizing English through the teaching and learning of academic writing. First, the language classroom in the South African context is a melting pot of several languages owing to the multilingual nature of university campuses and classrooms by extension. Second, the English for Specific Purposes course is a special course that is underpinned by contextualization of all variables that congregate in the execution of learning and teaching. In that regard, a brief description of English for Specific Purposes as a course is useful in the justification of the methodology with particular reference to sample and data collection instruments used.

Given the currency of English as an international language, there is an ever-increasing demand for the English for Specific Purposes (ESP) course in universities. The objective is to equip students from different fields with requisite knowledge and skills for successful global interaction and participation. Early studies into ESP have defined it as a broad and flexible discipline with specific objectives and purposes that may vary from academic, professional to scientific (Robinson 1980). Further, since its foundation, ESP has been approached as the teaching of English for utilitarian purposes (Mackay & Mountford 1978), an objective that directly echoes the global utility and functionality of English stated earlier.

The relevance of ESP to the foregoing inquiry into indigenizing Eng-

lish in the classroom can be sufficiently highlighted and substantiated by reference to Hadley's (2006) argumentation that 'the key to teaching ESP is to focus on the 'S' for Specific'. While general English Language Teaching (ELT) focuses on universal and broad ranging aspects of English, ESP is concerned with specialized, contextualized language and practice. In conceptualizing how English can be indigenized in the classroom, we constructed what we named 'The S Matrix' derived from the S in ESP.

The S Matrix is a model illustration of the classroom environment in which six specific and specialized elements interact continuously with each other as a prelude and prerequisite for successful learning and teaching. All six elements are prefixed by the focus terms *specific* and *specialized*. In this case, the students are coming from a rural background in which rurality underpins their cognition. Their home language is an indigenous African language spoken with the pride that is characteristic of rural communities that have not been adulterated by urban individualism and pretence. Even the manner in which they speak or write English is not grounded in Anglonormative standards. There is significant crosslinguistic influence that points to rurality in the phonological, lexical and semantic structure and expression of their English, thus, making it a South African variety of English.

The S Matrix

Specific Students	Specialised Instructional Material
Specific Context	Specialised Language
Specific Content	Specialised Contextualised Pedagogy

The S Matrix revolves around tailor making instruction according to the needs of the critical stakeholder in the learning process: the learner. As illustrated above, The S Matrix is underpinned by the specificity of student, context and content. The resulting expectation and experience is to customize instruction, language and methodology to suit the specific student in their particular

context. The environment of the learner, therefore, including their language, is what prompted the choice of the ESP classroom as a possible and practical site for indigenizing English as it lends itself well to the concept of translanguaging and multilanguaging. To avoid teaching English, to use Long's (2005) words, for no purpose or for other people's purposes, it is practical to aim for indigenizing English to facilitate epistemic access. The danger with ignoring indigenous nuances and idiosyncrasies that consistently show up in English in multilingual contexts as crosslinguistic influence (Zhou 2015) is that you have to either dismiss them with contempt or explain their facilitative nature if any, and further state why you cannot use them. Both alternatives converge on contempt for indigenous languages, a situation that this paper is aimed at eradicating. Indigenizing English implies that all facilitative CLI is accepted and used to complete the speaker's repertoire for expression of thought.

Discussion

Given that ESP is a learner-centred approach (Dudley-Evans & St. John 1998) our collection of data focused on the kind of data whose analysis shed light on individual learners, their differences as well as their specific linguistic and non-linguistic needs vis-à-vis the language of instruction. Through translanguaging, students participated with enthusiasm during discussions. In the absence of a negative affective filter and cognitive linguistic monitor that is characteristic of learning and speaking exclusively in English, students achieved positive learning outcomes as evidenced by oral and written assignments following class discussions.

As indicated earlier in the literature, the problem of epistemic access stems from the pedagogic practices in multilingual settings. When we look at the classroom situation, we often encounter a disconnect between the learning context, the learners and the learning content. This difficult situation is further complicated by introducing the language question into the mix of complex variables that are already discordant. This is the reason we employed The S Matrix in preparation and execution of all tasks regarding the academic writing topics, namely writing an introduction, argumentation, your voice versus authorities and concluding an academic essay.

Following exposition and task guidelines, most of the work was done in groups to allow students to own the learning experience. Presentations of group tasks were alternated among the students in order to give voice to all

within the group. Due to the rural background of the majority of the first years, codeswitching between isiXhosa and English was frequent in the discussions. Translation from isiXhosa to English was also engaged in; in some cases, the lecturer was asked to assist with vocabulary. Students presented freely with enthusiasm. The rigidity, hesitation and resentment that usually accompanies exclusive participation in English was absent. All responses were discussed exhaustively in all the languages of the group members prior to presentation. Turn-taking in presentations was a healthy option given that individuals coming from a history of subjugation are ever conscious of subtle innuendoes of dominance, whether personal, group, cultural or linguistic. Students are one group who are intricately linked to the continuous expression of dominance through scripted curricula that is packaged in colonial terms. While a shift from such curricula cannot be a guaranteed overnight job, pedagogic practices such as translanguaging have the capacity to disrupt the negative stream and continuity of hegemonic practices while paving way for more humane pedagogies.

Indigenized Lexical Items

To facilitate the participation of every member of the group, codeswitching and translation were used. The objective was to ensure that every member of the group had fully understood the task and, therefore, fully participated in finding the solution. During group tasks, it emerged that the choice and use of lexical items in multilingual contexts is governed by the African pragmatic context.

Students' use of lexical items in English as an additional language depends on their home language. Lexical choices are not dependent on Anglo-normative paradigms though English has its foundations in England. Once English is spoken in an African linguistic situation surrounded by Bantu languages, it inevitably adopts the phonological, semantic and pragmatic features of its environment. For instance, as a result of semantic generalisation, the lexical item *school* is used to refer to all educational institutions including a technical college and a university. *Mother* is used to refer to any respected or elderly woman or even a female lecturer. *Thing* is used to refer to every conceivable object or concept whose explication is beyond immediate cognitive and linguistic grasp; it could be an issue/ problem/ concept. The lexical item *child* is used in place of learner or student. Kinship terms such as

brother and *sister* can be integrated in an academic argument on where *brother* is any male and *sister* is any female. It is only when read in the context of South African communal life and Ubuntu ethos that one can understand such argumentation as not wrong but unique and rich as it reflects a particular worldview. This distinct choice and use of lexical items extends to use of conjunctions and discourse markers, as well as hedging and argumentation. Once guided on the correct use of these terms and their appropriate contexts, students feel confident to speak and write authentically. When they integrate aspects of their identity in speech and in writing, students feel that they are representing their authentic selves rather than acting up roles that they can hardly sustain in the brief lecture slot let alone for a lifetime career.

The various lexical, semantic, pragmatic examples that emerged during discussions and presentations confirmed that multilingual ESL students have an extensive lexicon acquired and learned during the SLA process. They compartmentalize vocabulary according to culture and context of socialization. Complex cognitive processes manifest as the selection and preference of certain lexical items in the learner's linguistic repertoire. Ignoring these realities thwarts epistemic access. Therefore, there is a need to appreciate English terms used in an indigenous sense, this one aspect in the development of South African English.

Conclusion & Recommendations

It is axiomatic that students in rural settings find their academic courses significantly difficult even though they actually have the background and intellectual ability to handle these courses. The weakest link in this instance is language. While rurality is not a disadvantage, it presents a contemporary marginalisation akin to the social exclusion reminiscent of historical marginalisation under racial subjugation. Therefore, whether English is learnt for academic purposes in pre-occupational circumstances or it is learnt for occupational purposes in post-academic contexts, we posit that indigenization of English significantly facilitates epistemic access to counter rurality in two broad ways. First, allowing the English classroom to be a translanguagable site in itself frees students from the constraints of a strictly Anglo-normative approach to the teaching and learning of English language. The exclusive use of English in the learning of English itself or other courses is not only stifling, but has undercurrents of discrimination and covert oppression. These

assumptions are of significance given that we cannot separate an individual from their culture and language. The three form an inseparable unit that defines one's identity. Therefore, to exclude one's language is to dismiss the speakers of that language and their culture by extension and implication.

Anglo-normative approaches dehumanize, alienate and further subjugate learners. Indigenizing English opens up a multiplicity of possibilities for decolonizing the classroom for positive learning outcomes. Students were conscious of the discriminatory and xenophobic nuances of scripted curricula as enacted by educators. Therefore, an attempt to redress this injustice through appreciation for indigenous languages during learning affirms students' identity resulting in positive learning outcomes for marginalized student populations. There is an urgent need for educators to create dialogic learning spaces in which all languages interface to facilitate epistemic access. There is further need to acknowledge crosslinguistic influence and the existence of local varieties of English through acknowledging crosslinguistic influence (CLI). Translanguaging can be embedded in the classroom without compromising the fundamental academic curriculum given that language is key to epistemic access. While our study confirmed that students participate actively in translanguaging classrooms where the use of English as a local variety is acceptable, there is need for further research into rural epistemologies with reference to language use. Further interrogation of performance in English medium courses and subjects is necessary since the objective is not to come top of the English class but rather to perform competently in subsequent courses taught in English regardless of geographical location. This would be the ultimate confirmation of epistemic access. Findings of this study should be interpreted as indicating a gap on innovation in the learning of English alongside indigenous languages. In summation, the global demand for high-level proficiency in English in various fora is indicative of the significant role of English in the global economy hence the need for innovative contextualised pedagogies that address the challenges imposed by rurality on students.

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Creating Decolonial Sustainable Learning Environments for the Fourth Industrial Revolution in the Rural and Urban Higher Education Contexts: A Study of Inclusive Management Strategies

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Abstract

This paper explores some decolonial management strategies in four Higher Education Institutions in South Africa that seem suitable for the creation of Sustainable Learning Environments (SuLE), in anticipation of, and in the context of the Fourth Industrial Revolution (4IR). These strategies are considered to be decolonial in that they are inclusive and valorise other forms of managing beyond those that are conventional and western in orientation. Furthermore, they validate the local experience and the particularity of the individuals and institutions under scrutiny. There are currently demands for high levels of technological acumen within the higher education sector, hence the labour markets. However, there are those workers and students in the Higher Education sector who are at the middle to lower end of the performance levels and who may be rendered superfluous and at risk of failure and dropping out, if they are unable to access these high-level skills and expertise. These tend to be left out as their institutions and societies advance technologically, resulting in increased inequality, unemployment rates, poverty levels and a subsequent deepening of the colonial arrangement of society. In order to address these challenges, there is a need for institutions to adopt management

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strategies that can create those sustainable learning environments in which all can succeed, regardless of their differences, thereby allowing for the transformation of society towards the desired decolonial state. This paper reports on how such management strategies are implemented in two urban, and two rural higher education contexts, respectively. In both categories of institutions; the physical, the physiological, the psychological and cultural modes of being human are used as bases for inclusive and decolonial management strategies which ensure success of all in the 4IR. These seem to give even more workers and students epistemic access to knowledge forms demanded in the 4IR era, irrespective of the geographical or socio-economic location of the institution, thereby ensuring cognitive justice for an even greater number of individuals. These strategies both advance and are anchored in complex problem solving, critical thinking, creativity, people management, coordination with others, emotional intelligence, judgement and decision making, service orientation, negotiation and cognitive flexibility – all of which constitute the context for a decolonial condition.

Keywords*:* Decoloniality, the Fourth Industrial Revolution, Sustainable Learning Environments, Management Strategies, Epistemic Access and Cognitive Justice.

Introduction

This paper explores decolonial management strategies suitable for the creation of Sustainable Learning Environments at Higher Education institutions in the context of the Fourth Industrial Revolution. Management strategies generally give managers ideas and tools for strategic planning, implementation and control that are suitable for the specific organizational conditions, such as those required in higher education institutions (Marsh 2012). Strategies are not fixed and they change accordingly in response to the challenges and the objectives of the institution (Head & Alford 2015:721). The conventional dominant strategies used in many institutions include rewards, job design and descriptt-ion, setting of and management by objectives (MBO), decision-making, delegation, implementation, monitoring and evaluation of such, as well as reporting (Shamim, Cang, Yu & Li 2017). However, due to the potential disruption likely to be caused to these 'neat' conventional management strategies as a result of

the Fourth Industrial Revolution (4IR), improvements aligned with the technological advances are required (Schwab 2015). This looming evolution is forcing different institutions to re-examine how they operate in order to function optimally in the context of the 4IR.

In higher education institutions, managers who are interested in the creation of the decolonial condition need to understand the changing 4IR environment in order to implement relevant and compatible strategies (Morreira 2017). According to World Economic Forum report (Mitch 2018) the ten most needed skills that should be developed by the institutions of higher learning in particular in 2020 are: complex problem solving, critical thinking, creativity, people management, coordination with others, emotional intelligence, judgement and decision making, service orientation, negotiation and cognitive flexibility. Even though these skills may also have been previously targeted by the conventional management strategies, they now have to be upgraded, in order to assist managers in the decolonial process so that qualitative excellence can be achieved in this complex context.

The Fourth Industrial Revolution or Industrie 4.0 (4IR) represents the infinite ability of humankind to store massive amounts of information and data, as well as process them accurately at mind-boggling speeds (Ross 2017). Industrie 4.0 is the era of Artificial Intelligence in which these data are transported over huge distances within seconds amongst an infinite number of users. This period has prompted talk about the Industrial Internet of Things (IIoT) to capture these developments and achievements. According to Schwab (2017), Industrie 4.0 is described as the Industrial Internet of Things (IIoT) where billions of people are simultaneously connected, for example through social media, while performing an unlimited number of diverse activities (Schuster, Groß, Vossen, Richert & Jeschke 2016). Through this IIoT, an infinite number of messages, services and products are moved across vast distances, connecting people ubiquitously and infinitely (Weinman & Euchner 2015). It is the era of robotics, of automation, and of drone technology, when even cars can drive themselves (Surden & Williams 2016).

This 4IR, however, comes with both threats and opportunities. The main threat to many managers in higher education is to ensure that workers and students possess requisite knowledges, skills and competences to enable them to transition with ease to the highest levels of technological strata in their jobs (Jankowski and Marshall 2017). This is what we understand to be a decolonial condition in this paper. When organisations and institutions do not manage this

transition effectively this might result in greater rates of unemployment, job losses, subsequent poverty and social inequality increases (Mitch 2018). On the other hand, the main opportunity created by this revolution is the potential to raise global income levels and improve the standard of living for the majority of people across the globe (Schwab 2017). Higher education institutions are faced with the responsibility of providing quality education in order to ensure that their graduates are able to constitute a pool of talent in the era of Industry 4.0 (Jankowski & Marshall 2017). For this to happen, the managers of such institutions must create and implement the strategies that ensure the creation of Decolonial Sustainable Learning Environments.

Decolonial Sustainable Learning Environments are those learning contexts, opportunities and spaces in which quality teaching, learning, curriculum and governance of the education enterprise are enabled (Le Blanc 2015). This concept is derived from the United Nations' 17 Sustainable Development Goals (SDGs) dating from 2015 to 2030. The 17 SDGs, and various learning theories, jointly validate that the value of one's environment ensures quality education (Hajer, Nilson, Raworth, Bakker, Berkhout, de Boer & Kok 2015). The argument is that one's environment or context is as important in determining the level of one's learning, as one's genetic make-up (Weiner 2012; Kagan 2018). Therefore, once these contexts are established, they provide the opportunity for those who are learning within them, to function with ease in the destined environment. In the Fourth Industrial Revolution, creating such environments would, however, require management strategies to be in place so that challenges such as greater inequality, hence colonisation, can be circumvented. Increasing the separation between low-skill/low-pay on the one hand and the high-skill/high-pay section of the work force as described above, is definitely going to heighten social tensions and colonial social arrangements (Killian & Agathangelou 2016). Therefore, it is imperative that different stakeholders, including in the higher education institutions, collaborate to embrace 4IR and respond to this challenge accordingly. Higher education institutions are leaders in knowledge creation, and they are the major role players in ensuring that quality decolonial education is realised (Khoo 2015). Its managers are thus required to design and implement strategies that will ensure that the education system provides the curricula and governance contexts that meet current and future needs of the people (Govender & Reddy 2019).

From the above premise, it seems obvious that the 4IR cannot be

avoided but that various institutions have to prepare thoroughly in order to balance the cost and benefits thereof (Mitch 2018). These institutions are required to understand the changing environment accordingly so that they are able to provide compatible strategies to survive in this new era. Managers at these institutions need to design strategies that will ensure that their institutions are willing and ready to provide the quality education systems equipped to tackle the transition ahead (Khoo 2015). These institutions as leaders need to provide curriculum that meets the current and future needs of all. Based on the above this paper therefore aims at exploring management strategies suitable for the creation of Decolonial Sustainable Learning Environments at Higher Education institutions in the context of the 4IR. The objectives of this study are therefore to understand how in both categories of institutions, the physical, physiological, psychological and cultural modes of being human are used as bases for inclusive management strategies that ensure success of all in the 4IR.

Background

Higher education as the leader in knowledge creation and dissemination cannot ignore responding to the challenges referred to above. The sector has to create highly advanced 4IR knowledge forms to ensure that 'the technologically enabled' exploit their potential optimally. However, managing the creation and dissemination of such knowledge forms comes with its unique set of challenges. This applies mainly in the rural higher education context, for example, where 4IR knowledge forms might be rare to find and complex to design, given the deep digital divide between the rural and the urban environments, especially in South Africa. For an institution to be able to embrace and benefit optimally from the 4IR, its management has to create conditions for full implementation and utilisation of the digital technologies that currently are still not as widely found or occurring in many rural Higher Education institutions. For example, many universities in rural contexts still manually manage among others their data on enrolments, funding, research output, evaluation of modules and staff, peer system in recruitment, promotions, intellectual property protection, incentives and facilities for staff and infrastructure (Penprase 2018).

On the other hand, for the mainly urban universities that have access to facilities and resources to advance the 4IR knowledge forms, the challenges

might include managing large data sets in a safe and secure manner. Within these large concentrated data sets reside the most vital and confidential individual and institutional information. Thus, should the system be vulnerable to hackers and attackers, the security of the workers and students could be endangered and they could be negatively affected (Tien 2013). Access and information security becomes a challenge when the accuracy, credibility, reliability and consistency of data within and across the institution is jeopardised due to tampering by hackers. This could also affect the morale of staff who may lack the expertise to manage such unreliable large data (Floridi 2014).

The other challenge might be the limited access to digital devices (Floridi 2014), mainly at rural universities. The very basic resources like computers, smartphones and laptops are still not adequately available in some of the rural higher education institution. This poses a serious barrier for the university community who claim to be ready for the 4IR (Mahenge & Sanga 2016). The supply of electricity is at times not reliable. This indicates that, in some instances, these institutions may not yet have surpassed the second and the 3IRs. Consequently, this impacts negatively on transformation towards the decolonial condition and the quality of education, because it limits access to knowledge on the side of both the students and workers (Warner 2016; Lake & Pushchak 2007). Furthermore, how do they prepare for classes in terms of research? How do they access other information that can be used to supplement their prescribed material or guides? The same goes for the managers who are supposed to manage from any location. The question is: if they do not have up-to-date digital devices and accompanying software, how can 4IR be implemented effectively? The fact is that they are then forced to rely on manual processes rather than having the advantage of doing things ubiquitously.

All these challenges lead to the deepening of inequalities hence colonisation and lack of access to requisite knowledge for the university community as a whole. This in turn violates the Constitution's Clause number 16 (1) (b) of 1996 that states that, it is every citizen's right to have access to information (Mbebe 2017). Furthermore, the lack of knowledge by academics (and/or workers) is directly linked to the students' poor success rate in the public Higher Education system in particular (Warner 2016). This is also linked to the workers' job dissatisfaction and levels of attrition. It should be understood that when such conditions prevail, it is important that managers should work hard to ensure that the higher education community in their institution is also able to enjoy the benefits of the 4IR.

Regardless of the many concerns about the security of large data sets in many urban- based Higher Education institutions, these are still valuable to assist in the strategic planning as well as in tailoring services accordingly (Marcus 2015). World Economic Forum (Schwab 2017) and many government departments have made many calls for managers to increase control over how data are managed. This was supposed to have spared many institutions the unpleasant incidents of hacking and more. However, more needs to be done so that the context of each institution is taken into cognisance in order to determine the kind of intervention needed to prepare managers. Once managers are prepared, they will be more ready to embrace uncertainty, ambiguity and risk presented in the 4IR. As digital communications become ubiquitous, data will rule in a world where nearly everyone and everything is connected in real time (Schwab 2017).

The other issue of concern is the lack of access to digital devices. China has been the leader in technologies where many of their institutions are empowered with the Artificial Intelligence-powered chat-box that can communicate with students and workers and can provide some responses to their queries and questions (Wenger 2014; Warner 2016). The above demonstrated how smart devices reduce dependency on the conventional setup of human-to-human contact and in return save time and other costs to the institutions. South Africa has tried to introduce blended learning at all levels of the educational system through the e-learning policy where teaching and learning would occur ubiquitously (Camilleri & Camilleri 2017). Teachers and lecturers were supposed to post interactive materials on Blackboard and/or Moodle to be accessed and used by students to do assignments, learn and to do assessment tasks and so on. e-Human Resource Management (e-HRM) system on the other hand was also well planned but the implementation of blended learning and e-HR Management have been a challenge to many rural Higher Education institutions that lack the right tools (Parry 2011).

Some donor organisations have provided digital devices and training to many rural Higher Education institutions (Li, Zhu & Yang 2012). The main concern in some instances has been resistance by some staff and students to accept the use of new and advanced technologies in the place of the manual way of doing things (Bovill, Cook-Sather, Felten, Millard & Moore-Cherry 2016). However, in spite of all the claims and the blame game, one thing remains constant, and that is that; there is limited access to cutting edge knowledge despite all the interventions made as a result of problems with

appropriate devices and software. There is an urgent need to support Higher Education institutions, especially those in the rural settings in order for them to prepare for the looming 4IR. In order for this preparation to take place there are certain conditions that need to be established. For example, supportive physical, physiological, psychological and socio-cultural environments have to be created, among others (Dallaire, Giguère, Émond & Chaib-Draa 2014; Gabarro 2014). Government departments and the higher education institutions need to be knowledgeable about 4IR so that they are able to take advantage of the benefits, mitigate the challenges thereof, and defend progress they make, effectively. The above challenge management to design and implement, clear and appropriate strategies.

Conceptual Framework and Literature Review

As mentioned earlier, the conventional management strategies, especially in the Fourth Industrial Revolution tend to focus on planning, implementing, control, monitoring and feedback for guidance and achievement of high-level goals and targets (Marsh 2012). Such management strategies seem not to promote economic development of all, or advancement of environmental sustainability and social inclusivity as the centrepiece of its activities (Shultz 2018). in keeping with the demands of a decolonial condition. The focus seems always to be on gaining competitive advantage in the cut-throat rat race of technological designs and implementation (Bovill *et al.* 2016). The main goal is to be better than the rest, to design and create better plans, and advanced gadgets and practices in order to generate as much income as possible (Lee, Wong, Intarakumnerd & Limapornvanich 2019). We see this trend being firmly entrenched even at universities that are now managed as businesses in order to increase income, based on the same economic principles and models - geared towards maximising profits at all costs (Lee *et al.* 2019).

This article explores the strategy for effective management that deviates from the above and advances the principles for equitable and inclusive economic development in an environmentally sustainable manner, especially in this era of the decolonial and the 4IR. Such a strategy focuses on total personhood as the starting point. It recognises that a person's physical aspects are very important and have to be taken into consideration when creating sustainable learning environments in the 4IR (Van den Berg 1971; Robbins 2018). The proposed management strategies go to the crux of what it means to

be human. Van den Berg's theory argues that as humans we are made up of our corporeal bodies with which we present ourselves to the world and others (Smith 2016). The physical aspects enable us to occupy space and perform activities in the realm of time and space. Nobody can be described as human if this aspect is missing. This physical corporeality is the site of identity and its construction (Mahlomaholo 2015). Our learning and management thereof play themselves out on our bodies. Therefore, when management strategies are designed and implemented, the differences in one's physical aspects and corporeality to others become the starting point such that one's physical limitations and strong points become the framework for an effective strategy. Such management strategies customise all efforts to enable one to perform and succeed like everybody else in the complex era of the decolonial 4IR (Kwak, Kim, Kim, Shin & Cho 2013).

The same care is also expended on the physiological dimension. Other than presenting ourselves as this body, this physical being and corporeality only, Van den Berg argues that we also present ourselves as these *growing beings* (Kwak *et al.* 2013). We start off as tiny embryos but in the majority of instances we grow into being strong and capable adults. Our potentiality to grow is what defines our identities. This potentiality is fluid and amenable to change, and dynamism. Thus, effective management takes this aspect seriously and puts it into sharp focus (Smith 2016) Effective management strategies capitalize on this aspect. It valorises it so as to ensure that it is managed effectively for optimum positive outcomes (Smith 2016). Therefore, management takes into consideration the growth and developmental opportunities of all in equal measure. The management strategies enable students and staff to define their goals and targets and use services and digital devices of the decolonial 4IR to achieve such.

At the next plane, our identity is influenced by how we experience this movement of growth, that is: the e-motion (Christou 2011). How we make sense of who we are in the world is one of the most important aspects that craft our psychological make-up (Marks 2014). Effective management should enable students, workers and all to feel comfortable, wanted, and valued in order for them to scale the highest levels of achievement with success. Our psychological make-up constitutes one of the most complex modes of being for any human (Mahlomaholo 2015). It determines how we feel about the world and ourselves. It is the dimension that grounds us, that constitutes who we are and how we ultimately express our identity as fluid and not just fixed

and complete. It is this aspect that enables humans to carry their being from one level to the next in one's head (self-concept/self-esteem) (Marks 2014). Effective management takes this aspect as the basis for engagement and transformation. Therefore, the proposed management strategies are the ones that enables the institutional community to be psychologically comfortable, to find full meaning in participating in the 4IR fully. This is about management that inspires confidence, that enable its community to advance in the design and use of large data sets and digital devices that are accurate, reliable and accelerated. Co-workers and others in the institution are not seen as competitors, but as facilitators and collaborators to enhance the achievements of the institutional community beyond what is individually possible.

The highest aspect of being human is the socio-cultural one. This is the ability to be with others, to define oneself in relation to others in the world. This typically human aspect enables us to interact for the valorisation of self and others (Van den Berg 1971; Robbins 2018). It is an aspect that enables humans to know good from evil (juridical), to know what is right from wrong (juridical), to know how to be disciplined and be ethical and appreciate beauty in all its forms (aesthetics), to believe (pistical), to act economically, and to care (Harter 2015). It is about being conscious about how inequality, poverty and unemployment constitute evils that have to be addressed and attacked. The socio-cultural dimension represents the highest level of being human (Glăveanu 2010; Seamon 2016). It is about having a past, a present and a future (historico-cultural). It is about the ability to self-reflect and to be able to stand outside of oneself and be critical about oneself and one's actions. Therefore, the socio-cultural constitutes the ultimate ontological basis.

Effective management strategies use the above as the basis for creating conditions for the success of all. Furthermore, effective management involves implementing cognitive justice approaches that take every student and staff member's station in life as a valid starting point and then provides appropriate scaffolding mechanisms to bring out the best in all of them (Andreotti, Ahenakew & Cooper 2011). It is about valuing and valorising all and believing that, with appropriate support, they all can achieve beyond anybody's wildest expectations. This is about designing a management strategy capable of achieving the above for all (Brydon 2012). Cognitive justice is also being understood as a call for making other ways of knowing visible. It also includes knowledge of the marginalized and those defeated by history to regain importance and worth. It implies the diversity of the knowledge and the

equality of knowers. It is about opening up the epistemic access to all regardless of their backgrounds (Anderson 2012). This implies, believing that in the 4IR, every citizen is a scientist and each person is a potential expert who can participate fully and meaningfully therein.

Therefore, this management strategy takes into consideration all cultural constructions and persuasions as both the starting point and the goal. Participation in the 4IR is managed so as to enhance and intensify self-awareness. It actually broadens and extends identify construction and its formations to more advanced modes in the context of the IIoT (Tondi 2019). These new management strategies in the 4IR are about broadening these identities such that nobody is excluded. Cultural dimension includes focus on the socio-economic wellbeing of all. It is about faith; aesthetics and the ethics of being that inform customisation of our learning and performance to the highest standards of 4IR (Mdluli & Makhupe 2017).

All the above confirm a management strategy, which is unique, personal, inclusive and respectful of all institutional communities to become and to achieve. It is a management strategy empathetic to differentials presented by all, irrespective of their station in life. Each student and staff's level of cognitive functioning in the context of their unique physical, physiological, psychological and socio-cultural conditions becomes the basis for mediating successful participation in the decolonial 4IR. No effort is spared to enable all to move towards the highest levels demanded with regard to knowledge and skills bases in this complex era.

Methodology and Design

The data presented and analysed in this paper arise from the everyday interactions with practitioners and practices at the four universities mentioned earlier. For purposes of this paper we ensured anonymity of the institutions and that of the people with whom we interacted. These individuals shared the intentions of their actions in their usual everyday activities. They also shared their reflections generously in focus group discussions per institution. On our part we attempted at all times to observe and abide by the highest research ethical standards. We obtained permission to use the information they shared with us with the promise that their identities would not be revealed and that their integrity would be protected at all times.

More data also come from documents which are in the public domain

to which we applied Critical Discourse Analysis - CDA (Van Dijk 2015) techniques in order to make sense of how effective management strategies were used to create decolonial sustainable learning environments in the 4IR. The four universities chosen were those to which we had easy access, and which were implementing seemingly successful management strategies in the context of the decolonial 4IR. The data gleaned are not for comparison between the institutions but to show how similarly they approached the creation of sustainable learning environments in the decolonial 4IR era, in spite of their location in the different socio-economic contexts. The Critical Discourse Analysis (CDA) techniques we used, capitalised on the text, both written and spoken, as the basis for making findings in relation to the research question of this paper Then the analysis progressed to the level of the discursive practices to explore how habits of the mind informed the text and shaped the meaning of what was being said. What we say as humans is in most instances informed by what we are used to saying, doing and listening to and thus one can trace where we come from on the bases of all these. Finally, we looked at the social structural arrangements and how these informed the discourses being analysed. These were done seamlessly so as to privilege the outcome of the analysis rather than the process.

The conclusions drawn and recommendations made are finally contextualised in terms of the literature to indicate how different and/or similar they are to previous research, policies and theories. This paper does not attempt to formulate general laws or predict or establish any causal relations between and among factors under scrutiny herein. The idea is to understand the situations as they present themselves without attempting any generalisation beyond the given contexts. In order to operationalise all the above, we used two scenarios to anchor the data, their analysis, findings, conclusions and recommendations.

Presenting some Illustrative Scenarios

The scenarios below are from some higher education institutions that implement seemingly successful decolonial 4IR management strategies. The urban universities (URB1 and URB2) are better resourced. They have many and well-functioning computer laboratories for students and staff. Students and staff over and above the university facilities, have their own gadgets like laptops and smart phones. During the periods of strikes when the physical

campus is inaccessible, lecturers and their students are able to continue with their normal academic work on Blackboard and Moodle software. The point we are making is that these two urban universities have advanced significantly in terms of embracing the advent of the 4IR, comparatively speaking. Their major concern currently is securing their data, hence the first scenario below.
The other two rural universities (RUR1 and RUR2), due to historical factors are still under-resourced, although serious efforts are underway to acquire the requisite technologies. Currently the tele- and videoconferencing facilities are already available, though more has to be done to strengthen them and their use. Use of Information, and Communication Technologies - ICT is still not as wide-spread although there are efforts to broaden participation of all lecturers and students in the use of Blackboard, Moodle and other software through the university's declared e-strategies.

Table 1: Funding[1]

Table 1 shows the audited and publicly available data on the calculations of the Teaching Inputs allocation per selected Institution from 2012 to 2016. The 2017 and 2018 data were still under audit. These calculations are based on a number of variables including the number of students enrolled per; institution, qualification, year level, Classification of Education Subject Matter (CESM – category of modules where examples are those preparing students in scarce skills versus those that are not so scarce), student learning, that is; whether they are full time or part time, repeating or not, the number and qualifications of staff, staff-student ratios, etc.

A survey over this five-year period shows that urban universities (URB1 and URB2) have higher Teaching Inputs allocations compared to their rural counterparts (RUR1 and RUR2). The implications are that the levels of government funding are thus consistently skewed away from the rural, thus favouring the urban universities. More money is thus available to the urban universities to improve their infrastructure, automate their systems and strategies for recruitment and evaluation, among others.

[1] Data populating the above Table 1 have been gleaned from the successive reports of the Department of Higher Education and Training – DHET (2012; 2016a). Ministerial Statement on University Funding 2011/2012 and 2013/2014 as well as 2017/18 and 2018/19. Pretoria: DHET

The differences in terms of allocations of resources (human capital, infrastructure, etc.) that are so crucial for welcoming and embracing the looming 4IR between the two categories of universities, namely rural and urban, could be ascribed to this differentiated funding from the Department of Higher Education and Training – DHET.

	URB1	**URB2**	**RUR1**	**RUR 2**
2012	**98 606**	**55 784**	**21 264**	**42 992**
2013	99 965	59 556	22 804	42 992
2014	108 005	56 779	24 610	38 299
2015	110 582	57 764	23 610	38 770
2016	112 487	58 882	24 445	39 266

Table 1 above does not capture all the categories of funding made available to the public higher education institutions – namely: Teaching Inputs, Teaching Units Outputs, Infrastructure and Efficiencies, Research Development, Research Outputs, Teaching Development and University Capacity Development Grants. Yet, it reflects the major and significant category of funding that describes and explains the differences as indicated above.

The rural universities are faced with huge backlogs in terms of provision of basic facilities that urban universities do not experience. Over and above attending to infrastructure backlogs with the meagre financial resources made available, RUR2 as rural university example, has to make provision for the cost of huge distances that staff have to travel on daily bases to ensure efficiencies at all its campuses that are spread over a huge square kilometre radius. These arrangements call for efficient and cost-effective management strategies that 4IR promises to deliver through advanced ICT technologies. The call is for these rural universities to provide more services with fewer financial resources which, to date, has placed huge demands on how they are managed.

Table 2: Enrolments[2]

Table 2 below shows the distribution of audited student enrolment figures

[2] Data for Table 2 above are obtained from the successive reports of the Department of Higher Education and Training – DHET (2014b; 2015; 2016c; 2017b; 2018b). Statistics on Post-School Education and Training in South Africa. Pretoria: DHET.

across the four universities under scrutiny.

	URB1	**URB2**	**RUR1**	**RUR2**
2012	57 508	32 375	16 434	24 613
2013	57 553	31 877	16 591	24 122
2014	56 376	31 032	16 663	23 946
2015	55 984	30418	16 891	25 993
2016	53 232	30269	17 662	28 581

As is the case with funding, for over a period of five year, the two urban universities continue to consistently show higher levels of student enrolments compared to those in the rural settings. The better-resourced urban universities continue to provide better and more attractive facilities, hence education. Their programme and qualification mixes are relevant and up to date, thus offering curriculum choices that better increase the chances of graduate employability (Charles 2016). Urban universities, especially due to their location and better resources provisioning attract better-qualified staff with impressive curriculum vitae, research profiles and up to date teaching methodologies (Zavala 2013). The higher levels of student enrolment mean better funding to afford all the above and the cycle of inequality between the urban and the rural is repeated and reinforced as the latter struggle to attract staff and students (Charles 2016). The prospects of adopting 4IR at these rural institutions become even more distant as a result, although because of their location, the need for these technologies is all the greater.

Although RUR2 looks as if it is getting closer to the URB2 in terms of enrolments figures in 2016, this is mainly as a result of students who take long to complete their studies at the former, and thus continue to fill the residences and the lecture halls without generating more income for the university, while new students have to be admitted into the university at the same time (RUR2 2018). Such students become more of a burden for the institution and create challenges for the effective management thereof. The main challenge is also with regard to stretching the limits of available resources beyond the numbers they can accommodate (RUR1 2018). The pass rates at these rural universities may be looking like they are catching up with those of urban universities, but the fact of the matter is that their throughput rates are still very low and not comparable (Maphosa, Sikhwari, Ndebele & Masehela 2014).

Table 3: Research Outputs[3]

Table 3 offers additional evidence of the glaring disparities noted between the profiles of the rural and the urban universities. Rural universities struggle to even meet the 1.5 unit of research output mark. This means that the share of their research outputs individually constitutes less than a percentage point of the total South African universities' research outputs.

	URB1	**URB2**	**RUR1**	**RUR2**
2012	11.7%	5.2%	0.6%	0.5%
2013	11.5%	4.8%	0.6%	0.3%
2014	11.0 % 1176Staff 1677.59 Units	5.0% 986Staff 759.88 Units	0.7% 285 Staff 110.74 Units	0.2% 591Staff 26.07 Units
2015	11.3% 1192Staff 1837 Units	4.4% 845Staff 711.24 Units	0.8% 295 Staff 130.40 Units	0.3% 582 Staff 49.41 Units
2016	11.51 1271Staff 2040.88Units	5.09% 841 Staff 927.29 Units	0.67% 306 Staff 122.89 Units	0.28% 571 Staff 50.41 Units

According to Table 3 above, consistently over the five-year period under study, urban universities far outshone their rural peers. For example, the URB1 has continued to produce slightly above 11% of the national research output. The URB2's research output on the other hand has been hovering around 5% share of the national scene. Again, these differences can be ascribed to inequality in terms of funding, hence fewer numbers of research academics at rural universities. This cycle of inequality gets repeated and reproduced over and over again as more funding attracts publishing academics and as such less

[3] Data for Table 3 is obtained from successive reports of the Department of Higher Education and Training – DHET (2014a; 2016b; 2017a; 2018a). Report on the Evaluation of the 2016 Universities Research Outputs. Pretoria: DHET.

research money is generated at the rural universities, compared to urban ones. This calls for stronger management strategies that can interrupt these cycles of inequality, so as to enable the rural universities to realise both their potential and research strengths.

The First Scenario comes from Urban Universities of URB1 and URB 2

As indicated earlier urban universities are more prone to cyber-attacks due to their sizes, location and the kinds of data they hold (Townsend 2013). The large data sets at higher education institutions for example, consist of financial, staffing and student information. The possibility that a university can be infiltrated through phishing, spamming and hacking constitutes a risk that can undermine the credibility of its work, its qualifications and all. This can dent its position of being a trusted partner in the sector, the country and the world at large.

Thus far, both urban universities seemed to respond successfully to various digital attacks. These universities seem to have improved their cyber safety and security practices in order for them to survive these complex developments of the Fourth Industrial Revolution. For example, URB1 summarised its inclusive strategy as follows:

> We are in the process of implementing a totally new Firewall platform for the university. It took Information, Communication and Technology unit in excess of 12 months to investigate and research the most applicable digital solution and we piloted several options. The Rectorate approved the business plan and the kit was ordered from the two leading countries in the North. When deployed, and the initial target date is soon to be announced, the University will be benefiting by being: i) be Proxy free, (ii) will be able to fully deploy dual-factor authentication, (iii) will be able to segregate and 'manage' older decentralised laptops and desktops in a manner that they are no longer a real threat to the digital security of the University, (iv) manage bandwidth (Free Internet to students versus going-concern business of the University), (v) enable and support the BYOx (Bring Your Own Anything, gadget), (vi) significantly increase digital security, (vii) better management of digital vulnerabilities, etc. (URB2 2018: 29).

The above strategy towards securing the data sets seems to be including the larger community of the university by providing them with the available information behind the cyber-attacks. In this paper we single out the cyber-attacks as an example of 4IR where automation to break and interrupt established official ICT systems is used. This is an instance where advance technologies are used to truncate the functioning of the normal software to confuse it and make its processes dysfunctional. This is the worst situation for any user of data in the 4IR. Programmes were put in place for all staff to be trained to identify and protect the university against cyber-attacks. Many attacks seemed to come through the student and staff emails. They were now being asked to update and validate their accounts. The ICT section was making it its business to ensure that the entire university community understands the nature of the war that is taking place in the cyber world. The university community was made to realise and understand their responsibilities towards securing their data. They were further made to understand the power of the recent 4IR that some were taking for granted. For example, they were made aware that the whole data sets from their research, teaching and learning as well as management which they have built so meticulously over the years could be wiped out by a virus at a click of a button if they were not careful and proactive.

The above benefits alluded to by the university seemed to be inclusive in the sense that they were opening epistemic access for students and staff regardless of the challenges of the Fourth Industrial Revolution. They were being empowered to know about and operate advanced technologies and their system was continuing to be upgraded for the benefit of everyone.

The Second Scenario Emanates from the Rural Universities of RUR 1 and RUR2

These universities were also responding positively to the challenges linked to the limited access to the digital devices they possessed. For example, RUR2 is a multi-campus institution that requires its managers to spend most of their time in extensive travelling when they manage their campuses. This exercise consumes most of their management time and leaves them without much time to pursue other university activities (RUR2 2018).

In response to this challenge, RUR2 decided to collaborate with other universities in the country to invest in the use of tele- and video-conferencing

technologies (RUR2 2018). Through such technologies, a skilled academic is still able to conduct lectures efficiently over long distances, thereby reaching students from many sites, since they have access to the conducted lecture. This advanced technology also allows managers to do their work effectively wherever they are. This is a significant benefit of the 4IR that makes digital communications ubiquitous. On the other hand, with the use of Videoconferencing, teaching and learning are made to be interactive across long distances, including diverse cohorts of students at their respective sites (Müller-Schloer & Mähönen 2000:299; Jones, Richards, Cho & Lee 2019:61). Thus, the issue of multiple campuses and the challenges of assuring quality teaching across them are being addressed, although more has to be done. The benefit through interactive teaching and learning also empowers lecturers to conduct their teaching at multiple campuses more easily. This seems to impact and has a positive relationship with job retention of staff. These 4IR technologies enable humans to perform tasks and activities effectively from wherever they are.

The above scenarios regarding two categories of universities with two different backgrounds, illustrate the possibilities that can be created by managers who think of the human being as a total being, who besides his/her physical dimension has other needs that have to be catered for towards the creation of decolonial sustainable learning environments. The main reason for such management strategy being effective in creating Decolonial Sustainable Learning environments in the Fourth Industrial Revolution seems to be its ability to empower its institutional community and provide quality education that is inclusive of all. This ensures that cognitive justice is achieved.

How Staff Experience Decolonial 4IR Management Strategies

As part of the aim of this paper to explore and understand how decolonial management strategies at rural versus urban universities were used to create sustainable learning environments in the context of the 4IR, we conducted one-hour focus group discussions at each of the abovementioned universities. Data were collected over a period of three years, as and when it was possible to talk to the participants. Each focus group discussion session was made up of four people who came from the university's senior management, middle management, academic and service staff respectively.

In presenting the data below we highlight the major trends and patterns

of how the participants say they experience their respective university's management strategy and style in terms of some-key issues for the 4IR, namely; strategies for recruitment and evaluation

Different universities use different strategies for recruitment of students and staff, evaluation and promotion of staff; Intellectual Property protection, incentives and facilities for staff Some strategies are more conventional, and paper based while others are 4IR compliant and are interactive, using pop-up messages to attract attention. Such strategies provide captivating and automated information about the institution. This pulls the potential student and staff into the relevant website where he/she can ask questions which are being answered so that growing curiosity is promoted. The more 4IR compatible institutions tend to adopt more democratic approaches to sharing of information on these platforms in the manner described above because they have technologies to protect the integrity of their information.

Even in the evaluation and promotion of staff, Intellectual Property protection, incentives and facilities for staff advanced technologies do play a role. The less 4IR compatible institutions tend to rely mostly on submissions of hard copies of forms and reports while the other institutions would be using electronic versions, that are easy to transport, to use and to evaluate both inside (locally) and outside of the institution (nationally and internationally) for enhanced quality.

Strategies for Recruitment

At all universities irrespective of whether they were rural or urban, there were committees dealing with staff recruitment chaired by either the Vice-Chancellors (VC) or Deputy Vice-Chancellor (DVC) in the rural universities, and by the relevant Dean/Director in the more urban ones. However irrespective of who chaired, all the committees had a mandate from the universities' Council through the VC to implement the approved universities' recruitment policies. A closer look at all the policies show that they all advanced the principles of inclusivity and meritocracy. Each Department or Directorate or unit had to motivate and demonstrate the need to recruit a staff member based on the democratically designed and Council approved staff establishment. No post would be considered for advertisement if there were no provision for such in the university establishment. The criteria for appointment were also clearly spelt out in the policies and departmental strategies. The

motivation had to use the criteria as bases for making a case for the post. A participant in one of the URB1's 's group discussion sessions noted, that;

> *the process is cumbersome, and sometimes takes too long because of all the supporting documents that have to accompany the motivation*.

The other participants from the same institution corrected her. They indicated that, checks and balances were necessary, hence the duration of the process.

> *All those were in order to make the process transparent and inclusive in that all stakeholders had to express themselves on the advert, the process of recruitment, selection, interviews and the vetting of the recommended candidate.*

Without belabouring the point, there seems to have been similarity in the way participants understood the management of the recruitment process. The common theme across all four universities was that all owned the strategies as they participated in the crafting and implementation thereof. At all levels there was an attempt to be inclusive of all stakeholders, as the understanding was that; *the more heads were put together the better they could look at all aspects of recruitment in ensuring that quality was assured.* The only difference between the rural and the urban universities was the extent to which ICT was used by the Human Resources Departments in executing the decisions of the various committees. Many of the processes at the urban universities were automated where, for example, classification and summarising of the applicant's CV was done through relevant software as all information was captured online and could thus be manipulated with greater ease. The sheer volume of the applicants' data that urban universities had to deal with for most positions to be filled made it difficult to process the data manually. However, the software was executing processes that were agreed upon collectively. The Office of the Human Resources Development and committee members were also trained in the use of the software and policies accordingly in order to fast track and streamline the processes.

Evaluation and Promotion of Staff

Our understanding is that all universities had to have democratically crafted

and Council approved policies and procedures because the DHET, which controlled all public higher institutions, demanded that these processes be in place and in line with the constitution of the country. It is because of this that there were lots of similarities irrespective of the location of the university. The policies for evaluation of staff without exception, at all universities in this study, emphasised that academic staff had to show expertise and experience in teaching and learning, research, community service and service to the universities. Each university had developed criteria that were graded from 1 to 4 where 1 represented emergent expertise and skill and 4 represented above average strength in the measured competencies.

> *It is not easy to be subjective when applying these promotion criteria, even when one is the chair of the promotions committee because they are so detailed and cover all aspects of a competency, which is evaluated. Besides, because we all participated in the crafting of such at Faculty Board and Senate meeting, we are all aware of the reasoning behind these criteria and the ways they empower us all and the university to becomes a respected brand.*

Another participant below, at the RUR1 group discussion, referred to above, commented in support of the above views expressed by his colleague:

> *You see the evaluation of staff by students is such an important aspect of these criteria to show evidence of the applicant's effectiveness in teaching and learning. As academics we have to compile a file of evidence everyday, so that we can in the end produce evidence that cannot be contested when we apply for promotion. This aspect is especially crucial because it gives students, who are the recipients, a voice in the evaluation and promotion of their lecturer.*

In the entire group discussions conducted at all the four universities, the participants expressed appreciation of the way in which evaluation and promotion of staff were conducted. They appreciated the objective manner in which that was done and how justification for all the decisions were provided and how each academic knew how to compile his or her portfolio of evidence as they were taught and supported by the respective Teaching and Learning Centre experts.

Again, at the urban universities, the processes were done online, as there was software that assisted in compiling and sorting out the applications in terms of predetermined criteria. Most staff used software like End Note to compile their portfolios and submit them on-line with all documents in electronic format. At the rural universities there were emergent attempts to use electronic media, although most still used hard copies and emails to send documents. In all universities, duly constituted committees were set up to consider the applications in a fair, transparent and developmental manner. Staff were always supported from the point of compiling their portfolios to the point of submission.

Intellectual Property Protection, Incentives and Facilities for Staff

At all the institutions, policies towards the protection of intellectual property are in place. In fact, from as early as the time a staff member joins any of these institutions, he or she is required to read and sign that he or she has read and understood this policy. The central idea of the policy is to make staff aware that all outputs created while in the service of the university belong to the respective university because the staff member used the time and resources made available and paid for by the university.

However, the universities encourage staff to produce research output as well as other artefacts in the execution of their teaching, learning and community engagement that can be commercialised to benefit both the staff and the university. Intellectual property policies make provision for staff to be given incentives that encourage them to do more as well as invest more time in advancing the collective agenda of the university. A participant from the UFS commented that,

> *… If it were not for the research incentive provided by the university, I would not have been able to produce this respectable curriculum vitae I have produced in the last three years. The research incentives provided enabled me to create this big research team you see where 15 academics collaborate in research and supervision of these 48 students towards their MEd and PhDs. The team is able to pay student bursaries, field trips for staff and students as well as conference attendance internationally and locally. Actually, one of our staff has*

> *even managed to get NRF rating from the work of this research project that the university supports through enabling us to host an annual international conference. The university sponsors accommodation and travel costs of speakers as well as the conference*

Along the same lines at RUR2 a participant noted that the university has opened many doors for her in terms of assisting in the patenting of a gadget that will be used by patients in hospitals.

> There were just too many legal hurdles that I could not handle on my own. The university provided support and helped to establish connections on my behalf with the relevant legal people as well as financed the travel and services that the external lawyers provided.

Using Inclusive Management Strategies to Create Decolonial Sustainable Learning Environments in the 4IR: Analysis, Findings and Discussion

The scenarios above focused on four universities in two different locations in South Africa, that attempt to create decolonial sustainable learning environments in the 4IR. While urban universities emphasised cyber security, rural universities were more concerned with acquiring high technology competencies and gadgets. A closer look at the management strategies of the four institutions, demonstrate similarities in terms of creating epistemic access and thereby advancing cognitive justice in their different approaches operationalised in diverse institutional contexts (Bovill, Cook-Sather, Felten, Millard & Moore-Cherry 2016; Camilleri & Camilleri 2017). These anchored in complex problem solving, critical thinking, creativity, people management, co-ordination with others, emotional intelligence, judgement and decision-making, service orientation, negotiation and cognitive flexibility.

The Physical

The management strategies at all the four institutions seem to address the issues of the provision of the physical infrastructure and protection thereof - although at different levels – to facilitate and embrace the 4IR. There are efforts at all to

ensure that students and workers are safe and secure in terms of their physical needs and requirements. Each has to have access to a computer or another gadget that would enable them to firmly participate in the 4IR. The management strategies are that every member of the university community is able to function meaningfully in this context without any hindrance (Glăveanu 2010). At all universities there are policies and strategies to ensure that this objective is achieved. The above demonstrate that there are attempts to open up access to knowledge (Millard & Moore-Cherry 2016; Camilleri & Camilleri 2017) by all through provision of materials that enable students and workers to get into the information highway of the cyberspace. This is a matter of cognitive justice (Millard & Moore-Cherry 2016; Camilleri & Camilleri 2017) where even those who would not otherwise have had access to 4IR knowledge forms, are empowered and provided with the means to do so, and thus participate therein meaningfully. This is done on their terms and the pace with which they are comfortable.

The Physiological

Opportunities for staff and students to develop and take their rightful position in the 4IR era are created through the abovementioned management strategies that are socially inclusive of all (Wenger 2014). As mentioned earlier, there are policies, strategies and actual plans to take each individual through stages of development that would enable them to understand, to operate and operationalise gadgets and services in the 4IR. The issue of epistemic access and cognitive justice can thus not be over emphasised (Seamon 2016; Shultz 2018; Tondi 2019).

The Psychological

categories of At the psychological level, data above show that the two institution; were similar in ensuring that staff and students could find fulfilment in belonging to their respective universities (Charles 2016; Floridi 2014). They gained self-respect when discovering their new abilities to operate gadgets they considered foreign (Bovill, Cook-Sather, Felten, Millard & Moore-Cherry 2016; Camilleri & Camilleri 2017; Charles 2016; Floridi 2014; Gabarro 2014; Glăveanu 2010). Over and above the question of safety and security of data they were also supposed to be happy and fully cognisant of their changing

roles. They were made to see the meaning in participating fully in the 4IR practices embarked upon at their respective institutions. Being at these institutions were meant to provide opportunities for self-realisation and actualisation through full participation (Glăveanu 2010; Gabarro 2014). Gadgets used at these institutions were also meant to enable all to extend their individual identities such that they are everywhere at the same time and can access, experience even at places where they have never been physically and otherwise (Charles 2016; Floridi 2014; Camilleri & Camilleri 2017).

The Socio-Cultural

The management strategies referred to above have enabled students and staff in their individuality to interact and learn from one another socially and collectively as they move firmly towards the 4IR (Glăveanu 2010). All were able to customise the 4IR practices to their particular context and individual approaches. They were able to find roles to play as the 4IR practices unfolded. Management had created many opportunities for that to happen in a deliberate manner. In the collectivised space they learned about ethics and aesthetics as aspects of the 4IR (Glăveanu 2010; Zavala 2013; Shultz 2018.). They discovered that after all there was nothing to fear in so far as the 4IR is concerned. Rather, through inclusive management strategies, they learnt that the new technologies were meant to make their lives easier while they become more human (Van den Berg 1971; Weiner 2012; Bovill, Cook-Sather, Felten, Millard & Moore-Cherry 2016; Camilleri & Camilleri 2017; Tondi 2019).

Conclusion

In this paper, effective management strategies suitable for the creation of decolonial sustainable Learning Environments in the context of the Fourth Industrial Revolution were explored. The paper defined the operational concepts so as to enhance the deeper understanding of the reader. The challenges, components, conditions, barriers, as well as indicators of success in the creation of sustainable learning environments, were identified and analysed accordingly. The paper finds that it is only when epistemic access is opened up to all, irrespective of their differentials that Decolonial Sustainable Learning Environments can be created. Thus, cognitive justice is achieved in the new era, by ensuring that no one gets left behind to suffer increased

inequality as an inherent risk for the Fourth Industrial Revolution rather than enjoying the benefits of this revolution. Therefore, the paper forms the basis for effective management strategies that may be tested further empirically in future research.

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Intercepting the Deluge of Streetism in a Rural Free State Town: The Views of Children-on-the-street

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Abstract

The life worlds, views, opinions and lived experiences of children with street life experiences are not sufficiently explored since these children are muted and relegated to the periphery of society. Researchers do not believe that these children can contribute suitable data and they are thus studied indirectly through adultist approaches in which adults serve as proxies. Researchers who adopt adultist approaches rely on adults' observations and views about the needs and lived experiences of at-risk youth. Therefore, the commonly held views on how streetism could be lessened are those of adults who have proximal interactions with children with street life experiences and not of street-involved children and youth themselves. In this paper, we report the findings of a qualitative study in which we explored how child migrations to the streets in a rural town in the Free State Province of South Africa could be prevented. We studied the children directly. The study involved 17 school-going children who fell into the category of children-on-the-street since they kept ties with their families of origin. The participants were aged from 10 to 16 years and in grades ranging from four to 10. The participants visited a drop-in centre run by a non-governmental organisation after school where they received meals before heading home. This qualitative study involved three focus group interviews with the participants sampled conveniently and purposively. Two focus groups consisted of six participants and one consisted

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of five participants. The data were subjected to inductive content analysis and the following broad themes emerged: stabilising family systems, providing opportunities for gainful employment, eliminating social exclusion and discrimination within families, and strengthening peer support. The findings were derived from the views of children-on-the-street themselves. The findings have implications for research and practice within the fields of social work, education and psychology.

Keywords: Children on the streets; resilience risks; resilience; street life; streetism; vulnerable;

Introduction

The phenomenon of streetism is prevalent in South Africa, a country that is wrestling poverty and underdevelopment in urban and rural contexts. According to the Nelson Mandela Foundation (2005), rurality is understood differently. Notwithstanding this conceptual uncertainty, in South Africa, the term rurality refers to former homelands that were designated for Africans in line with the policies of the apartheid political system, and includes remote, intensive farming communities where amenities lack for most people (Surty 2011:8). Many poverty-stricken families subsist within rural communities beset with risk and adversity in South Africa. This threatens the resilience of children and renders them vulnerable to streetism and poor developmental outcomes (Malindi 2014). The streetism phenomenon is by no means new and unique to South Africa. For example, the earliest reference to the phenomenon of street life was made by Barrette (1995:1) who had traced it back to the Middle Ages and the Industrial Revolution. To this day, many at-risk children continue to drop out of school and migrate to the streets.

Children who adopt street life cite a number of reasons for migrating to the streets. For example, these children point out that they leave their parental homes because of the harsh treatment that they receive from their parents and caregivers (Brolles, Derivois, Joseph, Karray, Pasut, Cénat, Pamphile, Lafontant, Alexandre, Felix & Chouvier 2017; Kiros 2016). Research shows that street-involved children and youth are often victims of physical, psychological and sexual abuse, poverty, child desertion, and traumatic experiences such as neglect and maltreatment (Cénat, Derivois,

Hébert, Amédée & Karray 2018; Dutta 2018; Zarezadeh 2013). In general, the causal factors of streetism are an intricate assortment of personal and socio-ecological factors (Donald, Lazarus & Molla 2014; Zarezadeh 2013). However, these personal and socioecological factors combine in complex ways and kick-start and sustain the deluge of streetism.

Street life itself is characterised by a myriad of risks that undermine normative development. For instance, children who live and work in street contexts are vulnerable to societal abuse and HIV infection, and they have limited or no access to safe family environments, health care and education (Braitstein, Ayuku, Delong, Makori, Sang, Tarus, Kamanda, Shah, Apondi & Wachira 2018; Dutta 2018). Furthermore, there is evidence that societies hold negative sentiments about children who adopt street life since societies see street-involved children and youth as criminals, rapists and a poor reflection on society (Rurevo & Bourdillon 2003; Victor 2015). Street-involved children and youth are stigmatised, repressed and marginalised by societies and authorities (Dladla & Ogina 2018; Göthe 2016).

There are four categories of street-involved children and youth, namely, *children-of-the-street* who sever ties with their families of origin (Mitchell *et al*. 2007; West 2003; Zarezadeh 2013), *children-on-the-street* who work on the streets and in shopping malls to supplement family income and irregularly attend school (Ayuku, Kaplan, Baars & Devries 2004; Malindi 2014; Pare 2004; Sauvé 2003), erstwhile street-involved children and youth who reside in sheltered accommodation (Mathiti 2006; Ayuku *et al*. 2004; Panter-Brick 2002) and children who live and work at waste disposal sites, where they search for food and sellable items in order to earn an income (Terrio 2004; West 2003). It is important to note that the term, *street*, includes spaces such as rubbish dumps and that erstwhile street-involved youth who reside in care institutions do not shed the street child label in the eyes of the community (Panter-Brick 2002).

There seems to be no sign that street-bound migrations by at-risk youth will abate or cease in South Africa. Interventions aimed at intercepting this deluge of street-bound migrations reflect the charity and deficit-focused approaches (Nath, Shannon, Georgiades, Sword & Raina 2016) and sadly exclude the views of children who have adopted street life. We argue that research is needed in order to explore ways in which streetism could be lessened, based on the views of children in street contexts.

Admittedly, studies involving children involved in street life are not

easy since these children move frequently in search of food and safe spaces (Theron & Malindi 2010:728). As a result of this movement, researchers and social services professionals have not succeeded in determining the exact numbers of children living and working on the streets. Street-involved children and youth have low literacy levels because of school disengagement (Malindi & Machenjedze 2012:73). Therefore, it could be less prudent for researchers to use pen-and-paper measuring instruments as data collection methods. Interviews have their own drawbacks too since children involved in streetism may be guarded and less willing to engage in conversations that seek to explore their lives. Due to their negative experiences, street-involved children and youth are often unwilling to engage in research. Researchers are then forced to study them indirectly through adult proxies who have proximal interactions with them (Ennew 2003).

The call for researchers to study vulnerable children directly rather than indirectly has become louder in recent times (Driessnack 2006). In line with this call, researchers are encouraged not to use adults as representatives of the children they wish to study but rather to study them directly (Ennew 2003). Consistent with this call, in this study, we sought to explore the views of children-on-the-street on how the deluge of streetism could be intercepted. We chose to work directly with them. We conveniently and purposively sampled children-on-the-street, who kept ties with their families and attended school, albeit irregularly.

Rurality, Risk and Resilience

The South African education system still bears the hallmarks of the structural inequalities that pervaded all aspects of life before the advent of democracy in 1994. These structural inequalities are more pronounced in immiserated rural areas beset with constellations of risks that not only serve as barriers to learning and development but also render children psychosocially vulnerable. Vulnerability is a context-specific term that is hard to define however; Eloff, Ebersohn and Viljoen (2007) cite Kelly (2001) who broadly defined vulnerable children as:

> *… children who have been exposed to trauma (such as violence, abuse, death), children living in compromising and adverse socioeconomic circumstances, girls, children from rural areas, street children,*

> *children with disabilities, children from urban slums or high-density areas, abandoned children, children in high-risk homes (especially those run by single parents), and social offenders (p. 79).*

Children who grow up and attend school in rural areas and street-involved children and youth are included in the definition of vulnerable children as the excerpt shows. Children in rural contexts subsist in contexts characterised by risks such as poverty, parental unemployment, poorly resourced schools, lack of parental involvement in education, low literacy levels among parents, shortages of schools, HIV/AIDS, violence within schools, lack of water, electricity, road infrastructure, poor sanitation, the phenomenon of child-headed households, lack of health-care and social services that could asphyxiate their development and resilience (Nelson Mandela Foundation 2005). These risks have the potential to limit resilient functioning among at-risk children in rural contexts and cause complete school disengagement or learner dropout and streetism (Donald, Lazarus & Moolla 2014:208; Lippman & Rivers 2008).

Schools that have resources and regular access to resources within the wider community remain the last hope for at-risk learners since they can connect them to services that can support their resilience. However, rural schools are not well resourced and they are limited as nodes of care and resilience for psychosocially vulnerable children. Several studies (Stewart et al. 2004; Hall & Theron 2016; Kasehagen, Omland, Bailey, Biss, Holmes & Kelso 2017; Malindi & Machenjedze 2012; Robelo & Pérez 2017; Mampane & Huddle 2017) show that a school that adopts a health-promoting strategy could help learners develop resilience. Research shows that health-promoting schools can enhance the resilience of learners through a myriad of protective factors. For example, personal learner resources such as locus of control and self-efficacy beliefs and family resources such as parental school involvement, family support, and father and mother education enhance academic resilience among learners (Anagnostaki, Pavlopoulos, Obradović, Masten & Motti-Stefanidi 2016). There is evidence that learners become resilient and ready for school if they come from supportive families where there is less conflict between parents and children (Anderson 2017). Perceived social support and life satisfaction significantly predict resilience among young people (Baltaci & Karatas 2015).

Schools that have access to school psychologists directly and indi-

rectly support teacher resilience (Beltman, Mansfield & Harris 2016). Resilient teachers serve as an active support system for learners whose resilience requires strengthening. Theron (2016) discovered that schools have a responsibility towards supporting children's resilience since teachers can champion resilience, and foster every day whole school support of resilience. Malindi and Machenjedze (2012) reported that school engagement and teachers who deliberately support street-involved youth enhanced their resilience. This occurs in schools that have meaningful connections with the immediate macro environment.

In addition to schools, communities should provide resilience resources in ways that are culturally meaningful (Ungar 2011). However, schools that are located within economically disadvantaged rural communities frequently lack the socioemotional, cognitive and behavioural skills needed for successful early school adjustment (Tatlow-Golden *et al.* 2016). Children who subsist in poor socioeconomic communities where health-promoting resources are scarce, experience poorer health and sometimes drop out of school (Sznitman, Reisel & Khurana 2017). Conversely, caring teachers as community members who are skilled and experienced are in a better position to promote resilience among vulnerable learners and prevent school dropout (Malindi & Machenjedze 2012; Silyvier & Nyandusi 2015).

Rural communities are well known for the outward movement of people towards the more industrialised towns and cities in search of job and other opportunities. Behind, they often leave their children in the care of spouses or extended families who are sometimes unemployed (Malindi 2009). In rural communities, as in other parts of South Africa, there are children who grow up in child headed households and a significant number of orphans. Without adequate care and support, some children drop out of school and adopt street life in which they fend for themselves.

The risks that cause learners to drop out of school and adopt streetism threaten their resilience too. Resilience is the outcome of the navigation and negotiation process that includes the capacity of individuals to traverse their pathways towards resources that sustain well-being, the capacity of the individual's physical and social ecologies to provide resilience resources and the capacity of individuals, families and communities to negotiate culturally meaningful ways to share resilience resources (Ungar 2006; Ungar 2007). This suggests that an individual must be able to confidently exercise agency in navigating his/her pathways towards resilience resources and that communities

must be able to make these resources available in culturally meaningful ways (Ungar 2008). The navigation and negotiation process enables coping ability in the context of risk and adversity. In poor rural contexts, it is difficult for at-risk children to navigate their pathways towards resilience resources since these communities have limited access to resources. This fuels the deluge of street-bound migrations. The focus of this study was on documenting ways in which streetism could be lessened, based on the views of children-on-the-street.

Methodology

We conducted a qualitative study in order to elicit the views of children-on-the-street on how the deluge of streetism could be intercepted in a small rural town in the North Eastern part of the Free State Province of South Africa. The town was engulfed in poverty, therefore; most of the adult population routinely migrated to larger towns and cities in search of better employment opportunities. Often, they left children in the care of their mothers, grandparents and aunts. There was a growing number of child-headed households in this rural town as a result of migrant labour and parental mortality.

Welfare organisations were actively involved in efforts aimed at rescuing children from the streets. Likewise, the children who participated in our study were beneficiaries of the services rendered by a welfare organisation that ran a drop-in centre where the participants had meals after school. The non-governmental organisation relied on funding from the Department of Social Development and kind donations from individuals and organisations. The participants fell into the category of children-on-the-street as pointed out earlier. Children-on-the-street go to the streets in order to beg for money and food from shoppers and return home where they spend the night (Grundling *et al.* 2004:29; Raffaelli & Koller 2005:251; Montane 2006:8; West 2008:10; Kaime-Atterhog & Ahlberg 2008:1325). The organisation did not have an overnight shelter designated for the participants. Neither did the participants receive breakfast and dinner at the drop-in centre. On weekends, the participants did not receive any meals from the drop-in centre and this encouraged them to beg.

The participants were boys and girls aged from 10 to 16 sampled conveniently and purposively. There were 10 boys and 7 girls in the sample and therefore, the total number of the participants was 17. The participants

were in grades ranging from four to 10. The participants spoke IsiZulu, Sesotho and English as an additional language. The participants had opportunities to use any language during the interviews since the first author speaks Sesotho and the second author speaks both Sesotho and IsiZulu, however; they chose to speak to us in English.

The data were collected through focus group interviews. Two focus groups consisted of six participants each and one consisted of five participants. We transcribed the interview data verbatim and the transcript was not language-edited to keep it original. The participants volunteered participation in the study after they had received a letter providing full details of the study and data collection strategies. The letter was accompanied by consent forms that parents and caregivers at the centre had to co-sign. We were allowed to use the venue used for meals to conduct the interviews. We sat in a circle for facial contact to be achieved. There were more boys in the sample. Le Roux (2001) observed that children with street life experiences are typically male in South Africa. The participants also gave us permission to use excerpts from the interviews in writing the findings up. We assured them that their privacy would be protected.

The data were subjected to inductive content analysis. As individuals, we coded the data and sat together to compare our codes. We refined the codes and developed themes through consensus discussions. We asked the caregivers to examine our codes and themes in order to further enhance our understanding of the life worlds of the participants. The study had been ethically cleared by the Ethics Committee of the North-West University (FH-SB-2012-0018).

Metatheory

This study was premised against the Social Ecology of Resilience Theory (SERT) (Ungar 2011; Ungar 2012; Ungar 2013). The SERT highlights the importance of the social and physical environments in facilitating adaptive coping in youth despite the existence of risk and adversity. The SERT is based on principles such as decentrality, complexity, atypicality and cultural relativity. As regards decentrality, Ungar (2011; Ungar 2013) argues for the child at-risk to be decentred, implying that we must not focus solely on the individual child's strengths for evidence of resilience. Instead, the role of a child's social and physical ecology in enhancing adaptive coping should be acknowledged and not be discounted or relegated to the periphery. Theron and

Engelbrecht (2012) add that adults (teachers and parents) as part of a child's social ecology may serve as microsystemic strongholds for psychosocially vulnerable children and provide the social capital needed to enable their resilience. There are other studies that confirm the protective roles of parents and caregivers (Malindi 2018; Machenjedze, Malindi & Mbengo 2019), school teachers (Malindi 2018; Malindi & Machenjedze 2012; Sharma & Sen 2012; Theron 2016; Theron, Liebenberg & Malindi 2013) and community resources and services (DuMont, Ehrhard-Dietzel & Kirkland 2012; Ebersöhn & Eloff 2004, Masten 2001).

Regarding the complexity principle, Ungar (2011; Ungar 2013) argues that positive growth in the midst of adversity as well as the protective processes that contribute to it are too complex to predict singular developmental trajectories in all contexts. Furthermore, for a child to resile, he or she must take advantage of the resources the environment provides and there are constant changes across contexts and time in children's social and physical worlds. Therefore, a child, however supported, may not necessarily perform better in all contexts. For example, when vulnerable children and youth leave their homes and adopt streetism they could be thought to be less resilient however; in the context of streetism, they have consistently demonstrated buoyancy (Malindi 2014; Malindi & Theron 2010; Kombarakaran 2004; Theron & Malindi 2010). This proves that resilience is a slippery concept that is context-specific (Dass-Brailsford 2005).

The principle of atypicality refers to instances in which children cope with risk in ways that are not normal if judged by conventional societal standards. Such atypical coping behaviours demonstrate hidden resilience (Malindi & Theron 2010; Ungar 2004; Ungar 2007; Ungar 2011). Streetism is an example of an atypical way of coping with adversity. Although it is regarded as an unconventional way of coping, it serves as an adaptive coping mechanism.

The principle of cultural relativity presupposes that processes that enable resilient coping are both culturally and temporally (and therefore, historically) rooted (Ungar 2011; Ungar, 2013). This means that one's culture is significant in promoting mental or psychosocial health. Culture predetermines what is universally accepted as normal or typical behaviour. It encompasses, shared beliefs, values and norms. Resilience mirrors the influence of culture and coping ability is therefore, rooted in culture (Malindi & Theron 2010; Ungar 2011). Researchers who explore the resilience of street involved children and youth should therefore, not discount cultural influences

in promoting adaptive coping in these children. Children are naturally socialised based on the tenets of a particular culture.

Findings

We read the transcripts severally as a way of immersing ourselves in the data. The process of open and axial coding that followed led to the development of four major themes. These themes are stabilising family systems, providing opportunities for gainful employment, eliminating social exclusion and discrimination within families, and strengthening peer support. It is important to note that the themes relate to social and physical ecological resilience resources. We discuss the themes below and present unedited excerpts from the raw data.

Stabilising Family Systems

Unstable family systems as part of a child's social ecology, where parents and caregivers did not let children say how they felt, were implicated in initiating and sustaining the deluge of streetism. In order to intercept the deluge of streetism, the participants believed that parents and caregivers had to be advised not to be oblivious to the views and needs of their children. The participants emphasised the important role of healthy communication between children and parents or caregivers in families. They felt that such communication could be mediated by other competent adults too. The following excerpts bear evidence of the above assertions:

> *I think someone should speak to our parents … sit down with them and talk about what we like and we don't like. So I think is the thing that can make things change* (Serame, a 14-year-old grade eight participant).

> *I think if the father can get a person from his family and the mother also get a person from the family and sit down to talk so that things are well* (Leruo, a 10-year-old grade five girl).

Another participant added that they as children had to learn to be assertive when they communicated with their parents and caregivers and let them know

what they were unhappy about. This would alert their parents to the shabby treatment that was inadvertently meted out to children and the effects thereof. This would lessen street-bound migrations as the following excerpts show.

> *I agree with you. According to me, family can help prevent streetism, but it cannot do so without you, so you have to include yourself amongst them, because there are things you are unhappy about that you must tell. Let's say they are not treating you sharp* [well], *but you are still not saying anything. They will only think that whatever they are doing is fine, but there will be someone from the family who will understand you better than anyone* (Sello, a 15-year-old grade ten participant).

The participants suggested that other competent adults had to be asked to facilitate mutual understanding between them and their parents or caregivers since they as children felt less empowered to do so. This suggests that the participants felt helpless and powerless, and these feelings had to be eliminated for streetism to abate. For example, Lebo, a 14-year-old girl in grade nine said:

> *True …. You will then speak among them that this and that I do not like, which means if they do not understand you but then there will be someone who will understand you. This person will be able to tell them that what you were saying he/she understands it, but then he/she will do this and that so as to help you. But she/he needs you to adapt with him/her so as to avoid such situation.*

The participants decried the prevalent family disunity that initiated streetism. The need for family unity was mentioned as a way that could bring family problems that fed streetism to an end. For example, Omphile, a 15-year-old boy in grade ten said:

> *This thing* [streetism] *can help* [end], *permanently; it means that we must combine ourselves as a family, and trust God with prayers. So all the problems* [antecedents of streetism] *will end.*

Alcohol abuse and domestic violence were severally cited as antecedents of streetism. The participants blamed themselves for the conflicts that ensued in

their families as the following excerpt shows:

> *When you arrive at home at night trying to sleep, a drunk adult will get home making noise, trying to beat a person we are living with. Those are the things that cause many problems like this one* [street life] *and must be stopped. You feel like you are one causing problems in the house … you end up feeling like leaving and live on the streets* (Ntebaleng, a 16-year-old grade ten girl).

Lefa, a 16-year-old grade nine boy cited self-blame and added that family feuds caused children to develop anxiety. He suggested that migration to the streets was a way of avoiding family conflicts. Lefa said:

> *A father, when he gets home, he beats a female who is staying with two children. It is where the problems originate because you see as if you are the one causing problems where people are staying. So you leave so that there will be peace. If they are fighting, we shall not be scared and go away.*

The participants unanimously agreed that disputes at home caused street-bound migrations. An end to family inharmoniousness could lessen streetism. Migration to the streets was an attempt to avoid not only fighting but also swearing as the following excerpt shows:

> *Parents who are always fighting and children who are answering* [backchat] *big people like my sister. Having no understanding in the house makes children go to the streets …* [hesitates] *… if fighting and swearing can stop, this* [streetism] *will stop* (Metsi, a 12-year-old grade six boy).

The family is listed among socialising agents that ideally promote resilience among vulnerable children. The participants agreed that families could do much to enable their resilience and thus eliminate the need to migrate to the streets. Thabiso, an 11-year-old grade six boy felt that families had to guide and equip young people with coping skills. Families could further promote social competence among young people so that they could avoid street life. He said the following:

> *Guidance should be given to children when they are still young … so that a child should be able to deal with problems and not leave home. In this way, they can help the children to get out of bad things and to avoid this* [street] *life.*

Family is the source of the much needed social support that enables resilience among children. However, the participants bemoaned vulnerable children's lack of access to family support. Parents and caregivers had to be available and show interest when young people had problems. This would stop children from soliciting support and advice from their peers. The following excerpt bears evidence of these assertions:

> *At home, we do not have support when we have problems. We must … if we have problems, we must* [be able to] *tell our parents … or the persons we are living with. You must* [be able to] *tell him that you have certain problems or go to another person who can be able to help you if they are not interested. If you are a human being and have problems, you must not just keep quiet, you must go to a person who can help and get what you want. This life* [street life] *cannot help you; these people* [fellow street-involved children and youth] *are children too* (Thabang, a 13-year-old boy in grade eight).

It is clear that the participants emphasised the importance of stable, peaceable and functional families in preventing streetism. Functional families support normative development and resilience among children through providing social support and opening healthy channels of communication among members.

Providing Opportunities for Gainful Employment

Parental unemployment led to children adopting life on the streets due to the strain it puts on family systems as part of their social ecologies. Unemployment limits the ability of parents and caregivers to provide food for their families. Lack of food in turn caused children to adopt streetism. In this regard, Morena, an 11-year-old boy in grade five said:

> *I think this will change if people in our family can find work, our brothers, our mothers get better work so that there is food and never*

> *short in the house. Yes, I think that is what can make things change and stop them going to streets.*

Urbanisation and migrations from rural areas towards towns and cities in search of employment had negative consequences for those who have low academic qualifications. Unemployment is rife among less qualified citizens and they are less able to provide for their families as the following excerpt shows:

> *I …, think we should not move to towns … when we were still living at home on farm, we were … my mother was able to do everything for us. Our parents were able to do everything we were asking even though they were not working* (Tumo, a boy aged 16 and in grade ten).

The parents' inability to provide for their children causes them to adopt street life in order to supplement family income. The social grants that indigent citizens receive from the state proved to be less than helpful in lessening the impact of unemployment on families. Some caregivers used social grants for purposes they were not meant for as the following excerpt shows:

> *When we got here in the township, I met problems and asked myself that but I am getting social grant but why are these people not able to satisfy myself the way I want, but my parents were deceased, and they were not working, but they were able to do things that I wanted. If they did, I would not be here and living this way* (Keke, a 10-year-old grade five participant).

The participants were unanimous in saying their caregivers used the grant for alcohol. Others said that they did not know what the money was spent on. There were orphaned participants who reported that grants meant for them were used to meet the needs of the children of their aunts and they were forced by these circumstances to adopt street life. One of them pointed out that unemployment was the reason why the parents and caregivers used the grants for other purposes, neglecting the needs of the participants. Morena, an 11-year-old boy in grade five added and said:

> *I agree with this person when saying it is having no job* [being unemployed] *which puts us at risk. If there were jobs, people would*

> *not be taking our grants and fighting in the house because sometimes you find that they fight because of having no money. The grant is used somewhere else and so you go away because you are hungry*

Kananelo, a 13-year-old boy in grade eight then added and said the following:

> *For example, I am staying with my two uncles, a mother and a father, so the mother it seems as if she gets her wage after a father has got it. Now the mother is acting as if she is the boss, she controls even the grant she gets on my behalf. So I think is the lack of work which causes things like this* [misuse of the grant], *so that has to change or else it* [streetism] *will continue.*

It is evident that parental unemployment, lack of food, the misuse of social grants, and competition among working members of the family rendered life difficult in families. This fuelled streetism.

Eliminating Social Exclusion and Discrimination within Families

Perceived social exclusion and the resultant discrimination fuelled children's migration to the streets. It is important to note that social exclusion and discrimination emanated from the children's social ecologies. Unanimously, the participants said social exclusion and discrimination at home had to end in order for steetism to lessen, as the following excerpt shows:

> *It* [street life] *can stop. The big people* [adults] *must stop discriminating against some children, like if they are having many children, they must treat them equally* (Tiisetso, a 16-year-old orphan girl in grade nine).

The participants referred to incidents that smacked of blatant exclusion and discrimination. For example, they said caregivers cared for their biological children and excluded, neglected and discriminated against the participants who were orphans. Therefore, social exclusion and discrimination had to cease for streetims to be reduced as the excerpt below shows:

> *If you are children, the three of you, she will favour her child; these other two, she will not favour them because they have no parents. What makes us find ourselves here is because parents favour others more than others. They must stop it* (Lefa, a 10-year-old boy in grade five).

The participants felt that favouritism at home had to end since it encouraged them to migrate to the streets. Evidence of this is contained in the excerpt below:

> *Now, I asked myself that what causes the problem* [street life] *is that a parent, meaning our guardians, they have … they favour* (Sifo, a 13-year-old orphaned boy in grade eight).
>
> *They must stop having favourites, like if there are three children, the other one is hers and the other two are orphans, should stop favouring her child. Because you can find that sometimes you ask her to buy you something, knowing that you need that, she will buy it for her child who is already having what you are asking for. Parents must stop having favourites; they must love children equally so that this* [streetism] *could go away …* (Thabang, a 14-year-old boy in grade nine).

From the above discussion it is evident that according to the participants, streetism would stop if children were not socially excluded, discriminated against and treated unequally at home.

Strengthening Peer Support

The participants reported that migrations towards the streets could be curtailed if children had people they could confide in, in their social ecologies. In the excerpt below, Phuthi refers to the importance of confiding in caring peers and teachers about their travails. Peers and teachers are part of a child's social system and an active support system is crucial in enabling youth resilience. The participants were aware of the importance of social support in preventing streetism. In this regard, example, Phuthi, a 13-year-old girl in grade eight said:

> *Another school kid can be able to help. She will be able to tell your class teacher your problems and the class teacher will be able to sit*

> *down with you so as to help. Or else you go to the street when you feel alone.*

The participants believed that streetism could be curtailed through access to organised peer support structures as the following words by Nthuse, a 15-year-old boy in grade nine show:

> *At school, they must form support groups like Soul Buddyz. There must be a place where … where … after school Soul Buddyz … can come together and talk about their common problems. We will be able to say how we feel so that we can find help and not leave school. At school, they can … we have Soul Buddyz ….*

The participants unequivocally suggested that organised leadership structures at school level could break the cycle of school disengagement and the concomitant migrations to the streets. Mamosweu, a 13-year-old girl in grade seven suggested the Representative Council of Learners (RCL) as another structure that could assist at-risk learners at school level:

> *Ah, I was adding up where she was saying we should have Soul Buddyz. I was also saying the RCL (Representative Council for Learners). It means that the bodies representing learners in schools can provide support to other children to stop their problems and dropping out of school.*

The participant believed the RCL could provide support to at-risk learners and thus prevent leaner dropout. Other participants argued that organised peer support could benefit those who were experiencing peer pressure and bullying. Others emphasised the importance of church-based peer support structures in mitigating streetism. In this regard, Tshepo, a 15-year-old boy in grade ten said:

> *Yes, they should stay away from the wrong friends. They must always be close to their mothers and attend church and schools very well.*

It is apparent that the role of school-based and church-based peer support in preventing streetism was emphasised.

Discussion

The aim of this qualitative study was to explore the views of street-involved children and youth, who are classified as children-on-the-street in a small rural town in the Free State, on how the deluge of streetism could be intercepted. The children-on-the-street isolated broad areas within their social and physical ecologies that required attention in order to reduce street-bound migrations, namely: stabilising family systems, providing opportunities for gainful employment, eliminating social exclusion and discrimination within families, and strengthening peer support.

Earlier research shows that stable families facilitate resilience among children due to the social support they offer vulnerable children (Anderson 2017). However, in this study, the findings show that the participants felt that their dysfunctional families failed to serve as microsystemic strongholds for them (Theron & Engelbrecht 2012). Instead, their families rendered them psychosocially vulnerable since they were characterised by parental inattention to children's needs, poor communication, alcoholism, domestic violence, lack of support, swearing and parent-child misunderstanding. Intercepting the deluge of streetism thus required families to be stabilised as social ecologies on a micro level (Donald *et al.* 2014).

In the small rural town in the Free State Province of South Africa where the study occurred, employment, and access to resources and the amenities that sustain health and well-being were severely limited as in other rural contexts (Nelson Mandela Foundation 2005). For example, the participants agreed that parental unemployment, lack of food, urbanisation, parental inability to meet their needs, and the misspending of the social grants are reasons why they had been forced to adopted street life in order to meet their basic needs for food. Socioeconomic problems, which kick-started street-bound migrations, had to be dealt with since they influenced the nature and quality of care within families.

The prevalent, social exclusion and discrimination within families destroyed a sense of belonging and feelings of being loved within the participants and thus initiated the deluge of streetism. A sense of belonging has been found to be a basic need and an important resilience enabler among at-risk youth (Malindi & Theron 2010). Since the feeling of alienation led to migrations to the streets, it is important to note that the participants felt that social exclusion and related discrimination had to be eliminated within their

families in order to lessen streetism.

The findings highlight the need for the promotion of school-based and church-based peer support systems in interrupting street bound migrations. Peer support systems enhance a sense of belonging that in turn enables resilience (Theron & Malindi 2010). The participants attended school albeit irregularly, since they also had to fend for themselves on the streets in order to supplement family income. It is important to note that schools in South Africa do not have easy access to psychosocial services because there is a shortage of mental health-care professionals within the education system. Research shows that access to psychosocial services enables the resilience of vulnerable learners (Beltman *et al.* 2016). Other studies show that schools manned by caring teachers encourage adaptive coping in at-risk learners (Malindi & Machenjedze 2012; Theron *et al.* 2013)

The above findings are significant considering that earlier research produced similar findings in contexts where street-involved children and youth had not been involved as participants. These studies showed that ecological protective resources such as stable and supportive families, meaningful social relationships, access to community resources, having a sense of belonging, having mentors and being part of a culture that supports normative development in children enabled resilience among at-risk young people (Dass-Brailsford 2005; Ebersohn & Elloff 2004; Killian 2004; Schoon 2006; Theron 2007; Ungar 2008). In other words, these social and physical support systems need to function adequately in order to enable resilience among at-risk children and youth (Masten 2001).

The Social Ecology of Resilience Theory (SERT) illuminates our findings more brightly. For example, according to the decentrality principle of the SERT, children should be decentred since research has shown that they depend not only on their personal strengths to cope adaptively but also on the resources that their social and physical ecologies should provide in culturally meaningful ways (Ungar 2011; Ungar 2013). Decentering the child implies that the potential of the child's social ecology in enabling resilience should be considered since they do not rely solely on their personal strengths to resile as earlier research seemed to suggest (Ungar 2011). Instead, they rely on what is built around them too, namely their social ecologies (families, schools, peers), and physical ecologies (services) (Ungar 2005). The findings of our study show that the social and physical ecologies of our participants were riddled and weakened by constellations of risk and adversity. This initiated streetism.

According to the atypicality principle of the SERT, resorting to streetism is an atypical way of coping adaptively, however, it seems to have been the only alternative the children had in situations devoid of the social capital that active micro and macro support systems could and should ideally provide (Donald *et al*. 2014; Ungar 2011; Ungar 2013). The findings further highlight the complexity of the phenomenon of resilience and related processes such as risk and protective resources (Ungar 2011; Ungar 2013). In other words, streetism is generally negatively perceived to be an unconventional way of coping with adversity (Dladla & Ogina 2018; Göthe 2016; Rurevo & Bourdillon 2003; Victor 2015) however, it served an adaptive function to the participants. As regards the cultural relativity principle of the SERT, resilience is nuanced by cultures which should ideally provide resilience resources in culturally meaningful ways (Ungar 2011). Cultures determine what is acceptable or not and in this regard, the dominant cultures of the participants viewed streetism as an atypical way of coping adaptively. This concealed the resilience of the participants who had adopted life on the street (Ungar 2004; Malindi & Theron 2010). Societies therefore stigmatise streetism (Dladla & Ogina 2018; Göthe 2016). What is considered as a risk, namely streetism, served an adaptive purpose to the participants.

In general, the participants were critical of their social and physical ecologies and saw the weaknesses as reasons that initiated and sustained street-bound migrations. Strengthening these social and physical ecologies could lessen the deluge of streetism.

Conclusion

This study amplified the voices of street-involved children and youth in a small rural town in the Free State Province of South Arica. The findings alerted the researchers to the risks that fuelled streetism among the participants. It further provides a constellation of solutions that may lessen the incidence of streetism. The context in which the study was conducted still bears the hallmarks of the political system that disadvantaged Africans and kept them in the periphery of the dominant socio-political system. While the causes of streetism were outlined by the participants, an important caveat is that these causes occur as complex combinations of personal and socioecological factors. The solutions proposed by the participants are wholly socioecological in nature.

The major achievement of this study is that it reflects the views of

children-on-the-street unlike preceding studies that reflected more the views of adults as proxies (Dladla & Ogina 2018). The study was qualitative and phenomenological in design. Generalisation was not intended but it would be interesting to replicate this study in a city with other categories of street-involved children and youth. Replicating the study in a city would allow for the comparison of the factors that fuel streetism and the solutions suggested by street-involved children and youth in various contexts. The sample consisted of street-involved children and youth classified as children-on-the-street who had access to home, school, church and a non-governmental organisation. It would be interesting to know the views of those children, namely children-of-the-street who have severed ties with their families, and live permanently on the streets with no access to these resources.

Secondary interventions are aimed at rescuing these children from the streets and placing them in care institutions. The findings of our study suggest that primary prevention interventions should be crafted. These primary prevention intervention programs should focus on strengthening families, empowering communities and making services and resources equitably accessible to all at-risk children. This would require schools to be made nodes of care for vulnerable children. The findings further advocate for mental health-care providers to craft interventions based on the views of the street-involved children and youth themselves and not on the views of adult proxies.

Collaboration among sectors of the society is needed. This would create opportunities for family and community resilience to be enhanced by creating job opportunities, strengthening families and making access to resources such as health-care, social services and education in rural communities possible. Schools in rural contexts should be resourced with adequate human and capital resources so that they can serve as nodes of care for at-risk learners. Resilience-promoting schools are in a better position to enable the resilience of vulnerable learners. These schools are manned by caring and resilient teachers and they have supportive networks with non-governmental organisations as well as other government departments.

Our research approach represented a move away from the commonplace adultist approaches that regard young people as participants who cannot contribute usable research data (Ennew 2003; Driessnack 2006). Through this study the voices of the children-on-the-street were acknowledged and amplified. These solutions will be helpful in crafting interventions.

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The Deluge of Streetism in a Rural Free State Town

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Rural History Teachers' Perspectives on the Contemporary Significance of History

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Abstract

The rising trend internationally is for history to be taught in schools with a focus on historical significance so that learners may understand relationship between the past and the contemporary issues. Given the importance of such an emphasis, the present study sought to explore the perspectives of rural history teachers about historical significance. In addition, this study examined the impact of rurality on the perspectivesof these teachers. A qualitative approach was used to collect data by means of interperspectives in the King Cetshwayo education district, north of the Tugela River along the coast in KwaZulu-Natal. The participants consisted of seven professionally qualified history teachers who had taught history for at least five years in the Further Education and Training (FET) band. The findings revealed the perspectives of these teachers that studying history in a way that highlights historical significance develops learners' understanding of contemporary history and political knowledge, acquisition of life lessons, and local, national and global awareness of pertinent issues that affect everyday life. The findings also revealed that rurality impacted negatively on perspectivesof rural history teachers. This research study indicates the value of the potential of historical significance to equip and develop learners in the rural South African classroom with relevant historical knowledge and the ways in which rurality affects the way rural teachers look at issues affecting daily life.

Keywords: rural teachers; history teachers; historical significance; perspectives

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Introduction

History teachers are custodians of historical knowledge. Regardless of the socio-economic and political conditions in which they work, they are responsible for teaching and learning activities in their discipline in schools. One of the mammoth tasks they face is teaching learners second-order concepts that provide a tool for studying history or for thinking historically (Seixas 2008). Thinking historically means 'developing reasoned judgments about the past based on the consideration and synthesis of multiple historical sources' (Baron 2012: 833). For Lee and Ashby (2000), second-order concepts shape the way that learners go about doing history. One of these critical second-order concepts is historical significance, regarded internationally as one of the pillars of historical thinking (Phillips 2002; Counsell 2004; Seixas & Peck 2004; Lévesque 2005; Seixas 2006). Historical significance refers to the relationship between past and present issues (Arthur & Phillips 2000). In other words, it enables learners to understand contemporary issues by comparing them with past events. It is suggested that, without a clear understanding of the value of historical significance, learners at school may find it challenging to study history meaningfully and history teachers may find it difficult to teach history from this perspective.

In line with this view, Lévesque (2005) argues that historical significance promotes learners' ability to use first-order knowledge, that is to engage with the practice of history. First-order concepts are what history is all about (Peck & Seixas 2008) or what history entails. This implies that historical significance should enable learners to use historical knowledge to understand current affairs and conditions by so doing they put history into practice. If learners can practice history in this way, they may understand why people care, today, about certain past events, trends and historical issues (Seixas 2006). Such issues help them to understand present life as well as to address and survive challenges. Furthermore, a pellucid understanding of historical significance can help learners understand how past events impact on current ones. The purpose of the present research was to explore the perspectives of South African rural history teachers on this topic.

Historical significance studies emphasise ways in which events and people of the past relate to people in the present (Seixas & Peck 2004). In addition, Metzger (2010) submits that the teaching of historical significance helps learners to interpret and analyse the past in order to make use of it on a

day-to-day basis, as it encompasses what happened long time ago but still survives for people today. This approach suggests that the past can also help to explain the present. It is therefore incumbent for learners to be exposed to historical issues and to be taught how to relate historical issues to the present.

Seixas (2006) further argues that there are two critical aspects of historical significance. The first is that historical significance is associated with change, which means that a historically significant event or person had deep consequences, for many people, over a long period of time. The second is that historical significance should be revealing, in the sense that the event or person sheds light on enduring or emerging issues in history and contemporary life or was important at some stage in history within the collective memory of a group or groups. These aspects emphasise the close relationship between the past and contemporary issues.

To further elaborate on the meaning of historical significance, some scholars (Seixas 2004; Kohlmeier 2005; Seixas 2006; Peck 2010; Lee & Coughlin 2011) suggest that historical significance entails people and events that have a great impact on other people and the environment over the longest period of time. They argue that historical significance should be measured by the effects of such people's actions over a long time, thus impacting on other peoples' everyday lives. This also suggests that not every historical actor and event is significant; some are not in the sense that they are not useful for shedding light on current situations. Consequently, it has long been felt that learners should be taught to discriminate among historical actors whose actions impact on day-to-day survival of other people in relation to historical themes or developments (Rodgers 1987). However, these themes or developments should have been undertaken or conducted by certain historical actors thus becoming outstanding the way they contributed the understanding of contemporary events.

Therefore, this research study seeks to explore the perspectives of rural history teachers about historical significance. It is guided by two questions. The first being 'what are the perspectives of rural history teachers on historical significance'. The second being 'how did rurality influence the perspectives of history teachers about historical significance'.

The present study was guided by the social constructivism theory of Vygotsky (1962) according to whom teachers construct their own realities or knowledge based on experiences and exposure to the environment or society. This means that the discourses within the society and school play a big role in

helping teachers to acquire experience; for this reason, some proponents of social constructivism (Kim 2001; Harrison & Thomas 2009; Siemens 2014) contend that learning is socially constructed. In other words, the discourses within their own societies affect the experiences and realities that teachers – in this case, rural history teachers in South Africa – may come across.

The article is structured as follows: the literature review focuses on the teaching and learning of historical significance nationally and internationally; the research methodology is then described; next, the findings are presented and discussed; and, finally, the paper concludes with recommendations.

Literature Review

This section addresses the extent to which historical significance has been dealt with internationally and nationally. Numerous international studies have been undertaken on historical significance in relation to teaching. For instance, Peck (2008) argues that historical significance is one of the benchmarks of historical thinking and he and Seixas (2004) both believe that, because teaching historical significance underpins the teaching of historical thinking, history teachers should teach learners historically significant events in ways that develop historical thinking. Some studies (Cercadillo 2001; Yeager, Foster and Greer 2002; Barton 2005; Cercadillo 2006; Peck 2009 & 2010) have focused on students' conception of historical significance in China, Canada, England, Spain and the USA. Lévesque (2005) alluded to the importance of teaching second-order concepts, one of which is historical significance. From a British perspective, Philips (2002) argued for historical significance as a forgotten 'key element' of history teaching in the classroom, and Bradshaw (2006) explained how to promote historical significance in the classroom. These studies dealt with historical significance in the teaching context of so-called 'first-world' countries. Their focus was on the meaning and conception of historical significance or on students' perceptions about historical significance; none, however, provided an in-depth analysis of the perspectives of the teachers about the historical significance.

In South Africa, various studies have explored the value of aspects of historical significance at school level. Dryden-Peterson and Siebörger (2006) wrote about history teachers as memory makers, whereas Chikoko, Gilmour, Harber and Serf (2011) covered the teaching of controversial issues by history teachers. Studies by Kallaway (1995 & 2012) also highlighted issues

concerning history education of South Africa, and history in Senior Secondary School CAPS 2012 and beyond, respectively. Kubow (2007) focused on how history teachers construct democracy, and Tibbitts (2006) covered issues about making use of history projects to support history teaching in the country. Parle and Waetjen (2005) emphasised the importance of teaching African history in South Africa, and Dierkes, Yoshida, Clark, Kitson, Valls, Oglesby and Chapman (2007) analysed history teaching and referred to the subject as dealing with 'the violent past'. These studies dealt with issues such as the role of history in knowledge provision, memories of the past, controversial issues, democracy, aspects of history teaching and the history curriculum. However, no South African study could be found that addressed historical significance as such or history teachers' perspectives on historical significance. Internationally, the education community has understood the value of historical significance as an approach, but this international trend has so far been neglected in South Africa. The present study attempts to address the gap through the perspectives of history teachers themselves.

This study focused on the perspectives of rural history teachers who teach or work in areas in which public schools are characterised by lack of basic services, where learners travel long distances to schools that often lack suitably qualified educators, and in which classes are large and teaching aids frequently inadequate (Pini, Moletsane & Mills 2014). Rural teachers are known to work under difficult conditions. Furthermore, in attempting to incorporate historical significance into the classroom, rural history teachers also contend with poor or unavailable access to libraries, or to quality information about contemporary issues in South Africa and globally to which to refer learners in the process of developing historical thinking. Therefore, rural schools represent the country's most deprived context for embedding historical significance in the teaching of history in the country. The perspectives of rural teachers thus offer a view of the discourses that occur in schools situated in rural areas and provide a lens through which to consider the impact of rurality on teaching and learning activities.

Method

This small-scale study perspectiveswas conducted in the King Cetshwayo district, north of the Tugela river along the coast, covering Empangeni and Richards Bay and their surroundings. Because the intention was to gain

understanding of history teachers' perspectives, a qualitative approach was adopted, as advised by Henning *et al.* (2009), Cohen *et al.* (2011) and Cresswell (2014), on the grounds that it enables in-depth and detailed understanding of people's perceptions of the phenomenon under study and the meaning that individuals or groups ascribe to it (Lewis 2015).

For the purpose of this study, purposive sampling was used to select seven professionally qualified history teachers. This method offered a deliberate choice of participants for the qualities they could bring to the study (Etikan, Musa & Alkassim 2016). The criteria for selection were that participants had to have worked in the King Cetshwayo district, taught history in the Further Education and Training (FET) band (grades 10–12) and had a minimum of five years' teaching experience. Interperspectives were employed to allow the researcher to predetermine questions to be asked and the freedom to seek clarification (Doody & Noonan 2013).

The right to privacy for participants was provided through the use of pseudonyms. They signed consent form and were informed of their right to withdraw at any time during the interview if they so wished. They were also assured that only trends and patterns of data would be included in the discussion of findings. After the interperspectives had been conducted, the data were coded and analysed thematically. This enabled the researcher to identify and analyse patterns of meaning to illustrate themes that were important in the description of the phenomenon (Braun & Clarke 2006; Cohen *et al.* 2011; Liñán & Fayolle 2015). Fereday and Muir-Cochrane (2006) argue that thematic analysis enables the emergence of themes to be discussed. To this effect, four themes emerged for discussion in this study.

Findings and Discussion

The four themes that arose were as follows: understanding contemporary history, developing political and social knowledge, learning life lessons from history, and creating local, national and global awareness of pertinent issues.

The Four Main Themes for Knowledge

Theme 1: Understanding Contemporary History

All the participants understood clearly the meaning of historical significance in terms of its connection with the present. The quotations below are a testimo-

ny of how they viewed historical significance.

Participant 1 explained that 'historical significance equips learners with knowledge of the contemporary world'. Participant 3 added: 'historically significant aspects enable learners to compare and understand the relationship between contemporary history and the past'.

This study found that the rural teachers believed that historical significance develops and promotes among learners the skill of making meaningful comparisons. This skill comes into play when comparing past and present events, thereby linking contemporary historical issues with the past. As comparison takes place, identification of similarities and dissimilarities between the past and present also occurs. It means that not only does historical significance develop knowledge, but it also helps to develop generic skills. The perspectives of the rural history teachers in this study exemplify the theoretical framework of Seixas (2004), which suggests that the significance of historical events and people manifests itself in the classroom when learners can see the relationship between past events and people in the present, and emphasise the usefulness of historical significance in linking and identifying relationships among contemporary issues and past events. Peck (2010) bolsters this view by arguing that learners' understanding of historical significance can make them understand their own position in the world and help to make them competitive in the world because they would have mastered the significant issues of the past that also relate to their own time and place current ones thus making them competitive in the world. The ability to link the past and present can offer people understanding of the existing relationship between their country and the world. The relationship between the past and contemporary events can also, in the view of Peck and Seixas (2008), make learners understand the effect of change that manifests itself when the past influences the present and thereby help them to appreciate historical knowledge (Yeager, Foster & Greer 2002) and its value in their own lives.

Further supporting the relevance and importance of historical significance, Lèvesque (2005) argues that present-day commemorations, or 'memory-history', give identifiable contemporary reasons for ascribing importance to events of the past. In other words, commemorations are informed by the relationship between the past and present events. Therefore, the mastery of historical significance can develop the ability to link the past with the present. Hunt (2000) suggests that historical significance raises fundamental questions that are important for adolescents to consider. As adolescents consider

fundamental questions, their interpretative skills may also come into play. It is therefore helpful for them to develop understanding of historically significant events so that to find answers to fundamental questions about critical issues of the past and their own present. The knowledge acquired via historical significance can be used to investigate and anchor historical narratives (Lèvesque 2005). However, for history teachers contemporary issues do not cover learners' understanding of their position in the world, effects of change, memory-history, findings answers to fundamental questions about the past and historical narratives. These are critical issues that define and inform historical significance but the exposure of history teachers limits their scope; consequently they did not think beyond comparing relationship between past and present.

Theme 2: Developing Political and Societal Knowledge

According to Participant 2, 'historical significance enlightens learners about political and societal knowledge'. Participants 3 also held the view that 'historical significance equips learners with knowledge of political and societal values'. Participant 1 argued 'as learners study about different political and societal leaders they learn about the pros and cons of inhumanity, cruelty and *ubuntu* amongst other things'. Participants 4 asserted that 'historical significance introduces learners to democratic and autocratic government'. Participant 7 suggested 'democratic government promote equal rights for all people irrespective of race, colour, background or whatsoever'. Participant 2 submitted that 'historically significant issues also cover the representation of people in national, provincial and local governments'.

Another finding of this study points out that the teachers saw historical significance as dealing with political and social issues, and illustrates their understanding that these issues develop political and social knowledge. Previous studies that have been carried out argue that political issues refer to past events that have an effect or had specific and enduring meaning (Van Eeden & Warnich 2018) on individuals. Besides other political and social issues, the present study also revealed that values played a part in the analysis of history in the participants' classrooms. The values that emerged as important for the teachers in the study were humanity, kindness, *ubuntu* and tolerance as opposed to cruelty. Some participants lamented inhumanity and cruelty, claiming that these violate human rights, and recommended active promotion of *ubuntu*. Some of the teachers believed that awareness among learners of

political and social values in history and in their own lives may help with good citizenship based on ethics that emanate from adherence and keeping of values. The perspectives of history teachers put it vividly that values were an important aspect of the their history teaching since values help to promote good morals.

If values have been taken care of and are observed accordingly, they may promote a good socio-political conditions where everybody lives with hamorny. In support of this argument, Partington (1980) and then Counsell (2004) contend that socio-political values are remarkable, remembered, resulting in change and revealing hence they may be a yardstick for promoting historical significance. Partington (1980) presents five criteria for measuring these significant issues for which values are part. These criteria are importance (which measures the importance of past events to the people), profundity (which measures how deeply people's lives were affected by these past events), quantity (which is about the number of people that were affected by the past events), durability (which measures how long people's lives were affected by the past events), and relevance (which is about the contribution of the past events to increased understanding of present life). It means that political issues that are deemed to be significant should satisfy these criteria presented by Partington (1980). The comments from scholars revealed a deeper sense of historical significance than it was the case with teachers. According to scholars, historical significance is underpinned by certain criteria whereas as per history teachers it enlightens, equips, and introduce learners, promotes human rights and representation of people. Teachers looked at historical significance at a face value taking into account what happens in their rural area but did not go beyond school situation. Therefore, even though history teachers and scholars presented positive perspectives about historical significance but they looked at it in different pespectives. While teachers focussed on what it does for learners, scholars went beyond that alluding on issues that inform it.

The study further reveals political systems of government and governance as some of the issues that also underpin political and social knowledge. The political systems that teachers mentioned in this study were democracy and autocracy. According to teachers, democracy should be dealt with deeply since it is one of the values enshrined in the constitution of the Republic of South Africa and it promotes equal rights and equal representation as opposed to autocracy. In line with this, Hunt (2000) suggests that historical significance develops understanding of a range of concepts such as freedom, equality, democracy, which are chaaracteristics of democratic country,

depression, slavery and also the role of the state in the provision of welfare for its citizens.

Not only does historical significance deals with democracy but it also deals with autocracy which is in contrast with democarcy. While democracy is a system of government constituted by the whole population through elected representatives, autocracy is a government whereby only one person has absolute power. According to the perspectives of history teachers, autocratic governments are not good because they sometimes result in the overthrowing of government due to members of the community being unhappy with its operations. History teachers'perspectives on democracy and autocracy are complemented by Hunt, (2000) when arguing that historical significance includes issues related to power, decentralisation and government. In other words, teachers' perspectives emphasise the pertinent role that democracy and autocracy play in enlightening learners about issues of power. Therefore, this research notes that the perspectives of history teachers show that historical significance deals with political issues and values; according to them political issues and values shape the way people live and behave.

Theme 3: Learning Life Lessons from History

Participant 4 affirmed that 'historical significance is about life skills that history learners need in order to live a better life'. Participant 6 argued that 'life skills are amongst the benchmarks of good citizenship that historical significance perpetuates'. Participant 3 alluded to the fact that 'via historically significant issues learners learn to avoid mistakes similar to those committed in the past'. Participant 1 suggested 'historical significance makes learners assertive in all spheres of life'. Participant 2 explained 'historical significance develops generic skills like analysis, evaluation, communication and critical thinking'.

The findings of this study have also shown that according to the perspectives of rural history teachers, historical significance addresses generic skills such as analysis, evaluation, communication, accepting others and critical thinking. As per the perspectives of history teachers, during the engagement with historical significance, some generic skills are utilised and they help learners to be clear about historical significance. This view is not far-removed from the argument of Bradshaw (2006) that in order to understand historically significant issues one needs to deploy a range of skills which may help to reach substantiated judgments. In other words, after learners have

developed and acquired skills, they may find it easy to engage with historical significance. So the perspectives of history teachers show that if learners can understand life skills they may develop an ability to make a complex and thoughtful judgements without explicit scaffolding (Bradshaw 2000) from the teachers. This may sugggests that after acquiring and developing generic skills learners may not need teachers to help them understand significant issues, via clarifications, but they can develop understanding of historically significant issues on their own and easily. Learners may live independently from teachers. This is good because everyone should live his/her own life independently and acquisition of skills can assist in that regard. A clear understanding of historical significance can help to explain why other events and periods are significant and resonant (Husbands 1996; Lèvesque 2005). Also the acquisition of skills may enable learners to live a better life thus being able to deal with issues affecting their lives. Therefore, one can regard skills as the benchmarks of good citizenship. In other words, learners may need to acquire life skills in order to be good citizens.

The perspectives of rural history teachers have also revealed that historical significance enables learning from past mistakes commmited by historical actors. During engagement with historical significance people should assess the contribution that people of the past made as well as understand the attitudes and ideas that gave rise to such past human actions (Arthur & Phillips 2000). The assessment of past human actions may compel the identification of actions that were good or bad. Consequently, people may learn to shy away from bad ones while adopting and using the good past human actions for their survival. Learning about past mistakes may help learners not to commit same mistakes in the near future. Therefore, according to rural history teachers historical significance is about life and generic skills, is a benchmark of good citizenship, teaches learners to avoid mistakes and makes learners assertive in all spheres of life.

Theme 4: Creating Local, National and Global Awareness on Pertinent Historical Issues

Participant 7 asserted that 'historical significance makes learners aware of what transpired in South Africa and led to current situation, how the world has developed to date and the importance of representation'. Participant 3 claimed that 'historical significance makes learners aware of the constitution and some

nitty-gritties of democracy'. Participant 2 argued that 'historical significance makes learners aware of what is happening around them and the world'. Participant 6 affirmed that 'historical significance makes learners aware of how changes are initiated and how they occurred'. Participant 4 argued that 'historical significance enables learners to learn about progression or continuity of events thus learning how events unfold from one event to another'. Participant 1 affirmed that 'historical significance provides an awareness about other people's history will create understanding and respect for different cultures thus promoting harmonious living amongst citizens'.

The findings of this study, as per rural history teachers, suggest that historical significance develops in-depth knowledge about issues that affected their country and world at large. Van Drie, Van Boxtel & Stam (2015) argue that in-depth knowledge about country and world issues enables learners to make informed judgement. One of the criteria for measuring historically significant events, mentioned earlier, is revealing. It means that if historical events are revealing, they should affect individuals. The argument of history teachers that historically significant issues develop in-depth knowledge shows that historical significance reveals some issues in learners. The perspectives of rural history teachers also revealed that historical significance develops in-depth knowledge about changes and development that occurred in the past, knowledge about constitution and democracy, and representation of people. This view is complemented by Phillips (2000) and Hunt (2000) when they contend that historical significance helps learners to give meaning to events and development of the past and relate it to their own lives and to present times. The developments and changes show how ancient events progressed to date. However, in order to link past and present events, historical thinking and historical reasoning come into play thus enabling learners to practise history (Van Drie *et al.* 2015). In other words, for learners to develop understanding of historical significance, they need to think and think historically. To this effect, Van Drie *et al.* (2015) argue that to show full understanding of historical significance, learners should consider the changes brought about by historical actors as well as impact these changes had over individuals. This links with the view of teachers about changes and development which can be regarded as some of the yardsticks of historical significance. The perspectives of history teachers enable theorisation (Historical Association 2007) which is inline with 'making history' and may enable reflections on ones actions. It meanss that historical significance enables learners to put history into practice. In addition

to historical reasoning and historical thinking which enable historical significance, Cercadillo (2006) also suggests historical understanding. Therefore, when engaging with historical reasoning, historical thinking and historical understanding one promotes and addresses historical significance.

The findings from rural history teachers also revealed that historical significance promotes understanding and respect for different cultures. According to rural history teachers, the study about historical significance enables engagement with different people from different races with different cultures. This may result to the understanding of diverse cultures and may also promote respect for other cultures. The study by Yeager *et al.* (2002) also noted that historical significance encapsulates cultural constructs, cultural factors as well as cultural forces that develop knowledge about different cultures. It means that the perspectives of history teachers were not far-removed from the argument of Yeager *et al.* (2002). This suggests that the study of cultural aspects may develop a deep understanding of different cultures as per the perspectives of rural history teachers. The perspectives of rural history teachers in relation to different cultures is complemented by Lèvesque (2005) when arguing that cultural connections are one of the types of 'memory significance'. In other words, via historical significance people may connect to different cultures and rural history teachers strongly belie in that. Therefore, engagement with historical issues is a way of showing interests and concerns about past events (Seixas 2005) including understanding of other people's cultures.

In a nutshell, the perspectives of rural history teachers in relation to historical significance and creation of awareness were that historical significance deals with how the world has developed and importance of equal representation of people which is in line with the constitution and democracy. Furthermore, the perspectives of history teachers also were that historical significance is about the discourses of the world as well as how countries have progressed to date. Lastly, historical significance encapsulates understanding about different cultures

Influence of Rurality on Perspectives of Rural History Teachers about Historical Significance

It is notable that rural history teachers share partly the same sentiment as most of the scholars. Even though these teachers work under terrible socio-political and economic conditions they still see some positives on teaching and learning

activities. The fact that their perspectives were partly complemented by scholars regardless of the terrible conditions they work under, shows that the rural educational context had an influnce on their perspectives.

Rurality and its socio-economic and political conditions impacted negatively on the perspectives of history teachers in numerous ways. The way history teachers looked at historical issues was linked to scholars. However, history teachers did not look at issues they presented deeply as it was the case with scholars. This may suggests that even though history teachers and scholars shared the same sentiments about historical significance but teachers looked at issues at face value rather to consider impact that perspectives may have on individuals. This may have been influenced by the rural exposure that both learners and teachers had which meant that teachers had to accommodate the level of knowledge for learners which is shaped by the socio-economic and political conditions that shape the way they think. To do this, teachers may have been compelled not to look at issues deeply so that learners may understand.

For example, for history teachers contemporary issues were only about comparisons; which is one of generic skill. They did not look at the effects of having these skills like it was the case with scholars. Some of the effects, presented by scholars, are an ability to reach substantiated judgment and take informed decisions. It means that history teachers did not associate contemporary issues with historical skills which are some of the key concepts of history and history teaching. Furthermore, they did not, for example, allude on how to use generic skills to increase a deeper understanding of historical issues. This suggests that the exposure they had, for teaching, only limited their knowledge to a face value in order to make it easy for learners to understand. Also for history teachers, contemporary had to do with relationship betwixt past and present and did not look at impact of contemporary issue on what happens around learners' lives. In other words, for history teachers contemporary issues evolved around comparing relarionship between the past and present. Furthermore, rural history teachers looked at historical significance as enlightning, equipping and introducing learners to certain aspects and nothing beyond that.

In addition to contemporary issues, history teachers contended that historical significance is about political and social issues, and values. However, they did not alaboratye more on these political and social issues in order to indicate that they had deep understanding of these issues. They also stted that

historical significance is about values and only mentioned some of the values they referred to but did not explain how to go about promoting and keeeping these values. They also posited that historical significance enlightens, equips, and introduces learners to political and social knowledge but did not allude to how historical significance enlightens, equips and introduces learners to political and social knowledge. Furthermore, history teachers submitted that historical significance promotes human rights and representation of people but did not elaborate on how it does that. They also affirmed that historical significance encapsulates democracy and autocracy, generic skills and, changes and development. Lastly, history teachers asserted that historical significance encourages learning from past mistakes and devlops understanding and respect for different cultures. However, they did not describe how historical significance helps learners to learn from past mistakes. These are all the issues that history teachers raised or alluded to lightly but did not discuss them figuratively in order to cover all the relevant aspects.

Therefore, rural history teachers represent South Africa's most difficult socio-political and economic educational conditions. Knowing the range of their experiences can help to determine targeted set of strategies and resources to deal with and aproach conditions in which rural learners are taught history.

Conclusion

The findings, though not generalizable, demonstrate various aspects of history teaching in schools that contribute to the development of historical knowlegde. After engaging the rural history teachers, it became clear that historical significance can be studied – even in deprived classroom conditions – because it helps to develop knowledge about contemporary historical events, as well as political and social knowledge and life lessons from history, and it also helps in creating local, national and global awareness of pertinent issues that affect human beings. These aspects are critical in promoting good citizenship. Therefore, the arguments of rural history teachers was that the knowledge that learners develops via historical significance equips learners with deep historical knowledge which is of great value in their lives.

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