Locating the Experiences of Rural Science Students in Higher Education

Nkosinathi Emmanuel Madondo

Abstract

In higher education in South Africa, the home practices with scientific underpinnings students from rural areas bring with them to their learning are not clearly understood and, therefore, are often marginalized in university teaching and learning. In a context where issues of equity of access to higher education and success are highly politicized, the experiences of these students cannot be ignored. This paper argues against absenting the experiences of these students in higher education with a view to harnessing the resulting knowledge to facilitate access to formal, disciplinary science knowledge. The paper posits that the way in which science curriculum (and/or teaching and learning) is structured tends to favor certain world views and not others, as a consequence, students from rural areas are often alienated because how they have learned to see the world is often not used as a starting point or seen as relevant when teaching the science curriculum. In order to contextualize learning and teaching, the paper argues for Archer's social realism as a theoretical framework to access students' prior experiences to enrich the curriculum and the student experience more broadly

Keywords: home-based practices, decontextualized learner, cognitive injustice, social realism, critical realism

Introduction

Students from universities across South Africa have expressed concerns that curricula in the disciplines are not connected to their lived experiences and the

Print ISSN 1023-1757; Electronic ISSN: 2519-5476; DOI https://doi.org/10.29086/2519-5476/2018/v25n2a9

ways of being of their home communities (Mbembe 2016; 2015; Ndlovu-Gatsheni 2013). Such concerns were particularly apparent in the #FeesMustFall protests of 2015 and 2016, events which saw students citing their marginalization and their perceptions of the concomitant continuing elitist and exclusive nature of the institutions in which they were enrolled to study.

In this article, I argue that higher education institutions do not adequately cater for prior learning or cultural capital (Bourdieu 1973) of students from marginalized communities with the result that the curriculum, which is understood as a structure that regulates access to knowing and knowledge, tends to favour certain world views and ways of being and, as a result, does not treat all fairly (Boughey & McKenna in press; Luckett & Luckett 2009). Students from marginalized groups thus come to feel ignored by the curriculum and the teaching and learning processes that it encompasses (Ellery 2016).

While there is a general concern from the marginalized sector of students about the 'obsolete' curriculum (Mbembe 2015), this article argues for the potential integration of the local knowledge of students who come from rural areas into institutionally powerful knowledge in the field of science. In particular, the article focuses on how students gain epistemological access (Morrow 2007) to the field of science, given their particular lived home learning experiences.

Focusing on students' being and local ways of knowing with scientific underpinnings could be used to gain genuine understandings of what it means to enable epistemological access to higher education in the field of science. My assumption is that the learning of scientific concepts and ways of knowing in science could be contextualized so that it encompasses students' prior learning or home environments, provided we come to understand how to use those experiences to provide them with access to the ways of knowing and being in science. This focus could help re-think teaching and learning in the sciences so that attention is not just on accessing the powerful knowledge of the disciplines (Maton 2014; Wheelahan 2010) in decontextualized ways but also on how students have learned to see the world (Heath 1983) and, then, on the ways in which these understandings could then be used to access powerful knowledge. A key point here is that there are ways of being and ways of knowing in rural areas which are valid, but are simply not recognized. Local knowledge is subjective and is produced by local people on the basis of their beliefs and reasons for doing what they do (Zinyeka 2013). In some degree, this is similar

to formal scientific knowledge which itself does not start from neutral observations in order to arrive at explanations about the natural world but rather from the subjective experiences of scientists (Chalmers in Lederman, Lederman & Altink 2013).

In order to identify ways in which academic teachers can assist students to access scientific knowledge and scientific ways of knowing by drawing on their home-based practices, the first part of this article engages with connections between scientific ways of thinking and knowing and students' prior knowledge or practices. The article then moves to providing a brief survey of the effects of education policy in South Africa on the chances of black working-class students, and particularly those from rural areas, accessing higher education. The third and the last part of this article deals with Archer's (1995; 1996; 2000) social realist framework to understand the learning of students who come from rural areas. However, Archer's social realist framework is based on Bhaskar's (1978; 1979) critical realist ontology. Bhaskar's stratified ontology is believed to be relevant in providing the tools to explore a level of reality beyond students' immediate experiences and lecturers' observation of such experiences. Drawing on Bhaskar's critical realist framework, I argue, will provide us with insights into which could be used to improve the situation.

The paper therefore aims to do two things. Firstly, it aims to present an argument for the need to use students prior learning in our universities, and particularly in science. Secondly, it argues for the use of a specific theoretical framework combining Bhaskar's (*ibid*) critical realism and Archer's (*ibid*) social realism to explore this.

Scientific Ways of Thinking and Students' Prior Knowledge

In order to account for differences in knowledge and in ways of being and knowing in formal science and local knowledge, it is pertinent to consider the extent to which the distinctive features underpinning scientific way of thinking and thus knowing manifest themselves in students' prior knowledge, experiences and/or practices. Clearly, differences in the epistemologies and ontologies of scientific and local knowledge present major challenges for attempts to integrate the two in formal science teaching. For example, one difference is that formal science is concerned only with phenomena that are

testable empirically. On the basis of this testing, theory and principles are logically deduced. Local knowledge, on the other hand, embraces both testable and non-testable metaphysical phenomena (Zinyeka 2013). This means that mainstream science validates only which can be observed empirically whereas in local ways of knowing even that which cannot be empirically observed, including superstitions, is validated. The fact that phenomena such as superstitions are not empirically observable does not mean that they are irrelevant. However, in order to overcome this challenge, it is necessary to have a clear understanding of the characteristic features underpinning scientific ways of thinking and knowing. It is then necessary to understand features of other world views in order to see how these might be integrated.

Based on an understanding of the epistemology of science 'as a way of knowing, or values and beliefs inherent to the development of scientific knowledge', Lederman, *et al*. (2013: 140), argue that philosophers of science, historians of science, scientists, and science educators do not generally define the nature of science (that is its ontology) or epistemology of science in similar terms (Lederman *et al*. 2013). Such dissonances should not be viewed as irrelevant, as Lederman *et al*. (2013) maintain. Rather such dissonances could be resolved by accepting that scientific knowledge is never absolute.

Understood in this way, critical questions could be asked about scientific canons. These would include questions about what constitutes legitimate knowledge in the field of science and who can claim to produce and/or have legitimate knowledge (Leibowitz 2017b). This question is relevant given that certain ways of reading the world are hegemonic as they are assumed to be universal (Gramsci 1971). The hegemony of certain kinds of knowledge leads to a situation where other knowledge systems and values are ignored and suppressed as scientific knowledge is generated (Leibowitz 2017b; Santos 2014). This situation leads to what is termed cognitive injustice involving the unequal treatment of all forms of knowledge (van der Wall 2012). Writing about cognitive justice, the opposite of cognitive injustice, Leibowitz (2017a) points out that this does not mean that all forms of knowledge are equal. Rather, it is the equality of knowers that should form the basis of dialogue amongst knowers and their knowledges. In the context of this article, students as knowers, whether they come from rural areas or urban areas, should feel that they are part of the curriculum with which they are engaged as valid knowers.

Questions noted above have implications for the curriculum more broadly and not simply the selection of knowledge. Such considerations are

crucial as academics need to consider the kinds of student curricula will shape. As a result, students' local ways of being and knowing are crucial in the development of scientific knowledge, something which is not usually the case in science disciplines which normally focus on the knowledge that is to be transmitted as opposed to students themselves as knowers (Ellery 2016; Maton 2014).

There is also a general agreement among scholars that 'scientific knowledge is tentative (subject to change), empirical (based on and/or derived from observations of the actual world), subjective (theory laden), that it necessarily involves human inference, imagination, and creativity (including the invention of explanations), and is socially and culturally embedded' (Lederman *et al.* 2013: 140). These qualities underpin formal science as a way of knowing. In the rural areas, practices such as observation of the natural world stemming from curiosity also lead to the use of inferences to draw conclusions (Zinyeka 2013). In some areas, for example, cow dung is used as a fertilizer. The development of this practice resulted from observing the impact of the dung on the growth of grass and other plants. According to McDonald (2013) the process of knowledge production involved in this practice resembles scientific procedures as it draws on the skill of observation to observe the environment and the making of inferences, including inferences about what causes the grass around the cattle kraals to grow healthily (Zinyeka 2013). When it comes to formal disciplinary science, students could engage in experiments to investigate the substances that the cow dung possesses to enable grass to grow healthily around cattle kraals. The fact that what they already know is valued in the classroom is likely to enable participation in knowledge construction. Even more importantly, this would allow them to see that what they can already do, in the sense of coming to conclusions based on observations they make of the world around them, is valued in formal science.

Another local practice in rural areas involves the use of primitive technology in roof thatching. Zinyeka (2013) is of the view that there are several concepts regarding this practice which are amenable to scientific principles, facts and experiments. Such concepts relate to shapes, force, materials and angles in terms of support and balancing.

The potential integration of ways of knowing involved in the development of indigenous practices does not suggest that local knowledges should be included under the banner of science (Hodson 2009). Rather, it is the case that an analysis of how knowing came to be, could assist students in

understanding the development of scientific knowledge and, thus, knowing. A failure to consider the knowledge resources that students bring with them into our universities might be the reason why the statistics indicate that black students in higher education bear the brunt of failure rates (Chereni, Leibowitz, & de Wet 2017; Boughey & Mckenna 2015; Boughey 2010), an observation which has resulted in the use of policy, such as the Foundation Programme Grant Policy (DET 2004) to improve access and success.

South African Policy

Chereni *et al.* (2017) have investigated the ways in which educational policy, or the curriculum strategies and practices that result from it, has responded to the perceived interplay between 'rurality' and education. In doing so, they have identified a close relationship between the place of residence, for example, rural versus urban, and access and success. Others (Mahlomaholo 2012; Masinire 2015; Moletsane 2012) point out that the place of residence influences post-secondary educational trajectories and career choices and has a significant impact on educational outcomes. Educational policies shaped by the segregation policies of apartheid resulted in white supremacy and the monopoly of resources in education (Statistics South Africa 2011). Such policies ensured that blacks received inferior education (Hart & Padayachee 2013). According to Roscigno and Crowley (2009), educational outcomes between racial groups in South Africa varied significantly because of such policies.

A further outcome of these policies was the disruption of 'the ontological security among blacks' (Chereni *et al.* 2017: 6). There was thus a disjuncture between students' home literacies (I use the term 'literacies' in the sense of Street's (1984) ideological model explained later in this article) and school-based literacies (Department of Basic Education 2005; Human Sciences Research Council 2015; Statistics South Africa 2011). This observation was also made by students in the protests of 2015 and 2016.

Although recent research shows that racial and gender barriers involved in accessing higher education have been reduced over the past seven or so years (Chereni *et al.* 2017), equity of outcomes, defined as success, are still split along racial lines. In a similar vein, Chereni *et al.* (2017) note that students who come from low-income families, including rural communities,

bear the brunt of underachievement at Grade 12 level. Chereni *et al.* (2017: 16) go on to argue that 'conditions of inequality screen out learners from disadvantaged backgrounds prior to post-secondary education'. The implication of this observation is that, at university, equity of outcomes for these students is negatively affected.

Accounting for Failure

Numerous researchers (Badat 2011; Case 2013; Chereni *et al.* 2017; Boughey & McKenna 2015) argue that equity of outcomes or academic achievement cannot simply be related to factors such as intelligence, motivation or skills and that the clash between broader institutional contexts and those of the families and communities in which students were raised also have to be taken into account. It is thus the 'social' aspect of teaching and learning that this paper argues could play a significant role in positively affecting equity of outcomes or academic achievement of students, and most especially those who come from disadvantaged backgrounds including the rural areas, particularly in the field of science. The argument is therefore that the informal acquisition of scientific practices in home contexts have the potential of being harnessed to facilitate access to formal, disciplinary science knowledge and ways of knowing.

This is especially the case given that immersion in the academic context of a university can undermine a student's way of being and of understanding the world in profound ways, a process that then impacts affectively, psychologically and emotionally on the learner and, thus, on learning itself. When students are presented with knowledge that seems completely separate from them, their identities, their heritage, their backgrounds and value systems, accessing that knowledge can seem inordinately difficult. There is therefore a clear need to bring something 'from home' into our teaching as a means of reassuring students that all is not foreign and that what they already know is valuable.

Boughey and McKenna (2015) identify two models, existing at either end of a continuum, in understanding success and failure in higher education. The first model, 'the model of the student as a decontextualized learner' constructs the ability to succeed in factors inherent to the individual such as intelligence, motivation and aptitude. At institutional levels, this means that

blame for failure is allocated to the student and the university, and its staff, are absolved of all responsibility for it. The 'model of the student as a decontextualized learner' is contrasted with a second model at the opposite end of a conceptual continuum, 'the model of the student as a social being' (Boughey & McKenna 2015). This model acknowledges the university as an inherently social, political, historical and cultural space to which some students have privileged access by virtue of their previous experiences. A key step in exploring what academic teachers could do to allow students to feel that they belong in the new learning space they have accessed would thus be to accept that universities, the knowledge and the learning that sustains them are not neutral.

Related to the understanding of sites of learning as social, cultural and political spaces, is Street's (1984) identification of two models of literacy, the 'autonomous model' and the 'ideological model'. The 'autonomous model' understands literacy as a set of neutral, apolitical, acultural, asocial 'skills' involving the encoding and decoding of printed text. In contrast, the 'ideological model' sees literacy as a set of practices, developed from birth thanks to the contexts into which individuals are born and are raised. Literacy practices not only involve ways of interacting with text but also influence the texts with which a reader or writer is prepared to engage. Following this understanding of literacy as socially embedded, academic literacy (i.e. ways of engaging with certain kinds of texts privileged by the university) is understood as but one literacy in a multiple field. Significant in the context of this article is that literacy practices in the academy are underpinned by values and attitudes regarding what can count as knowledge and how that knowledge can be known (Boughey 2013). In the field of science, for example, knowledge is understood to exist independently of human thought and action with the result that objectivity is valued in the process of 'coming to know'. In language use, this then results in practices involving the passive which effectively elide the agency of the researcher.

Gee (2008) expands the notion of practice to involve all learning practices which are understood to be socially embedded. This would mean, for example, that the willingness of a student to ask and answer questions in class would be seen as a practice stemming from previous experiences, from values related to what can count as knowledge, whether knowledge is 'fixed' or constructed through interaction and how that knowledge can be generated, i.e. through interaction with another person.

Boughey and McKenna's (2015) work on the 'model of the student as a social being' and the 'model of the student as a decontextualized learner' along with the work of theorists such as Street (1984) and Gee (2008) acknowledge learning and the practices associated with it as profoundly social. From this perspective, there are no 'correct' ways of learning *per se*. Rather there are multiple ways of learning with some privileged in some contexts as they are understood to be more productive. Drawing on understandings which acknowledge learning as social is essential if we are to understand the differences in our universities and the differences in success and failure. The alternative, involving the attribution of success to factors inherent to the individual, is too horrendous to contemplate given that cohort studies (see for example CHE 2016) unfailingly show that black students experience more failure than their white peers.

An Alternative Lens for Exploring Difference

In the section above, I have argued for social understandings in order to explore the experiences of students in South African universities. In order to begin to understand why students from backgrounds that are 'other' to the middle class educated families that gain most access to higher education, an ontological framework is also needed. For this, Archer's (1995; 1996; 2000) social realism is proposed. However, as already indicated, Bhaskar's (1978; 1979) critical realism is the basis of Archer's theoretical work.

Bhaskar's Critical Realism

Bhaskar (1978; 1979) argues for a stratified or 'layered' understanding of the reality we want to explore and understand. The first of these layers is the 'Empirical', which involves the world of experience and observation, and it is at this level that exploration of the social world must begin. This layer in Bhaskar's critical realist ontology is understood to be relative, constructed, ever changing and transitive. In the context of this article, this might mean that a lecturer teaching students from working class rural backgrounds might observe that the students do not obtain the desired marks to enable them to pass a test in, for example, physics or chemistry. The lecturer, as a result of her/his social and cultural conditioning involving structures such as social class,

language as well as the impact of dominant discourses which construct failure as a result of a lack of inherent ability in students (Boughey & McKenna 2015) might fail to understand why students do what they do in order to study and complete assignments and therefore attribute failure to a lack of ability or motivation. Students, on the other hand, might understand their failure very differently. They know they have worked hard and therefore see the results of the assessment as unfair.

The second layer of Bhaskar's ontology is the 'Actual', or the layer of events. Events can be conceptualized as actions, things people do, and are observable and able to be experienced at the layer of the 'Empirical'. In the context of higher education, events can be conceptualized as the 'literacy practices' identified in Street's (1984) 'ideological model of literacy and Gee's (2008) broader model.

The final layer of Bhaskar's ontology is the 'Real'. This layer consists of enduring mechanisms which are understood to exist independently of human action and thought. The level of the 'Real' is therefore understood to be intransitive and impervious to human action and thought. The interplay of these mechanisms leads to the emergence of events at the level of the 'Actual' and experiences and observations of these events at the level of the 'Empirical'. Critically, the emergence of events, observations and experiences is understood to be tendential and not as strict cause-effect. Mechanisms can consist of structures such as social class, gender, race and geography as well as discourses, conceptualized as sets of ideas that hold together in language and other sign systems and which constrain and enable what can be done, thought, valued and so on (Kress 1988).

Archer's Social Realism

Archer's social realism (1995; 1996; 2000) draws on Bhaskar's critical realism in order to allow us to explore the working of these layers of reality over time. Drawing on a concept she terms 'analytical dualism', Archer (*ibid*) insists that the 'domains' of structure, culture and agency should be analyzed separately by arguing against what she terms the 'fallacy of conflation' (Archer 1996: xv).

Archer (1996) identifies three types of conflation, upwards, downwards and central conflation. Downwards conflation, or what Archer

terms 'Society's Being', involves the belief that everything is socially constructed and that human beings have no choice or free will. Upwards conflation, or 'Modernity's Man' privileges human agency and sees society as created by human action. The final view, central conflation, draws on Giddens (1984) 'structuration theory' is critiqued by Archer because agency and structure are 'clamped together in a conceptual vice' (Archer 2004: 4).

For Archer, culture is understood to be discursively constituted. This means that sets of ideas in language and other sign systems constrain and enable emergence of events at the level of the 'Actual' and experiences and observations of these events at the level of the 'Empirical'.

Mechanisms in the domain of structure would include social structures, the finance system, the education system and so on. Critically, mechanisms are dormant until agents exercise their own powers to draw on them in order to pursue a project which will allow for the attainment of goals. In the case of students in higher education, they would draw on discourses about what constitutes knowledge and appropriate ways of learning as well as structures such as the location of their home and the social class of their family, in order to generate events that would lead to the attainment of their goal, a qualification. Students from working class rural backgrounds could thus be expected to draw on very different mechanisms from those from middle class, educated, urban homes.

Since in this article the intention is to locate and understand the social world of students who come from rural areas and are now studying at university, Archer's (1995; 1996; 1998) theoretical framework is seen as relevant because of its emphasis on structure, relating to concepts such as social class, gender, race, marriage, education and so on), culture, which is understood to concern ideas, beliefs, values and ideologies, and agency, which refers to human thought and action.

In order to have a 'broader critical understanding of the context in which teaching and learning takes place' (Case 2013: 5), a social realist lens is useful in order to tease out the way structure condition their agency in contrast to the way the agency of their academic teachers, who may come from very different backgrounds, plays itself out.

A final aspect of Archer's work that is of use in understanding the impact of the broader social context on learning is her 'morphogenetic cycle'. Archer sees change, or non-change, as occurring in 'morphogenetic cycles'. Agency is conditioned in the first part of the cycle, termed 'T_1'. It is then

possible to look at the way students use their agency, either individually or as groups, over a specific time period termed 'T_2' to 'T_3'. It is then possible to explore whether change or non-change has occurred in the final part of the cycle, 'T_4'. According to Archer, this framework allows us to arrive at an 'explanation of how … the properties and powers of the "people" causally intertwine with those of the "parts"' (Archer 1995: 15).

In the context of higher education, it would thus allow us to understand how working-class students from rural areas enrolling at a university interact with the learning required of them given their previous conditioning as well as allowing us to see how efforts to enhance teaching and learning, such as drawing on students' home-based knowledge practices, can result in change or non-change**.** The theoretical lens of critical realism and social realism thus have the potential to allow for more sophisticated understandings of the need for prior experience to be welcomed in the university classroom.

Conclusion

This paper has argued for the need to locate students' home-based practices with scientific underpinnings in the teaching and construction of knowledge in the field of science. The paper has argued that structures such as the curriculum are sometimes left without critique while the causes of student failure is perceived as located in factors inherent to individuals. Because equity of outcomes is still skewed on racial lines, black students who come from working-class, and particularly rural, backgrounds still find it difficult to succeed in higher education, and more so in the field of science. In order to critically engage with these issues, the paper proposes firstly the need to draw on explanatory theory that will allow us to understand learning in our universities as profoundly social, cultural and political. Examples of such theory have been given in the work of Street (1984) and Gee (2008).

It is not enough simply to have explanatory theory however, particularly in the context of science where the social is usually ignored in favour of understandings of a reality that is objective and independent of human thought and action. Archer's social realist framework, which is based on Bhaskar's stratified ontology, are therefore proposed as ways to account for the relativism of human experience and the realism of an absolute world. Scientists are usually skeptical of relativism. The ability to acknowledge an

absolute world while, at the same time, also recognizing the relativity of human experiences and observation can therefore be appealing, particularly in contexts where scientists are increasingly being called upon to work in teams with social scientists in order to solve complex problems.

More importantly, however, in the context of the rigorous theoretical framing such work offers, the paper argues for the need to draw on the ways of knowing and the knowledge that students bring with them into our universities in order to validate them as individuals as well as to contribute to their success.

References

Archer, M. 1995. *Realist Social Theory: The Morphogenetic Approach.* Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511557675

Archer, M. 1996. *Culture and Agency: The Place of Culture in Social Theory.* Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511557668

Archer, M. 1998. Social Theory and the Analysis of Society. In Williams, T.M. (ed.): *Knowing the Social World.* Buckingham: Open University Press.

Archer, M. 2000. *Being Human: The Problem of Agency.* Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511488733

Archer, M. 2004. Constraints on the Internal Conversation: Margaret Archer and the Structural Shaping of Thought. *Journal for the Theory of Social Behaviour* 34,4:0028 - 8308.

Badat, S. 2011. Higher Education South Africa. *Insight Higher Education South Africa* 3:1 - 28. Available at: http://www.hesa.org.za/sa-universities/all-campusses (Accessed on 20 November 2017.)

Bhaskar, R. 1978. *A Realist Theory of Science.* 2nd Edition. Sussex: The Harvester Press.

Bhaskar, R. 1979. *The Possibility of Naturalism: A Philosophical Critique of the Contemporary Human Sciences.* New York: Routledge.

Boughey, C. 2010. *A Meta-Analysis of Teaching and Learning at Four South African Universities of Technology.* Pretoria: Council on Higher Education.

Boughey, C. 2013. 'What are we thinking of'? A Critical Overview of Approaches to Developing Academic Literacy in South African Higher Education. *Journal for Language Teaching* 47,2:25 - 42. Available at: http://dx.doi.org/10.4314/jlt.v47i2.2 (Accessed on 20 November 2017.)

Boughey, C. & S. McKenna 2015. Analysing an Audit Cycle: A Critical Realist Account. *Studies in Higher Education* 1 - 13. Available at: http://dx.doi.org/10.1080/03075079.2015.1072148 (Accessed on 23 November 2015.)

Boughey, C. & S. McKenna In press. *Calling for Change*. Durban: UKZN Press.

Bourdieu, P. 1973. Cultural Reproduction and Social Reproduction. In Brown, R. (ed.): *Knowledge, Education and Social Change: Papers in the Sociology of Education.* London, UK: Tavistock Publications.

Case, J.M. 2013. *Researching Student Learning in Higher Education: A Social Realist Approach.* London: Routledge.

Chereni, A., B. Leibowitz, B. Akala & T. de Wet 2017. Rurality and Education in South Africa: A Country Paper. Unpublished Paper Prepared for SAULT Forum Research Project on Rurality.

Council on Higher Education 2016. *Vital Stats*. Pretoria: Council on Higher Education.

Department of Education and Training 2004. *Policy on Foundation Programme Grants*. Pretoria: DET.

Department of Basic Education 2005. *Report of the Ministerial Committee on Teacher Education: A National Framework for Teacher Education in South Africa.* Pretoria: Department of Basic Education.

Ellery, K. 2016. *Epistemological Access in a Science Foundation Course: A Social Realist Perspective.* Unpublished PhD Thesis. South Africa, Grahamstown: Rhodes University.

Gee, J.P. 2008. *Social Linguistics and Literacies: Ideology in Discourse.* London: Routledge.

Gramsci, A. 1971. *Selections from the Prison Notebooks of Antonio Gramsci* (Hoare, Q. & G.N. Smith, ed. & trans.). London: Lawrence & Wishart.

Giddens, A. 1984. *The Constitution of Society: Outline of the Theory of Structuration*. Cambridge: Polity Press.

Hart, K. & V. Padayachee 2013. A History of South African Capitalism in National and Global Perspective. *Transformation: Critical Perspectives on Southern Africa* 81,1:55 - 85. Available at:

http://doi.org/10.1353/trn.2013.0004
(Accessed on 13 August 2017.)

Heath, S.B. 1983. *Ways with Words: Language, Life and Work in Communities and Classrooms.* Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511841057

Hodson, D. 2009. *Teaching and Learning about Science: Language Theories, Methods, History, Traditions and Values*. Rotterdam, the Netherlands: Sense Publishers. https://www.sensepublishers.com/media/1013-teaching-and-learning-about-science.pdf

Kress, G. 1988. *Linguistic Processes in Sociocultural Practice.* Oxford: Oxford University Press.

Lederman, N.G., J.S. Lederman & A. Altink 2013. Nature of Science and Scientific Enquiry as Contexts for the Learning of Science and Achievement of Scientific Literacy. *International Journal of Education in Mathematics, Science and Technology* 1,3:138 - 147.

Leibowitz, B. 2017a. Cognitive Justice and the Higher Education Curriculum. *Journal of Education* 68:93 - 112.

Leibowitz, B. 2017b. Power, Knowledge and Learning: Dehegemonising Colonial Knowledge. *Alternation* 24,2:99 - 119.

Luckett, K. & T. Luckett 2009. The Development of Agency in First Generation Learners in Higher Education: A Social Realist Analysis. *Teaching in Higher Education* 14,5:469 - 481. https://doi.org/10.1080/13562510903186618

Mahlomoholo, S.M. 2012. Early School Leavers and Sustainable Learning Environments in Rural Contexts. *Perspectives in Education* 30,1:101 - 110.

Masinire, A. 2015. Recruiting and Retaining Teachers in Rural Schools in South Africa. *Insights from a Rural Teaching Experience Programme* 25,1:2 - 14.

Maton, K. 2014. *Knowledge and Knowers: Towards a Realist Sociology of Education.* New York: Routledge.

Mbembe, A. 2015 Decolonizing Knowledge and the Question of the Archive. Unpublished Paper. Available at: https://wiser.wits.ac.za/system/files/Achille%20Mbembe%20-%20Decolonizing%20Knowledge%20and%20the%20Question%20of%20the%20Archive.pdf

Mbembe, A. 2016. Decolonizing the University: New Directions. *Arts and Humanities in Higher Education* 15,1:29 - 45. Available at: http://www.historicalstudies.uct.ac.za/sites/default/files/image_tool/images/149/Decolonizing%20the%20university%20New%20Directions%20-%20Achille%20Joseph%20Mbembe.pdf (Accessed on 21 January 2017.) https://doi.org/10.1177/1474022215618513

McDonald, C.V. 2013. Nature of Science and Argumentation: A Review of Empirical Research. In Akpan, B. (ed.): *Science Education: A Global Perspective.* Abuja: Next Generation Education.

Moletsane, R. 2012. Repositioning Educational Research on Rurality and Rural Education in South Africa: Beyond Deficit Paradigms. *Perspectives in Education* 30:1 - 8.

Morrow, W. 2007. *Learning to Teach in South Africa.* Cape Town: HSRC Press.

Ndlovu-Gatsheni, S.J. 2013. *Empire, Global Coloniality and African Subjectivity.* New York: Berghahn Books.

Roscigno, V.J. & M.L. Crowley 2009. Rurality, Institutional Disadvantage, and Achievement/Attainment. *Rural Sociology* 66,2:268 - 292. Available at: http://doi.org/10.1111/j.1549-0831.2001.tb00067.x (Accessed on 07 December 2016.)

Santos, B. 2014. *Epistemologies of the South: Justice against Epistemicide.* Boulder, Colorado: Paradigm Publishers.

Statistics South Africa 2011. *Census 2011 – A Profile of Education Enrolment, Attainment and Progression in South Africa Contents*. Pretoria: Government Printer. Pretoria. Available at: http://www.statssa.gov.za/publications/Report-03-01-81/Report-03-01-812011.pdf (Accessed on 8 December 2016.)

Street, B.V. 1984. *Literacy in Theory and Practice*. Cambridge: Cambridge University Press.

Van Der Wall, C.S. 2012. Creolisation and Purity: Afrikaans Language Politics in Post-Apartheid Times. *African Studies* 71:446 - 463. https://doi.org/10.1080/00020184.2012.740886

Wheelahan, L. 2010. *Why Knowledge Matters in Curriculum: A Social Realist Account.* London: Routledge.

Zinyeka, G. 2013. *The Epistemological Basis of Indigenous Knowledge Systems in Science Education.* Unpublished PhD Thesis. South Africa, Pretoria: University of Pretoria.

Nkosinathi Emmanuel Madondo
Centre for Higher Education Research
Teaching and Learning (Extended Studies Unit)
Rhodes University
n.madondo@ru.ac.za