EDITORIAL

AN EDUCATIONAL RESPONSE TO STUDENT PROTESTS. LEARNING FROM HANNAH ARENDT

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PROTESTS

The higher education scene in South Africa has recently been dominated by student protests such as #rhodesmustfall and #feesmustfall. These movements express critique of social inequalities, colonial epistemologies, oppressive pedagogies, bureaucratic management in and financial exclusion from universities. They associate closely with workers' demands for insourcing (#outsourcingmustfall) and decent remuneration.

The protests are part of the growing global awareness of the social and environmental unsustainability of neoliberal politics and global capitalist practices. They could be seen as part of what Raymond Williams (1965) calls the 'long revolution' towards self-governance. This continuing revolution could be detected among the South African 'born free' generation (those born after the establishment of the democratic state in 1994). This generation demands with new energy and urgency the continuation of the South African revolution through the realisation of the promises of democracy. As could be expected, the older generation, particularly those who were part of the democratic revolution in South Africa, are 'bewildered and angry when the new young generation asserts that the revolution has after all not

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occurred' (Williams 1965, 12). Students are consequently confronted with forceful and violent resistance from the state and its apparatuses such as university managers with an emphasis on securitisation (Duncan 2014).

What is largely lacking in these reactions is an educational response that displays an awareness of the significance of these movements for the democratisation of society. Educators should be motivated by this demand for a better society to which education could contribute.

The question is therefore how we as educators and educational researchers should respond to the actions and voices of the students. This reflection aims to learn from Hannah Arendt who brings together a number of key issues, such as the significance of the new and the revolutionary spirit; violence, power and freedom; traditions and renewal; and democracy and the public sphere.

BEGINNINGS

In the active life, which is for Arendt (HC) constitutive of humanity, three kinds of activities could be distinguished: labour, work and action. Labour is the repetitive activity through which the conditions are created to sustain biological life. Through work the environment is transformed in the production of durable life contexts. Since both labour and work deal with the repetitive provision of the necessities of survival (food, shelter), they are instrumental towards determinable ends. While the activities of labour and work deal with instrumentality and predetermined ends, the activity of action is characterised by freedom.

To act is to begin something new. The newness of a beginning is possible because of natality, the fact that new humans are born into the world (R, 211; HC, 9). Each new human brings something uniquely new to the world. As an initiative, a beginning is also an act of freedom which does not simulate anything that came before. It is a miracle since it seems to appear from nowhere and could have unpredictable effects. These beginnings are essential to sustain the world, which is in constant need of renewal.

Beginnings as individual initiatives take place in the company of others where they are recognised and taken further. The proliferation of beginnings makes plurality characteristic of the human condition (HC, 8). Action is also boundless and unpredictable because it triggers a chain reaction among others that cannot be controlled or predetermined. It has the potential to 'force open all limitations and cut across boundaries' (HC, 199). Any attempt to determine the effects of actions or to shape the response of others deprives them of their own freedom to initiate a beginning.

REVOLUTION AND VIOLENCE

Revolutionary beginnings are characterised by two different desires: a desire to be liberated from necessities and a desire to pursue positive freedom (R, 142). A beginning is a violation (R, 20) since the boundaries of the old cannot withstand the 'onslaught with which each new generation must insert itself' (HC, 191). The violations often turn violent when they appear in response to necessities. Violence is for Arendt (HC, 31) 'the prepolitical act of liberating oneself from the necessity of life for the freedom of the world'. She distinguishes rebellion, which aims at liberation from the necessities, from revolution, which aims at positive freedom (R, 142). Rebellions are meaningless if they do not lead towards the constitution of freedom. The 'spirit' of revolution is the drive to not simply transform the world but to change fundamentally the conditions of human life in order to realise freedom.

The contrast between liberation and freedom comes for Arendt to the fore in the difference between the American and French revolutions. The American Revolution aimed at the constitution of a society on the basis of freedom (R, 68, 92, 198). In contrast, the French Revolution was driven by liberation from the necessities of social needs in the pursuit of personal happiness. It is the dominance of social needs and necessities that caught the French Revolution in the cycle of destructive violence perpetuated by a revolutionary dictatorship. In contrast the drive for the life of freedom led to the constitution of a new political society in America. A revolution driven by social needs remains within a destructive cycle of violence because these drives cannot envisage a life of freedom after liberation. The true meaning of revolution for Arendt is therefore the 'foundation of freedom, that is, the foundation of a body politic which guarantees the space where freedom can appear' (R, 125). A revolution caught up in the cycle of violence constitutes the end of the political. Violence is anti-political since it is incapable of speech and speech is helpless when confronted with violence (V, 19).

THE POLITICAL

To be political means that everything is decided through words and persuasion and not through force and violence (HC, 26). The real purpose of revolution is the establishment of freedom through the constitution of a political public sphere *(polis)* of equal and free participation. The political is the space of action where beginnings could appear in the company of equals. It is only in the public sphere that is free from violence where positive freedom, plurality, action and excellence could thrive in the pursuit of public happiness (R, 130). It is where freedom and power come together. The political life demands courage from the individual to appear in the company of others and to strive towards excellence when judged by them. It is the life among equals where judgements are made about the best way to live among others and to constitute a better world. Arendt emphasises the importance of speech as political

action. Action is the ability to find the right word at the right moment (HC, 26) in the presence of others.

While the political sphere could provide some boundaries to the boundlessness of action, it cannot predict or control where the beginnings would lead. The political sphere is not dependent on institutionalisation. The endurance of the political cannot be ensured through the prior creation of spaces or institutions. The *polis* itself is constituted through acting and speaking together (HC, 198). It is therefore important that the *polis* be kept alive through acting and speaking in order for beginnings to appear, freedom to be exercised and plurality to be pursued.

THE EDUCATIONAL

Education deals centrally with actions characterised by freedom and plurality. Participation in the public sphere is therefore a central element of education in a democracy. While education is located in the transition from the private sphere of the home to the public sphere, it participates in exactly the same actions that characterise the public.

For Arendt education introduces the new generation to the common world. The purpose is not to imprint the world that has to be accepted as such, but to show the world as a dynamic process in constant need of renewal. By introducing young ones into the common world they are made part of the world into which they are born. They are not introduced into an idealised world, but into a world with all its flaws and achievements. This educational introduction is, however, a paradoxical process since it is both the introduction of the world as it is and the creation of conditions under which the world could be renewed. This central task of education is presented by Arendt as follows:

> Education is the point at which we decide whether we love the world enough to assume responsibility for it and by the same token save it from that ruin which, except for renewal, except for the coming of the new and young, would be inevitable. And education, too, is where we decide whether we love our children enough not to expel them from our world and leave them to their own devices, nor to strike from their hands their chance of undertaking something new, something unforeseen by us, but to prepare them in advance for the task of renewing a common world. (CE, 196)

Arendt emphasises here the responsibility of the educator whose task it is to introduce the new generation to the world in such a way that the world could be protected and renewed. Arendt furthermore separates education from politics when she criticises the pursuit of political programmes through education (CE). An education that serves political purposes does not promote freedom because it predetermines how the new ones are to renew the world. Biesta (2013), among others, criticises Arendt's separation of the educational and the political. While the presence of predetermined outcomes in education should be appreciated, for Biesta education deals centrally

with human action and freedom, therefore with the political. The ontology of being born already provides the principle of the renewal of the world.

The student protests have also shown that any attempt to separate the educational from the political could not be more wrong. They have shown a keen sense of how education excludes the majority from participating in the public sphere of action and freedom. They have expressed the insight that education is the necessary means towards a full participation in the political. Education is therefore political in two senses: Extrinsically, it is affected by politics and enables political participation. Intrinsically, the political processes of enacting freedom are constitutive of education. Education is an inherent part of the political process of human interaction characterised by plurality and freedom.

Educational spaces are political spaces of a particular kind. They are spaces of reflection, of relative safety and reduced risks; courage is not assumed, but fostered; opportunities are provided to experiment with new beginnings and imaginations and to develop judgement; forgiveness could be cultivated and hope fostered. For Biesta, the introduction into the common world could only mean the enablement to participate in the public sphere by developing through participation the virtues and competences that characterise such a world.

EDUCATIONAL RESPONSIBILITY

The securitisation and eruption of violence on campuses are symptoms of failed political and educational processes. Politics fails when a significant part of the population is excluded from education and thereby from the common world. Education fails when the actions of students put the renewal of the common world at risk. When this happens we have, in the words of Arendt (CE), left students to their own devices by failing to make them part of the ‘common world’. The inevitable effect is increased frustration and violence.

We encounter danger when student protests are not driven by the pursuit of freedom, but largely by social needs based on necessities related to educational exclusion and financial deprivation. The protests driven by necessities tend to remain within anti-political and anti-educational cycles of violence. The danger intensifies when universities are burdened with the task of dealing with these necessities and are distracted from engaging educationally with the students.

What follows is an attempt to be more specific about the responsibility of educators to engage with students.

Fidelity to the event of the revolution

The event of a revolution already points towards the inability of traditions to promote and sustain freedom (R, 162). The responsibility of the educator is to bring the revolutionary spirit into the public sphere so that the spirit could stay true to

the pursuit and constitution of freedom. The spirit is kept alive when freedom is exercised through authentic interactions based on respectful deliberations. Such exercises and experiences of freedom are the only way in which to prevent violent reactions of frustration.

Take responsibility for the world

Educators have to take responsibility for the ways in which the revolutionary spirit has been suppressed prior to, but also after the constitution of democracy in South Africa in 1994. We have to take responsibility for the world as it is even though we may disagree with many of its features. This responsibility demands a response to students about the successes and failures in our struggles to keep freedom alive.

Openness towards the new

Educators have to confess their ignorance about the way in which the world will or should be renewed. The new beginnings are unbounded and unpredictable. Their most insightful attempts fall short in predicting or determining the world to come. Many educators who lived through the struggles that led to the constitution of a democracy in 1994 may have the impression that nothing new is at stake. Educators should pay attention to the ways in which 'old' values gain new meanings in changed contexts.

Foster open spaces

Educational spaces have to be opened up to the multiplicity of student voices. The failure to attend to student voices already excludes them from fuller participation in and care for the common world. This openness does not entail the endorsement of whatever is expressed or the cacophony of multiple voices, but an engagement about the ways in which the common world could be revolutionised through the refinement of deliberations and judgements in the pursuit of excellence in the public sphere.

THIS ISSUE

This is the first free open access issue of the journal in the spirit of the accessibility and openness of educational knowledge. The issue contains a variety of articles that critically investigate inequalities through which current configurations of power are maintained and entrenched. The positive tone present in the concrete proposals to change attitudes and practices displays hope about the ways in which education could be transformed.

The first two articles deal with different discourses in schools, one in relation to gender in a Scandinavian context and the other in relation to violence in the Western

Cape. Brunila and Edström investigate the discourse of gender equality in preschools in Sweden and Finland. They introduce the concept of projectisation to refer to the market-orientated form of work, governmentality and subjectivity that filters through to schools. The discursive regime of projectisation contains a heteronormative bias that privileges masculinity by expecting girls to change in order to display masculine traits. Through their critique of projectisation, the authors 'trouble' the way masculine values are portrayed as the ideal in the preschool.

Davids and Waghid investigate the language of educators in a context of social problems such as violence, gangsterism, drug abuse, unemployment and crime in a school. They show how principals and teachers resort to disciplinary measures such as suspensions and corporal punishment that violate institutional policies and constitutional demands. They often respond in a derogatory 'language of violence'. One gains the impression of their frustration brought about by the lack of alternative strategies and support structures to deal with the violence in the community and the school. Davids and Waghid propose that this cycle could be broken by shifting from a language of violence to a language of becoming that emphasises social healing and engagement. This is a language of care, 'liking' and 'friendship' that enhances the humanity of all involved.

Two articles show how mentors benefit from their involvement with mentees. Archer and Parker show how young academics are developed through their own work as writing consultants in university writing centres. Their exposure to a variety of students and disciplines shapes their academic discourse and interdisciplinary insight.

O'Shea, McMahon, Priestly, Bodkin-Andrews and Harwood investigate a mentorship programme that aims at university access for indigenous young people in Australia. This is the first of two articles that deal with access of marginalised students to the university. They show how the pedagogy attempts to avoid a deficit approach by drawing on cultural resources of the mentees. The authors focus on the learning of the mentors enabled by the mutuality of the programme. They found that the mentors benefit from the programme by learning to appreciate indigenous culture. They also came to a better understanding of the history of Australia, learn ed how to respect indigenous knowledges and unlearned racism and stereotypes.

Norodien-Fataar investigates the pathways disadvantaged first-generation students create in order to gain access to the university. She extends Bourdieu's notion of cultural capital to analyse the nature and role of various kinds of capital within their communities. These students display 'sophisticated intellectual mediating capacity' by drawing on their 'community cultural wealth' such as the social capital in networks and emotional capital.

A similar emphasis on community resources is present in the next two articles on service learning. Preece uses the notion of adaptive leadership and asset-based development to query issues of power and equality between universities and

communities. While adaptive leadership enables individuals and groups to accept responsibility for their decisions, an asset-based approach contributes towards the emancipation of communities from external mobilisers of change such as the university. It remains, however, a question of how community-based knowledge could inform legitimate university knowledge.

Bowie and Cassim report on a service-learning project where communication design students engage with prisoners in their own learning about a human-centred approach to design. The article reports on how students reflect on their interaction with prisoners. It testifies to the mutual benefit of an approach to design that takes the users' expressions of their needs seriously.

Koopman, Le Grange and de Mink investigate phenomenologically the lived experiences and actions of a Physical Science teacher. This article provides a valuable contribution to the study of curriculum change by focusing on the meaning structures of a teacher. It portrays the teacher as someone who could often actively contribute towards his own learning against the odds of unsupportive colleagues and a deprived educational background.

Gebremedhin and Joshi critically compare the educational discourses in Mandela's statements with those within post-1994 policy statements. They detect a shift from an emphasis on human rights, empowerment and democracy, equality and social justice in Mandela's texts, towards a neoliberal emphasis on the economic functions of education in the policy documents. They show that this orientation towards the market perpetuates racial and class inequalities. They appeal for a return to the wisdom within the more balanced view of Mandela.

Cockcroft, Bloch and Moolla investigate the problem of psycho-educational assessment of school children's verbal learning abilities in a context of inequality. They express concern about the ways inequalities are reproduced when assessment is based on receptive and expressive vocabulary. They argue that working memory is less influenced by social and economic conditions and is therefore a more accurate indicator of learning abilities. They propose that tests based on working memory be included in order to obtain a more just assessment.

The introduction of the topic of evolution in the school curriculum brings a cognitive and moral dissonance related to the proper understanding of science and its methods. Against the background of poor teacher knowledge textbooks have become a central element in the acquisition of knowledge. Sanders and Makotsa investigate the quality and scientific soundness of textbooks by focusing on the way evolution is portrayed. They find numerous 'misconceptions' and 'unscientific ideas' about evolution as well as many ambiguous formulations. This raises questions about the writing, evaluation and selection of textbooks.

In light of the decline in the knowledge of science in South African schools, the interventions investigated by De Villiers, Plantan and Gaines are significant. They investigate an approach to the teaching of science in primary schools that is

inquiry-based and experiential. They report on increased pupil involvement in and excitement about science activities related to this intervention. The participants also find that the pedagogies in South African schools are more varied and flexible in comparison with a focus in the United States of America on standardised tests.

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TROUBLING GENDER EQUALITY: REVISITING GENDER EQUALITY WORK IN THE FAMOUS NORDIC MODEL COUNTRIES

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ABSTRACT

This article concerns gender equality work, that is, those educational and workplace activities that involve the promotion of gender equality. It is based on research conducted in Sweden and Finland, and focuses on the period during which the public sector has become more market-oriented and project-based all over the Nordic countries. The consequences of this development on gender equality work have not yet been thoroughly analysed. Our joint empirical analysis is based on discourse-analytic methodology and two previous empirical studies. By analysing interviews conducted with people involved in gender equality work, this article emphasises the effects of market-oriented and project-based gender equality work in education and working life in Sweden and in Finland. The findings highlight an alliance between projectisation and heteronormativity that acts to regulate how gender equality ought to be talked about in order for its issues to be heard. A persistently constructed 'remedy' to 'the gender equality problem' is that girls and women are positioned as 'needing' to change more than boys and men, by adopting more traditionally 'masculine manners' and choosing to work

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in more ‘masculine sectors’. The findings also show that the constitutive forces of these discourses provide little leeway for critical perspectives.

Keywords: gender equality work, labour market interest, marketisation, projectisation, heteronormativity, subjectification

INTRODUCTION

This article forms a contribution to the discussion on gender equality, a political term that is actualised in demands for various kinds of social change. It focuses on gender equality work, that is, those educational and workplace activities that involve the promotion of gender equality. The article is written in the light of research on gender equality projects in education and in working life that have been implemented in Sweden and in Finland over the past forty years. However, our aim is not to compare gender equality work in different Nordic countries. Instead we want to highlight how gender equality projects in education and in working life in both countries are quite similarly connected with the interests of the labour market, with the demand and supply of labour, and among the market-oriented power relations of working life. In Sweden and in Finland, central government has traditionally supported the responsibilities of their welfare states through specially allocated long-term funding. This has been a benchmark in the Nordic model countries’ gender equality work (Bergqvist 1999; Brunila & Edström 2013). However, publicly and budgetary funded gender equality work has evolved into more market-oriented projects in situations where a project itself has become a new governing mechanism for society. To analyse this trend, we have utilised and developed the concept of projectisation (Brunila 2009). In our article this concept represents a strand of discursive power that intertwines with equality work and content, encompassing subjects that can be known and spoken about and that gain legitimacy from heteronormativity and market-oriented interests. Heteronormativity shortly refers to an understanding of what is labelled heterosexual and masculine as the most valuable, the norm. A critical starting point is that the impact of heteronormativity on gender equality work needs to be problematised and challenged. We will show how, on the one hand, projectisation has contributed to the visibility of problems related to gender equality, while on the other hand it has maintained heteronormativity and the hierarchical order of societal differences, especially of gender, as well as harnessing equality for market use, thereby becoming somewhat useful and productive.

In order to show how projectisation with heternormativity and market-oriented interests permeate gender equality work, we utilise in this article two case examples of gender equality work: one from education and one from working life. At present, when it seems as if projectisation is being applied to its full extent, it is particularly important to recognise that, despite there being a wide range of education and

working-life contexts in which many equality activities may operate, following the shift to a more project-based perspective, such equality activities tend to have been targeted and shaped by similar forms of power.

The article has the following outline: first, we present the theoretical apparatus, research data and analysis. This is followed by a presentation of findings that begins with a description of the impact the labour market has on gender equality in Sweden and Finland. There then follows a scrutinisation of the Swedish case example of gender equality in education, namely the 'Gender Equality in Preschool' project. This is followed by the Finnish example of gender equality in working life, namely the 'Gender Equality in ICT' project. ICT is used as a shorthand for information and communcation technology. For each case example, the initial focus and its development over time are described, with the main focus of attention being directed at the (in)visibility of labour market interests, projectisation, heteronormativity and subjectification. The article concludes with a discussion.

THEORETICAL APPARATUS

The meaning of gender equality is not written in tablets of stone. Instead, different gender equality 'diagnoses' (Bacchi 2009) and 'remedies' are at play. The meanings assigned to the concept influence objectives and the ways these are to be pursued. A common starting point when writing this article is that we consider it vital that meanings of gender equality address current heteronormative power relations. Previous studies (Brunila *et al*. 2005; Brunila 2009; Lehtonen 2010) indicate that heteronormativity is a crucial obstacle to the advancement of a gender equality that moves beyond the notion that girls and women need to change more than boys and men. There is a clear need to 'trouble' this. The notion of 'troubling' is used in this article in two ways. Firstly, our focus is on gender equality projects that are considered as 'troubling' because of their aim in promoting especially women's positions in education and in working life. Secondly, we aim to 'trouble' the project-oriented practices regarding gender equality work (Butler 1990; Youdell 2011) that reproduce problems from the perspective of women's positions in education and in working life.

Since Sweden and Finland entered the European Union, research has increasingly favoured a reliance on project-based activities in the public sector (e.g., Brunila 2009; Brunila & Ylöstalo 2013; Hansson & Lundahl 2004; Sjöblom 2009). Such an increased favouring of these types of projects forms part of a larger societal and market-oriented shift that has created a site in which to mix public and private interests. Short-term, publicly funded projects have become a common solution to all types of problems so that such projects have become a common way to implement many welfare policies, including gender equality (Guðbjörnsdóttir 2010; Lundahl 2002; Pinqus & Van der Ross 2001; Rantala & Sulkunen 2006). Since the 1970s

most gender equality work in education has been carried out through publicly funded projects (e.g., Brunila 2009; 2011; Edström 2010; SOU 2010:83; Tallberg Broman 2002). This has included the distribution of funds from, for example, state ministries and agencies, national associations of municipalities and regions, municipalities, unions and foundations. The state has had, as mentioned above, a pivotal role in this process. Taking Sweden as an example, a main theme over this time has been the allocation of resources to the running of summer courses in technology and science for lower secondary girls (Edström 2005; Tallberg Broman 2002). In the mid-1990s, by which time these courses had been conducted in most Swedish municipalities, this strong emphasis began to be questioned by the state itself (Prop 1994/95:164); nevertheless, this focus remains almost twenty years later. There has been a similar situation in Finland where girls and women have been guided and trained in the ICT field for decades by the government (Vehviläinen & Brunila 2007). Developments in state governance with respect to gender equality in education in the 21st century have been characterised not only by time-limited work, but also by gender equality becoming a clearer element of new ordinary governance processes such as audits and evaluations (Brunila & Edström 2013). However, considering the increased favouring of projects as being *the* solution to different perceived problems, the preconditions for continuing with projects have definitely improved (Brunila & Edström 2013).

New governance is a market-oriented attempt to introduce territorially unbounded public and private actors, operating outside of their formal jurisdictions, into the decision-making processes of political institutions (c.f. Bailey 2006). Projects, as a form of new governance, work by creating a project society (Brunila 2009; 2011; Rantala & Sulkunen 2006) with a level of interdependency among individuals, groups, organisations, enterprises, officials and the state, in order to solve the problems of welfare politics by market-oriented and project-based interventions. In addition to new governance, projects represent a form of governmentality (Dean 1999) because they link the constitution of individuals more closely to the formation of the state, and to shaping the action of subjects (Rantala & Sulkunen 2006). As organised practices through which individuals are governed (Rose 1999), projects extend marketisation even further into practices as a form of governmentality. Marketisation in this paper is referred to a situation when several producers compete over public tasks and/or when internal steering systems are developed with the market and industry as models. We use the term to denote the direction of the change process, and quasi-markets when referring to the resulting situation as this is not a market in the strict sense. In contrast to proper markets, quasi-markets are characterized by being established and controlled by the state (Lundahl et al. 2013). Earlier research concerning projects has shown that the project has become an ideological method with which to bring in more market orientation (e.g. Rantala & Sulkunen 2006; Sjöblom 2009; Vehviläinen & Brunila 2007). A significant proportion of domestic funds have been directed towards projects that specifically reflect EU policies (Bache 1998; Sjöblom 2009).

In exploring the discourses of project-based gender equality work there is a need to explore the ways in which certain elements of the discourse have become more powerful than others. Although gender equality in the 21st century also has become a clearer element in new ordinary governance, project-based activities seem to represent what society and the state largely has to offer for gender equality (Brunila & Edström 2013). The study of the power-relations that affect people associated with gender equality work is pivotal, because power-relations have important material effects on people's lives. Such studies involve an examination of the use of discursive power. In order to grasp and acknowledge the forms of power that shape equality work, we have utilized the concept of projectisation. As a form of discursive power, projectisation is important to analyse because it is tolerable only on condition that it masks a substantial part of itself. It teaches project participants, workers, and other people involved: how to present themselves in the right way; how to learn to make their own choices and carry their own individual responsibilities; how to learn to become developmental and trainable. Crucially, it also elicits the self as a subject to be known and talked about by oneself and others. Projectisation would not have succeeded without heteronormativity. Heteronormativity carries the idea of a hierarchical gender order. It means a code of behaviour that expects women to behave in a less valued 'feminine' manner, and men in a more valued 'masculine' manner (see more in detail Butler 1997; Lehtonen 2010). The perception of genders as two inherently different beings has resulted in comparisons and juxtapositions. We will also show how this has appeared to be an obstacle to gender equality work.

Research data and analysis

Both authors share a critical interest in gender equality in education as well as a history of gender equality work: Author 1 is Swedish with a background in preschool education and political sciences; Author 2 is Finnish with a background in politics and sociology of education and adult education. During our initial discussions about our respective fields of research and main interests, we realised that even though we have been involved in different forms of gender equality work in various parts of education and the labour market, our data and experiences as researchers were surprisingly similar. We therefore bring our previously gathered empirical data from each of our respective studies together in the present article.

This joint analysis has also made us critically examine marketisation and projectisation as well as our own previous activities in equality projects and equality work (see also Brunila *et al*. 2005). The observation that gender equality work does not necessarily always have anything to do with gender equality has been useful. It might be tempting to start teaching others, to dress up as an expert, but taking gender equality into consideration in your own activities calls for constant negotiation, which does not necessarily prove easy.

Author 1 collected data from three preschool settings, which were all part of the same major Swedish gender equality project in education, here referred to as the 'Gender Equality in Preschool' project. This county-wide, time-limited, state-funded project, which ran for two years at the beginning of the 21st century, was provided with economic resources by a state delegation that was also time-limited. The actors involved in the project included, among others, the local authority association, the county council, a university, and a network with participating preschools from more than ten municipalities. The aim of the project, which included about 300 participants, was to increase knowledge about gender equality, to provide methods and tools, and to contribute towards the distribution of knowledge. Participation included lectures, seminars and supervision. Author 1's main data include the results of interviews with nine project participants, preschool teachers and nursery assistants from three preschools. This is complemented with field-notes from the interviews and documentation from the county-wide project and the three preschools.

Author 2 collected data from over 100 gender equality projects that have operated in education and in working life; she has been directly involved in several of these projects herself. In this article she has chosen to utilise data that have been mainly gathered from one equality project, here called the 'Gender Equality in ICT' project, which has operated in working life and in several private companies in the metropolitan area of Finland. She studied the project for two years and produced data by interviewing both project workers and project participants, including project workers from four small- and medium-sized ICT companies; altogether there were 24 interviewees. She also wrote a research diary. The aim of the project was to promote gender equality and desegregation in working life and especially in the ICT sector. The project operated during the 2000s for two years. The reasons why these two projects were chosen were partly that, in line with the reasoning about new governance and project society, they both involve a wide number of actors, and partly, as we will illustrate throughout the findings, because they represent typical heteronormative and market-influenced approaches related to gender equality in education and working life in general.

In the analysis in this article, we have adopted a discursive approach that emphasises the analysis of power inherent in the projectisation of equality work. Projectisation is a disciplinary and productive form of discursive power and the notion is derived primarily from the work of Michel Foucault. Projectisation combines the ideas of new governance and governmentality. As a form of new governance, it represents market-oriented, managerialist, self-organising networks, and by incorporating, producing and positioning everyone involved with project-based work, it represents a form of governmentality. We study the practices relating to project-based gender equality work in terms of discursive power, by acknowledging the relationships among knowledge, discourse and power as being productive and regulative (Foucault 1976; 1991; Davies 1998). Projectisation is both compelling and

rewarding because it defines a cultural script about appropriate responses to events, and a set of associated practices through which people make sense of themselves and others. It helps to create individuals involved in equality work, not only as objects but also as subjects, due to the way in which they can also influence the individual's sense of self.

Furthermore, we have included the idea of subjectification (Davies 1998) within the concept of projectisation. Projectisation as a form of subjectification describes the ongoing process whereby one is placed and takes place in the market-oriented and heteronormative discourse. Through those discourses, people become speaking subjects at the same time as they are subjected to the constitutive force of those discourses. Such an approach allows one to see how the forms of power work, and to see the effects that they have on forming how one must speak in equality work in order to be heard, and how certain discursive constructions are appropriated, while others are discarded as irrelevant or even threatening. This enables us to study the ambivalent process of simultaneous submission and mastery of the project-based equality work and what consequences this has. It presents an opportunity to explore the possibility of speaking and acting otherwise, through the process of submitting to and mastering the discourse. This is by no means an easy process. The process of submitting and mastering means tensions and anxieties that were often reflected during the interviews.

From the perspective of subjectification, it is the very constitutivity of the subject that enables people involved in equality work to act in these forms of power, which are not just regulating but also productive. Therefore, it is crucial to acknowledge the critical perspectives related to the gender equality discourse. Critical perspectives offer ways of seeing and thinking about equality work as a possibility for an alternative discourse. However, as Davies, Dormer, Gannon, Laws and Rocco (2001) suggest, this demands one to be conscious of, and to have mastery of the discourse one desires in order to be critical of it and to resist being channelled into an undesired discourse. Only then can there be space for seeing, thinking and acting otherwise.

In addition, we consider that projectisation as a form of discursive power is always being constructed and is never fixed. In equality work, at any moment in time and space, a range of competing discourses exist (Bacchi 2009), some of which are given more space than others. Power is thus exercised in and through discourses. Therefore, we argue that by making visible the ways in which equality work is constructed, these 'self-evident truths' can be challenged. In short, in the actual re-reading of our respective previous empirical studies on gender equality, we have focused on the (in)visibility of labour market interests and marketisation, projectisation and heteronormativity, including subjectification and submission and mastery of the discourse. This includes scrutinising the attention on individuals, groups and on variations within groups, including intersections. The main focus of

attention in the re-reading and in the presentation of results has been on identifying, scrutinising and problematising similar themes. Consequently, although there definitly are clear differences between the two scrutinised projects (for example one concentrates on gender equality for very young children, while the other concentrates on gender equality for adults), it is the similarities that are brought to the fore.

THE IMPACT OF THE LABOUR MARKET – A NEVER-ENDING STORY?

In both Sweden and Finland, as in the other Nordic countries, gender equality policy is mainly targeted to working life, although there has also been a number of gender equality projects in the educational field. Gender equality in working life is, in both countries, regulated by legislation covering public and private sectors and involves, for example, requirements concerning gender equality or equal treatment plans or and having employees in charge of promoting these issues. Gender equality work in working life takes varying forms depending on, for example, who is doing it and the financial resources devoted to it (Ylöstalo 2012; Brunila & Ylöstalo 2013). The main part of the Swedish and Finnish work has, as in the other Nordic countries, been targeted at improving girls' and women's conditions in the future or current labour market by making them more similar to those of men.

Though the scope has widened over the years, the main emphasis on women in the labour market has remained unchallenged. Special attention has been directed at increasing the proportion of women in traditionally male-dominated areas such as mathematics, natural sciences and technology. Over the years, attention has also been directed at employing more men in sectors where women have traditionally constituted (and still do) the large majority of the workforce, for example, in preschool and in the early years of compulsory school, though this emphasis has not been given attention equivalent to that given to changing girls' and women's choices. The increased market influence has meant that the traditional 'Nordic' focus on gender equality as a labour market issue connected to equality, democracy and social justice, at least in Sweden and Finland, seems to be increasingly matched by arguments that gender equality in education may increase competitive advantages (Brunila & Edström 2013). In recent years, more attention than before has also been focused on what has been described as 'boys' underachievement' (Arnot, David & Weiner 1999; Arnesen, Lahelma & Öhrn 2008; Francis & Skelton 2005). Although the labour market is still at the centre of the arguments concerning why gender equality 'needs' to be pursued, the arguments include partly competing discourses, although they do not necessarily have to contradict one another.

One era making its mark on the definition of gender equality and its objectives has been the European Union (EU) policy-making period: a time marked by the emergence of new forms of governance (Outshoorn & Kantola 2007). The Nordic

countries constitute a special forum for equality policies within the EU. When Sweden and Finland joined the EU in 1995, high expectations were placed on them with regard to equality issues. Nevertheless, both countries were advised by the EU to consider the reasons for gender segregation in the labour market and to explore ways of dissolving it. In both countries, EU structural funds among national funders (such as ministries) have been a nationally significant source of funding for projects aimed at labour market desegregation. Generally speaking, the number of different projects has increased in parallel with an increase in the availability of project funding opportunities. However, this cannot be regarded as a direct increase in resources but rather as an EU-driven financial and administrative incentive, since funds paid to the EU are directed through structural funds into various projects (Brunila *et al*. 2005). Although it is making its mark on definitions of gender equality, EU membership has seemingly affected different parts of education to various degrees, in particular by having less impact on early years education than on later education. Although other issues are touched upon to some extent, the overall EU policy in the field of gender equality seems to be rather biased towards issues within the labour market. The main focus of EU gender equality policy has been on women as a group, including the promotion of an efficiency discourse that tries to fit social arguments into economic arguments (Calvo 2013). Listed below are some examples of the vast number of EU-funded Finnish gender equality projects directed towards women in the labour market:

- Utilising Women's Competences in the Field of Technology.
- Female Energy to the Transportation Business.
- The Clatter of High Heels to the Transportation Business.
- Women in Industry and Technology. (Examples of Finnish project titles in the 2000s)

Some of these project titles simply demonstrate some of those sexist discursive constructions caused by heteronormativity and its narrow view of women. Furthermore they also demonstrate how the equality obligation laid down in EU structural policy as a mainstreaming principle has been interpreted in practice by specifically directing actions towards women, rather than integrating equality in all activities. This has been the case in both Sweden and Finland (SOU 2005:66). Taking Finland as an example, one consequence has been that many projects implemented in education and in working life after the mid-1990s were specified as so-called women's projects, aimed at fitting women in to existing structures, rather than challenging the structures themselves. Gender equality work funded by the EU has mainly focused on changing girls' and women's educational and career choices, and on the integration of ICT into teaching. The projects have developed new methods and practices to shape girls' and women's attention and interest in

technology, including job training programmes to increase women's competencies in technology (see also Brunila 2009; Vehviläinen & Brunila 2007). Accordingly, in project-based gender equality work women have been perceived as gendered beings whose characteristics have been assessed in relation to labour market needs.

THE EXAMPLE OF GENDER EQUALITY IN EDUCATION: THE GENDER EQUALITY IN PRESCHOOL PROJECT

In this section, we present a Swedish case example of gender equality in education: the Gender Equality in Preschool project. We include a scrutinisation of the (in) visibility of labour market interests, projectisation and heteronormativity, including subjectification and submission and mastery of the discourse. The discussions, both within the county-wide project and at the three preschools, mainly focus on gender relations, and on girls and boys alone. There is little mention of intersections. This rather narrow focus, which seems to have been prevalent throughout the whole project, is also visible more widely in the gender equality work in Swedish preschools (C. Edström, in progress). Gender equality is mainly constructed as a delimited preschool issue that concerns, first and foremost, the approach and language used by preschool teachers and nursery assistants towards girls and boys, although some consideration is also given to its relevance to future education and the labour market. The participants' attention on the future mostly concerns the (positive) preschool influence on the future public sphere. Below, we quote one example of a participant arguing that gender should not matter in a child's consideration of its choice of future occupation:

> Yes. Exactly this that one should provide every child with opportunities based on person, irrespective of gender …. I should be able to choose what I want to do irrespective of if I am a girl or if I am a boy. I mean, am I a girl who wants to be a construction worker. Yes, well then I should be able to become that. And am I a boy who wants to be a ballet dancer. Yes, well then I should be able to become that …. Gender should not be decisive for my choice in the future (Interview project participant 2007).

On the one hand, it may be argued that rather few discussions concern future education or the future labour market. On the other hand, it is noteworthy that there is emphasis placed on the labour market, considering that the oldest children in preschool are five-years old for whom it will be at least ten years, probably more, before they actually constitute part of the workforce. What we want to 'trouble' here is not the focus on the labour market in itself, but rather that very little is mentioned about the future private sphere. It seems that the impact of labour market interests has some significance already on constructions of gender equality in preschool.

What then, are the discourses underlying the project participants' discussions? The project participants' reasoning includes some attention on preschool children as individual, but there is overall stronger emphasis on girls and boys as homogeneous,

oppositional groups. That (all) boys are considered to have acted in one way and (all) girls in another way before the gender equality work has begun is visible and is exemplified in the following example where the children's previous behaviour during lunchtime is described:

> Because before [the gender equality work] we thought they only screamed, the boys, like: "We want! Bring me!", for example, jam; and the girls have, like, been lip-reading and almost directly understood what they [the boys] have meant and they have most often given [it to] the boys (Interview project participant 2007).

The impact of discursive power relations and projectisation is clear in this and in a number of other examples from the interviews with project participants. For example, the above excerpt, where acknowledgement of variations within groups are missing, might just as well have been selected directly from one of the main books used in the wider project. The participants position themselves, the children and their gender equality work in relation to the wider project. Overall, throughout the discussions in the three preschools, the girls' group is encouraged to be stronger, braver, more independent and to take more space, while the boys' group is encouraged to be more socially and linguistically competent. Heteronormativity is visible both in the positioning of children as two oppositional groups and in the sense that the girls' group is to be changed, rather subtly, a bit more than the boys' group. In addition, the desired notion of a more gender equal girl is rather similar to that of a tomboy, whereas the notion of girls taking up traditional girlish positions, that is, dressing in pink skirts and dresses, is constructed as the 'least wanted' stereotype in gender equality work (C. Edström 2010, in progress). This seems clearly linked to heteronormativity and to discourses that prescribe what is desirable and recognisable as an acceptable form of subjectivity (Davies *et al.* 2001). When describing the actual work with the children, where the participants repeatedly refer to the wider project, their more nuanced reasoning that involves some attention being directed on children as individuals, on variations within groups, and on intersections between gender and age, 'lose out' to the 'project methods'. This may be understood in terms of subjectification.

Issues that can be related to marketisation, such as the presentation of gender equality work in different contexts and the support this gets from the principal and local authorities, are also brought forward in the three preschools. What cannot be said to parents is also discussed, especially in the most explicitly feminist preschool where some terms, such as 'feminism' and 'gender equality' were initially avoided in order to avoid discussions with parents about 'changing their boys into girls' and to avoid being perceived as 'militant' or 'scary'. This may be understood as if the participants are made speaking subjects at the same time as they are subjected to the discourses' constitutive force.

Much of the work in preschools seems to involve submission to the wider project, but there are also examples that may be considered to open up possibilities for alternative discourses. Although the overall influence of heteronormativity is discernible, boys taking up traditional female positions are, in some of the participant examples, recognised as acceptable forms of subjectivities (Davies *et al.* 2001). Although referred to in current societal structures, it is still argued that preschool boys should in any case be provided with opportunities to play with Barbie dolls and, as in one of the examples above, allowed to choose traditionally strongly female coded future occupations, such as becoming a ballet dancer (cf. Lindqvist 2010). Although the binary construction of girls and boys not is challenged, there seems to be some resistance against the higher valuing of 'masculine' manners. Still, although there is some resistance, this is not the main pattern. Instead, put together, the repeatedly constructed 'remedy' to 'gender equality problems' in this example seems to involve that girls 'need' to 'change a bit more'.

THE EXAMPLE OF GENDER EQUALITY WORK IN WORKING-LIFE: THE GENDER EQUALITY IN ICT PROJECT

The alliance of projectisation, marketisation and heteronormativity also seems quite strong in gender equality work in working life. Despite a starting point that has a wide perspective, the focus of projects easily ends up changing women and their educational or career choices towards male-dominated branches. The Gender Equality in ICT project is a typical example of this. It started with a wider perspective that acknowledged societal differences such as gender, age, cultural background, health, sexual orientation and religion together:

> In the project … understanding of gender and other societal differences related to gender such as age, cultural background, health, sexual orientation and religion is deepened (Extract from a project leaflet 2005).

Furthermore, the group interviews showed that the people involved in equality work also wanted to include other differences in their equality planning:

> Participant 1: The [Gender] Equality plan should not focus only on differences between genders. We have different nationalities, for example here we have… are there twenty people?
>
> Participant 2: Yes, something like that.
>
> Participant 1: Ok, then we can say that 10 % of staff are from a different background than Finnish, I think we should also acknowledge this in our equality plan. (Extract from group interview 2004)

Nevertheless, the end result was that the guidebook that was produced, based on the project-based equality work conducted in the companies, was focused on attracting women to the technology field:

> The ICT-branch wants to attract more women. It is time to change the traditional preconceptions about this branch not being suitable for women ….) Development of equality can be important for the company in the competition for new and competent workers (Extract from the project guidebook 2007).

The change in the discourse that took place in the Gender Equality in ICT project, and which resulted in a narrow focus on women and technology only, occurred within a period of just two years.

The labour market has undergone a major change in the past twenty years. There is a great variation in the terms and conditions of paid work, and different types of fixed-term and temporary employment have been common. Such contracts are increasingly common among young, well-educated women who are often the target of equality project activities (Brunila *et al*. 2005). This might explain how women in these projects as well as at the labour market have been systematically treated as a flexible and cheap labour force. The alliance of marketisation and projectisation has avoided acknowledging that societal differences should be recognised as a system of oppression, or as being intersectional.

Futhermore, this tells something about the difficulties that gender equality work has had in the heteronormative discourse. Gender equality projects have systematically aimed at the more valuable, male-centred environment towards which women are 'encouraged' (see also Brunila 2009). These heteronormative discourses help producing ways of being and doing suitable for each gender as well as different opportunities for action. This is how gendered working life is formed and reproduced.

The Gender Equality in ICT project was a sub-project of a larger EU-funded project that held regular research meetings for all the researchers working on the whole project. Author 2 also participated at these meetings both as a listener and as a speaker. On one occasion she was offered a chance to speak about the project on which she was working as a researcher. Here is an example of her research diary from this research meeting:

> I spoke about some ways that other gender equality projects have previously acknowledged heteronormativity in their activities. One researcher from the audience raised his hand and asked "Why do we have to talk about this so much because isn't the majority still heteros?" I asked who he referred to by "us". The researcher looked around and replied, "Well, us" (Extract from Author 2's research diary 2006).

Heteronormativity is so obvious in gender equality work that in many instances critical perspectives towards it just do not get heard. In project-based equality work, people end up producing and implementing heteronormativity often without even realising it. Other examples of heteronormativity were mentioned in some interviews

that Author 2 conducted with gender equality work specialists. These interviews showed how heteronormativity shaped activities. One of the equality specialists, who had conducted several ICT and equality projects in working life, commented how women in these projects are often positioned as targets. She wondered: 'To what extent are they there as actors?' Another gender equality specialist who has worked in several working life equality projects explained the possibilities for negotiations as follows:

> They [the evaluators] had written that the objective of the project is to bring more women into the field of technology. I then said that bringing women into technology has never existed in the project plan. In my mind it has not been the aim of the project. The evaluator, however, continued arguing that it was the goal. This is very contradictory (Interview with Equality specialist 2004).

The interviewed specialists are competent promoters of gender equality. However, they need to negotiate their aims, for example, in order to get funding, with actors who have little knowledge concerning the social construction of gender, equality and/or ICT.

All these examples above show how marketisation, projectisation and heteronormativity work in practice. Regardless of several objections, the result is that the activities are ultimately aimed at changing women's career choices, especially with respect to the field of technology (see also Vehviläinen & Brunila 2007). As a consequence, the heteronormative gender hierarchy, as well as the difference in value between the environments of the two genders, persists as long as activities are aimed at the more valuable male-centred environment that women are being directed towards.

An understanding is needed of how marketisation, projectisation and heteronormativity as discursive power relations function as a forcible framework within which the subject and action are formed. We would also point out that the decision to focus on girls and women in these projects, as in so many other projects, stems not so much from the individual, but from the condition of gendered possibility – the discourses that prescribe not only what is desirable, but what is recognisable as an acceptable form of subjectivity (Davies *et al.* 2001).

CONCLUDING DISCUSSION

This article has 'troubled' gender equality projects in education and working life in two of the famous Nordic model countries, Sweden and Finland, at the beginning of the 21st century. It has illustrated how gender equality work is connected in similar ways with the interests of the labour market, the demand and supply of labour, as well as with the market-oriented power relations of working life. Taking examples that ranged from the early years of education right up to the labour market, we have scrutinised how project-oriented practices regarding gender equality work

(Butler 1990; Youdell 2011) are permeated by the reproduction of problems from the perspective of girls' and women's position in education and in working life. We have suggested that project work, however well-intended, is a setting/situation where girls and women, from their childhood, over and over again, learn to position themselves and are positioned as a potential and mobile labour force. More valued heteronormative 'masculine' manners are repeatedly presented as ideals that help one to assert oneself in current or future education and in labour markets, especially in those sectors where men have traditionally constituted the majority of the labour force and are considered to be the most important. The 'need' for more 'masculine' manners and sectors in the renowned Nordic model countries' gender equality work, definitely needs to be problematised further.

Our analysis of gender equality projects operating in education and working life shows that marketisation, projectisation and heteronormativity have enrolled a circle by benefiting one another and regulating how equality ought to be talked about in order for it to be heard. There are some differences between the examples that we have presented; for example, that the attention to more 'boyish' or 'masculine' manners is clearly already present in preschool and beyond, whereas the emphasis on the labour market and especially on science and technology becomes stronger only later on. Nevertheless, when taking these differences into consideration, the examples clearly illustrate the influence of marketisation, heteronormativity and projectisation where a persistently constructed 'remedy' to the 'gender equality problem' is that girls and women 'need' to change a bit more.

Some of our examples also illustrate that the people involved in project-based equality work have been quite critical towards activities targeted at girls and women. We have talked about the assumptions of differing characteristics that lead to different treatment, which then produces differences that strengthen the assumption of gender-bound characteristics. For example, one project worker commented that women in these projects are usually positioned as targets. She wondered: 'To what extent are they there as actors?' Project-based gender equality work does not seem to offer much space for such critical perspectives to be heard because of prevailing norms and conflicting power relations.

However, being able to write about equality work as a diverse and complex area will hopefully encourage readers to begin asking more critical questions. Talking with people involved in equality work has encouraged the finding of a way in which to analyse equality work as sites of constant negotiations. This has enabled us to see that problems concerning equality are not objects, but rather the products of different practices, and are therefore always negotiable and changeable. A significant amount of equality work has been done by switching and shifting from one discourse to another depending on the political situation and the various societal interests. People involved in gender equality work may need to be pragmatic (Weiner 2006) and, due to current global marketisation, increasingly to demonstrate the impacts of

their work in market-oriented terms. This may be considered an obstacle, but when different discourses are utilised, equality work becomes more possible in contexts that might otherwise be inaccessible.

> And despite this, there will be occasional setback, and they're always pretty depressing. But then you have to think again what to do, and what you can learn from this, so that the same thing won't happen again the next time (Interview with equality specialist 2004).

It is important to highlight that gender equality work is also a personal process of change for those involved. Its consequences may also be surprising but it is not necessarily an easy process. The impacts of personal change also extend outside the actual project. Evaluating those impacts as part of the project results is difficult if not impossible (Brunila *et al*. 2005).

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RESPONDING TO VIOLENCE IN POST-APARTHEID SCHOOLS: ON SCHOOL LEADERSHIP AS MUTUAL ENGAGEMENT

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ABSTRACT

Schools in post-apartheid South Africa appear to be under siege by violence. In turn, school leaders find themselves in the unenviable position of not only having to deal with inadequate educator professionalism and learner underachievement – particularly in previously disadvantaged schools – but are under pressure to find ways to counteract the violence, and to restore schools as safe sites. Among the biggest challenges facing school leaders is that they have not necessarily acquired sufficient training to deal with violent encounters, and often have responded in equally violent and violating ways, which, to some extent, has enhanced the expulsion and alienation of learners. In drawing on our own project work at five high schools in the Western Cape, we explore the challenges school leaders experience in responding to school violence. In questioning the often equally violent responses of school leaders, we contend that they ought to adopt practices of becoming. That is, school leaders should engage in intimate encounters with the other; not based on a desire to change the other, but rather for the purpose of mutually engaging with the other in an effort to inhabit practices of coming into presence that are humane and just.

Keywords: school leadership, violence in schools, mutual engagement

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INTRODUCTION

There are a number of issues that continue to plague and raise serious questions about any conception of quality education in South African schools. Among these are overcrowded classrooms, inadequate resources and learning materials, poor educator professionalism and learner underachievement – most notably within previously disadvantaged schools. Inasmuch as the aforementioned issues present ongoing challenges to educational authorities, school leaders, educators, learners and parent communities, they appear to be easier to address than the numerous encounters of violence that have, to a certain extent, always disrupted previously disadvantaged schools. Nowadays, school leaders in post-apartheid schools encounter bullying, teen suicides, sex scandals, various forms of discrimination on the basis of 'race', sexuality, religion, ethnicity and ability, as well as unprofessional educator conduct, ranging from unpreparedness to teach to questionable relationships with learners.

School principals, in barely coping with ensuring that learners acquire the necessary skills and knowledge to move on to the next grade or to access higher education, are not necessarily and sufficiently trained to deal with such encounters. And, while the South African educational authorities have introduced many policies and safety programmes in an effort to quell the climate of violence that has, in many instances, paralysed education at previously disadvantaged schools, or at schools located in communities with a high incidence of violence, principals have often found themselves at a loss in knowing how to respond to, or to confront, encounters with violence. To this end, their incapacity has not only been inappropriate, but also has served to further mistreat and exclude learners. Given the reality that principals are clearly not in a position to deal with violent encounters easily, it is within their captured responses that we might better understand why attempts at intervention have struggled to make a difference. In confronting these responses, which often have been couched in equal levels of violence through the continued use of corporal punishment, or the isolation and humiliation of learners, we argue that principals ought to adopt 'practices of becoming'. Such practices entail engaging in intimate encounters with the other, not based on a desire to change the other, but for the purpose of mutually engaging with the other in an effort to inhabit practices of coming into presence that are humane and just.

ENCOUNTERS WITH VIOLENCE IN POST-APARTHEID SCHOOLS

Children, says Burton (2008), are more likely to experience violence in South African schools than in their homes. Common reports of bullying and playground tiffs are rapidly being replaced by incidents of drug abuse, drug dealing, stabbings, sexual assault and, to a large extent, gang-related activities, with up to 30% of educators reporting that they do not feel safe at school (Burton & Leoschut 2013). Reports

on violence in schools – such as the South African Council for Educators (SACE) 'School-based violence report: An overview of school-based violence in South Africa' (2011), and 'The dynamics of violence in South African schools: Report' (Mncube & Harber 2013) – are in agreement that the various types of violence are influenced by both social and gender dynamics, and that, while there are more obvious forms of violence, such as corporal punishment or bullying, there are more subtle forms of violence, such as spreading malicious rumours, cyber-bullying, threats, sexual harassment, or hazing and initiation. These, according to Burton (2008:2), are more prevalent in private and well-established schools than in poorer or township schools. Moreover, violence occurs from learner to learner (between or across genders), from educator to learner, and from learner to educator (Burton 2008; Burton & Leoschut 2013; Mncube & Harber 2013).

Jefthas and Artz (2007:38) clarify that boys and girls are exposed to different types of violence. While girls are more likely to be victims of sexual harassment and rape – perpetrated by boys, educators or principals – boys are more likely to be victims of fighting, stabbing or shooting. This does not mean, however, that boys are never victims of sexual violence, or that girls do not experience or perpetrate acts of physical violence. There are two main reasons for the perpetuation of sexual harassment and violence in schools, say Mncube and Harber (2013:12). The first is that traditional gender stereotypes and unequal power relationships within the broader society are not challenged, but rather reproduced by the school. Secondly, the authoritarian, closed nature of schooling in general, meshed with patriarchal values and behaviours, provides a fertile context for the patterns of sexual harassment described above.

According to Mncube and Harber (2013), the most common internal violence perpetrated by schools against learners is corporal punishment. While illegal since the inception of the *South African Schools Act (No. 84 of 1996)*, it remains institutionally sanctioned at many schools, with Mncube and Harber (2013:14) explaining that, while some children might never have encountered physical punishment in their homes, they might be exposed to it for the first time at their schools – making corporal punishment 'a form of violence internal to schools both in the sense that it exists at school and that the people who experience it there don't necessarily experience it outside'. Aggression displayed by male educators appears to be especially problematic. They state that reports include the rape of a 13-year-old primary school learner; physical assault involving being grabbed by the neck and pushed down the stairs; and an educator attempting to drown a learner in a fishpond, requiring a police officer to rescue the learner (Mncube & Harber 2013:1). In another incident, related by Raubenheimer (in Mncube and Harber 2103), a learner attempted to commit suicide after his physical assault by an educator became public knowledge.

Inasmuch, however, as educators inflict violence on learners, whether through corporal punishment or derogatory language, learners inflict violence on educators. An important finding of the SACE 'School-based Violence Report' (2011) was the

increase in reports of learners violently attacking educators, with schools reporting on verbal abuse, threats, physical violence and sexual violence against educators. Discussing the findings of the '2012 National School Violence Study', Burton and Leoschut (2013) report that school leaders generally felt that their schools were places of safety for both their educators and learners. Educators, however, were less likely to express this view, with only 70% of educators reporting that they felt safe when teaching, and 73.4% thought learners felt safe while on school premises. Reports from the Western Cape Education Department confirm that seven learners in 2011 and five in 2012 were expelled for physical assault or threatening behaviour. While one of the educator unions, the National Professional Teachers' Union of South Africa (NAPTOSA), acknowledges that educator abuse is as rife as learner abuse, educators are reluctant to report abusive attacks for fear of losing face in the classroom, or of further intimidation. The 'School-based violence report: An overview of school-based violence in South Africa' (SACE 2011:19) states that, while attacks on educators are under-reported, they highlight the vulnerability of educators in South African schools, as well as the problem of reports of school-based violence that construct educators as the sole perpetrators.

SAFETY IN SCHOOLS: AN APPROACH IN POLICY

That schools are generally still seen as sites for the cultivation and enhancement of those values necessary for a thriving and morally based citizenship and society, is evident in several policy texts, such as the Department of Basic Education's (DoBE's) 'Manifesto on Values, Education and Democracy' (DoBE 2002), or the recently produced 'Building a Culture of Responsibility and Humanity in Our Schools: A Guide for Educators' (DoBE, 2011). Official strategies by the DoBE to reduce violence in schools have included the prohibition of corporal punishment (Republic of South Africa 1996b), as stipulated in the *South African Schools Act (1996)*. With regard to discipline, the *SA Schools Act* (Section 8) empowers school governing bodies (SGBs) to adopt a learners' code of conduct after consulting educators, learners and parents. This is intended to establish a disciplined and purposeful school environment. Furthermore, in terms of the South African Council for Educators (2002), educators are expected to comply with a 'Code of Professional Ethics'.

Joubert (2008:1) explains that, in 1999, the DoBE (then known as the Department of Education) announced the Tirisano Plan for enabling the development of a fully functioning education and training system in South Africa. Joubert says that, with an increasing emphasis on the protection of basic human rights and the need to protect children against harsh and cruel treatment, attitudes towards discipline and punishment have changed considerably in the past ten years. Inevitably, increasing attention has been paid, leading to various detailed official policies, documents and publications applicable to many facets of the management of public schools that

show the government's commitment to establishing safe and effective teaching and learning environments. Some of these publications are the 'Alternatives to Corporal Punishment' (SACE 2000), and 'Signposts for Safe Schools' (South African Police Service and the Department of Education 2002), as well as safety programmes, such as 'adopt a cop', 'Captain crime stop', and 'Bambanani' (Joubert 2008: 12). While it is assumed, says Joubert (2008:13), that developing and publishing policies and regulations on school safety will create a safe learning environment, departmental officials and educational leaders do not always foresee potentially problematic situations, do not demonstrate knowledge and skills when applying basic legal principles, and as a result may act negligently.

It also remains true that, for many people, schools not only offer a haven away from communities riddled by gangsterism, drugs and their related ills, but to some, particularly parents, they might be the only space of order, discipline and hope for their children. Schools, therefore, fulfil more than just the role of preparing learners for the society that they already constitute. They are often expected, occasionally compelled, to fulfil surrogacy roles of parenting and security, physically and emotionally. It therefore is disconcerting and disturbing to realise that, despite the criticality of schools and schooling, both primary (including pre-schools) and high schools, and both public and private (including faith-based) schools are not immune to violence or its ramifications. As Burton (2008:1) explains, schools are important environments in which children not only gain knowledge, but also learn about themselves. They learn about themselves from the way they behave with others, they learn to interact, and they learn how to resolve conflict. But, if they are in an environment of violence – either through experiencing or witnessing it – then this behaviour will be emulated too. So, inasmuch as schools can be a positive space of engagement and deliberation, they also hold the potential for disengagement and violence. Leoschut and Bonora (2007:107) contend that the increased exposure and reinforcement of aggression and violence serve to normalise violence, contributing to an increasingly violent society. This means that, for many children, violence has become such a part of their daily lives that it is no longer considered abnormal or problematic. Schools, therefore for children, are safe zones, regardless of the high levels of violence learners might experience or witness.

RESEARCH CONTEXT AND METHODOLOGY

The five high schools that served as the research sites for our project work on violence, citizenship and the responses of principals are all located on the Cape Flats in the Western Cape[1]. Of the five schools, one is a former Department of Education

1 Cape Flats – also described as the 'dumping ground of apartheid'. The term refers to a large area in the Cape Town metropole that essentially appears to be flat when viewed from a distance. Historically, the Cape Flats was deemed to comprise what were predominantly previously disadvantaged communities – primarily due to forced removals (The Cape Flats Website).

and Training (DET) (black African learners only) school, and the other four are former House of Representatives (HOR) (coloured learners only) schools. The post-apartheid desegregation of schools has done little to alter the historical demography of these schools, with the former DET school still catering only for black learners, and the former HOR schools catering predominantly for coloured learners, and small groups of black learners. While two of the schools draw the majority of their learners from their surrounding communities, the other three schools draw the majority of their learners from outside the school's immediate vicinity. Commonly, learners depend on public transport, bus and taxi, to commute to school. The fact that high percentages of learners do not live in proximity to their respective schools has serious implications for each of the five schools in terms of offering any extra-mural activities. Consequently, other than athletics programmes, which are run during school time, learners are not exposed to any other sporting codes.

Spanning a period of two years, the project looked at common incidents of violence, typical responses from principals, and the implications for the school, and indeed for the learners, as citizens of a post-apartheid society. All five schools are characterised by communities with high incidents of unemployment, gangsterism, drug and alcohol abuse, excessive crime and vandalism and, in the case of one of the schools, abalone poaching. Similarly, the functionality of all five schools is compromised by big classes – up to 48 learners per class at three of the schools, poor infrastructure, a serious shortage of books and educational materials, inadequate sporting facilities, and poor parental involvement and support. The aforementioned notwithstanding, the five principals shared that they enjoyed particularly high levels of support from pockets of parents, who not only held the school in high regard and saw it as an avenue for a better life for their children, but also wished to contribute to the school. The latter generally took the form of parent volunteers controlling access to the school, maintaining flower and vegetable gardens, and assisting with a soup kitchen.

The research depended largely on three strands of data: structured interviews with the principals; examination of policies and procedures related to discipline and classroom management; and observations of learner conduct in the classroom and on the playground. The five principals were expected to undergo two sets of interviews. While the first attempted to gain a coherent understanding of the typical types of incidents of violence at the school, the second set of interviews delved into the specific ways principals responded to the violence, and the challenges they encountered in attempting to counter violence. The examination of the policies and procedures related to school discipline was analysed in relation to the responses provided by the principal during the second set of interviews, namely, how he responded to violence. Likewise, the observations of learner conduct in the classroom and on the playground were analysed in relation to the answers provided by the principals in the first set of interview questions, namely, typical incidents of violence at the school.

The findings under discussion in this article focus specifically on the data garnered from the second set of interviews, namely, how principals responded to incidents of violence.

EXPLORING PRINCIPALS' RESPONSES TO VIOLENCE AT FIVE SCHOOLS: MAIN FINDINGS

The five schools seemed to follow a particular pattern of disciplinary challenges on a daily basis. Mondays and Fridays appeared to be most problematic in terms of arriving late for school, by both learners and educators. Typical problematic, disruptive and violent behaviour by learners involved theft, smoking, carrying dangerous weapons, bullying, vandalism and assault. At three of the schools, principals said that it was a common occurrence for certain learners to subject their educators, especially women, to verbal abuse and profanity. On six separate occasions (two each at three of the schools) during the two-year research period, we observed the arrival of police officers to conduct random drug searches. While the five schools enjoyed periods of relative calm, it was evident from the interviews with the principals, as well as from the observations of educators, that the schools were under intense pressure and stress to be alert not only to incidents happening on the school premises, but also to violence coming from the outside in the form of gang violence. Common responses to disruptive and violent behaviour included detention; writing out of lines during break time; isolating the learner; sandpapering desks; scrubbing of walls; asking parents or guardians to fetch the learner from school in extreme cases of threatening behaviour, or when the learner is found to be under the influence of drugs or alcohol; suspension; and corporal punishment (at three of the schools).

Observations of other disciplinary practices included isolating learners by making them sit in the foyer of the school; and announcing the names of disruptive learners and calling them to stand in front during the school assembly. Particularly surprising at all five schools was the frequency with which learners were sent to the principal's office. Although this impacted dramatically on the principal's time and his other responsibilities, the general feeling of all five principals was that they understood why certain educators simply could not deal with unruly learners, and that they needed to focus on the other learners in their class. Equally apparent was that disciplinary procedures did not adhere to the recommendations stipulated in the codes of conduct of the five respective schools. The only procedure that appeared to match the offence related to the sandpapering of desks, or scrubbing of walls in the case of vandalism. Detention appeared to be applied to any offence – from smoking and swearing at a learner or educator, to bullying and threatening another learner, and even when two learners were caught engaging in a sexual act. Parents were only called upon in extreme cases, and then, only if the offence had been repeated. Four of the principals explained that they only contacted parents as a last resort,

since most of them either refused to come to the school, or responded violently towards the child when they did come. Although the five principals shared that they felt reasonably comfortable in dealing with acts of violence – since it is what they have always had to do – they experienced extreme discomfort in dealing with acts or offences of a sexual nature. Three of the principals reported that they have had to deal with sexually explicit cellphone videos being shared among learners, often involving learners from the school. In cases like these, two of the principals reported that they had confiscated the cellphones, while the other reported that he had simply not dealt with the matter and instead asked the Life Orientation educators to discuss it in their lessons.

While policy documents at all the schools mention the prohibition of corporal punishment, verbal abuse and humiliation of learners, these types of punitive measures were prevalent in all the schools, with corporal punishment being implemented at three of the schools. And, while two of the schools had policies related to demerit systems for learners and referral systems for counselling, these policies were not put into practice. Moreover, the principals appeared to pay little attention to the levels of offences, so that threatening a learner and smoking provoked the same type of punitive measure, namely detention. Concomitantly, learners were often suspended from school for a fixed period without any involvement by the school governing body (SGB) or consultation with the parents.

Reasons provided by the principals for not adhering to their own policies included that, given the prevalence of violence and disruptive behaviour, they did not have the time to deal with every learner. Instead, they simply responded to the offence and hoped that a punitive measure would remedy the disruptive behaviour. Moreover, the inconsistency and unwillingness of educators in following disciplinary procedures often fuelled the misbehaviour of particular learners. When asked why the SGB was not involved in dealing with serious offences, such as threatening with a dangerous weapon, selling of dagga or assault, four of the principals offered the same two responses. Firstly, that convening a meeting with the SGB was very difficult, given the fact that parents lived outside the school community and did not have transport to come to the school during the evenings, which was the only time a meeting could be held. Secondly, even if a meeting could be arranged, the principals were of the opinion that the SGB parents were not in a position to offer much input, given their own limited education and equally limited understanding of school policies.

CHALLENGES IN DEALING WITH VIOLENCE: MAIN FINDINGS

A major obstacle experienced by all five principals in adequately responding to violence at their schools related to the lack of support from education officials and parents or guardians. They reported that not only did they experience difficulty in

receiving adequate support from education officials, but the response time in dealing with sexual misconduct or learners at risk was so delayed that they often regarded it as futile to try to involve the department at all. Principals considered the support available to them as existing only in terms of policy, and not in practice. Exacerbating the sense of aloneness in dealing with incidents of violence was what principals considered to be a lack of interest and support from many parents. At one of the schools, the principal reported that, when he tried to enforce the wearing of the school uniform, a group of parents reported the matter to the local community newspaper, which created the impression that the principal resorted to autocratic practices and demanded that poor parents spend money on unnecessary school uniforms. School principals were not only expected to deal with incidents of violence at school, but often were drawn into violence in the home – when mothers turn to the school to discipline their children, especially where there are no father figures. At another school, the principal was often expected to bail out his learners from jail after they had been arrested for abalone poaching. Trying to get parents to assist in stopping their children from being involved in poaching is a fruitless exercise, since it is often the only source of household income.

All five principals reported being exhausted by a continuous onslaught of educationally unrelated tasks, from negotiating with gang leaders not to recruit learners, to ensuring that learners are placed in places of safety due to abusive home situations. While all the principals reported excellent support from most of their respective educators in ensuring a safe schooling environment, they also conceded a high staff turnover, often related to educator exhaustion, stress and disillusionment. Moreover, while all the principals shared that they were doing the best they could and were enjoying success in small measures, they were often demotivated by the day-to-day occurrence of violence, which they believed was getting worse, and that whatever they were doing was not enough. They also shared that, while they respected the prohibition of corporal punishment, they often wished they could use it, and in some instances did in fact use it, since they often were at a loss in how to deal with rude and threatening learners. While three of the principals regularly suspended learners from school, the other two principals were sceptical of suspension as a disciplinary measure, since this was exactly what the unruly learners wanted and they often returned, exhibiting worse behaviour than before because they know that there is nothing else the principal can do.

Not only are levels of violence at some South African schools disturbingly high, but whatever policies are in place, and whatever code of ethics principals and educators are expected to adhere to, they are inadequate to deal with this scourge. Principals in particular have had to deal with the inadequacy of policies and strategies. They are expected to deal with incidents of violence, yet they are neither equipped to do so, nor do they always enjoy the necessary support from the provincial educational departments in their efforts in dealing, for example, with unprofessional educators or

unruly learners. The principals acknowledged that they had not necessarily acquired sufficient training to deal with violent encounters and often responded with equal violence, harshness and humiliation. They reported feeling ashamed or embarrassed after dealing with learners in a particularly harsh manner, but they did not believe they that had any other recourse. The aforementioned notwithstanding, and given the problematic communities that the five schools serve – as exemplified by the barbed wire that imprisons each of these schools – the principals need to be commended for their willingness and belief that they can make a difference at their respective schools.

What, then, can school principals do in adequately dealing with incidents of violence so that they deal with the violence in a responsive and humane fashion, and so that they too feel a sense of empowerment and honour, rather than shame and embarrassment? Building on the premise that schools ought to be places of safety and hope, where both learners and educators might begin to contribute to an equally safe and hopeful society, we contend that principals ought to adopt practices of becoming, whereby they engage in intimate encounters with the other, not based on a desire to change the other's imperfections and humanity, but for the purpose of mutually engaging with the other in an effort to inhabit practices of coming into presence that are humane and just – that is, a matter of becoming that asks for respect and friendship, based on what Burke and Greteman (2013:163) refer to as practices based 'on mutual fondness and attraction to given practices and ways of being'.

TOWARDS A LANGUAGE OF MUTUAL ENGAGEMENT

Violence is a particular type of language – destructive and long-lasting – and one that needs to be understood before it can be addressed and remedied. Current responses to school-based violence have been inadequate in that they invariably have dealt with the symptomatic manifestations of violent behaviour, rather than engaging with the language of violence itself. What this means is that, when learners have displayed anti-social behaviour through bullying or aggression, the predominant responses from principals tend to emerge from a continuum of measures ranging from isolation (instructing the learner to stand in the corner, or ordering the learner to leave the classroom) and punitive (often in the form of physical or verbal abuse), to suspension and expulsion. While school leaders often lack the necessary training and support to deal adequately with the challenges presented by certain learners, they can, however, acquire a language through which to re-stitch the social fabric necessary for a non-violent and socially just society.

One such language is set out in James Alison's (2003:xi) *On being liked*. Alison makes the argument that in order to like someone (we would argue to care for someone) requires the other person to come into being. Unlike caring, liking is less well regarded in education, as it gets tied up with notions of popularity, as

school leaders and educators often imagine themselves beyond the fray of popularity and argue that they are not concerned with what learners think of them (Burke & Greteman 2013:164). Caring for the other involves the other person having to come into presence, that is, in order for one to care for the other one has to do so not on the basis of what one wants the other to become. To consider the other as coming into presence also requires, first of all, that one acknowledges the humanity of the other's existence (Butler 2010:1). A learner, for example, who is subjected to corporal punishment for assaulting another learner might not feel particularly cared for or liked. Likewise, we cannot imagine that a principal who administers corporal punishment would feel that s/he has demonstrated care. In other words, the acknowledgement of either the learner or the principal's humanity would be lost to the other, and the self. This is so because the language that both have used is equally couched in a language of violence. To this end, it is our contention that violence can never be justified as being 'in the best interests of the child'; it therefore can never be condoned.

When principals choose to humiliate learners as a means of discipline, then the experience of the learner is a reduced sense of being, so that the potential to become is not only debilitated, but possibly based on a skewed premise of becoming. The only language that the learner therefore has been exposed to is the same language that led to him/her being 'disciplined' in the first place. They would not have been directed towards another language; instead, their own language of violence is legitimised in the violence of the principal. What this means is that, when learners learn that dismissal, humiliation and corporal punishment are the only responses to violent behaviour, their compliance is based on a fear of retribution, rather than on an understanding of the potential breach of violence. They neither un-learn a language of violence, nor do they (re)learn a language couched in care and compassion, which might be more reconcilable with a socially just society. To care for the other (including those learners who violate others) is not based on a desire to change the other, such as the educator wanting the learner to conform based on corporal punishment or threats. One cares for the other for the purpose of mutually engaging with the other, that is, one comes into presence with the other not for whom the other is (an obedient and compliant learner), but rather for how one relates to the other without a search for mastery, meaning that the learner cannot always be expected to display compliant behaviour, and that the educator will not always understand challenging behaviour (Burke & Greteman 2013:167). As such, one of the particularities of violence is that its potential is always there; it cannot be wished away.

In attempting to remediate disruptive behaviour, teachers, principals and indeed educational policy makers ought to recognise that the pervading prevalence of a language of violence can only be countered with an equally pervading language of care and mutual engagement. In relating to the other through curiosity and in non-hierarchical ways, one becomes intimately involved with the other for the sake of

creating epistemological possibilities without necessarily domesticating the other's otherness (Burke & Greteman 2013:167–168). Thus, caring for the other relates to coming into presence of the other in order to nurture pedagogical relations based on trust. Nel Noddings (2005:102) makes the argument that pedagogical relations based on trust are constituted by friendship, in which 'friends wish the best to their friends for the friend's sake. A friend does not seek something for himself [herself] in wishing the best for his [her] friend'. In this way, we care for learners as we learn about them and ourselves through one another, that is, mutually engaging one another without having in mind some preconceived notion of what others should become, which involves reorienting ourselves towards one another without consuming the other. Such an engagement, based on care, friendship and mutual engagement, has profound implications not only for the interplay between what teachers teach and what learners learn, but also between *what* teachers teach and *how* they teach it.

The little that we understand about violence in schools, or elsewhere in society, is that it is not only unpredictable and misunderstood, but also complex and, to a large extent, under-theorised. Therefore, to expect principals to deal with violence adequately, even if they had the 'skills' to do so, or the 'best policies' to implement, is not to grasp the full impact of the multifarious nature of violence. Part of the obvious difficulty of dealing with violence is that schools are not just dealing with school-based violence; they are in fact dealing with forms of violence that emanate from complex communities and, as is the case with the five schools, communities with an excessively high incidence of violence and crime. Hence, it is noteworthy in itself that the five principals manage to maintain some level of functionality, coupled with pockets of academic excellence. Inasmuch, then, as these principals do what they know in managing that which cannot actually be known, they, too, recognise that their constant practices of punitive measures are in fact empty of any teaching or learning. They realised – certainly in the second set of interviews – that the pedagogical value of corporal punishment, humiliation and isolation of learners is not only non-existent, but only serves to teach learners that violence is an acceptable form of engagement.

If we understand that schooling is constructed in an epistemology of caring, which is concerned with instilling and cultivating awareness and measures to rupture inhumane acts, such as racism and bullying, then we can understand that the language of violence can be unravelled through a language that does not violate, humiliate or rupture. School leaders, therefore, have to express their leadership through a language other than the one of the violence by which they are being confronted. When a language of violence is answered with a language of violence, then society disintegrates under the weight of languages devoid of humane engagement and caring. Language is a way of being with oneself and with others. When one cares about oneself, then that same language needs to be used to engage with others – that caring for learners is articulated through 'relating to others and the self' (Burke &

Greteman 2013:164). What is needed, therefore, is what we refer to as a language of mutual engagement to contemplate the other (learners) in relation to the self so that care can be expressed. The mutual engagement that is extended is not to subject the learner to a preconceived conception of 'acceptable behaviour'. Rather, through expressing mutual engagement, the school leader contemplates the behaviour of the learner, why s/he uses threatening language, for example, and then tries to unravel it so that both the school leader and the learner come into the presence of each other for the purpose of mutual engagement. By contemplating before acting (that is, before humiliating the learner for undesirable behaviour), the school leader becomes involved with the learner for the purpose of creating epistemological possibilities, and extends care in order to nurture pedagogical relations based on trust.

For educators to act contemplatively is not tantamount to condoning violence. Rather, contemplating violence is a language of engagement one acquires in making oneself known to the other, such as imagining the vulnerabilities the other experiences (such as being subjected to violence) in order that one can connect more caringly with the other. And, when one acts more caringly *with* the other, one recognises the other in its otherness and the possibility that the other can come to speech. Put differently, the other has the capacity to see what is inherently wrong with violence and to detest it. This is quite different from telling someone that violence is wrong and that it has to be dealt with punitively, as intimated by the countless examples mentioned earlier. The point is, others have the capacity as human beings to rebuke violence without being ridiculed for its perpetration all the time. When learners are exposed to a language of mutual engagement, instead of corporal punishment or exclusion from the classroom, they will learn what it means to engage with the other in a language that is not necessarily constituted by disregard, ignorance and harm. They will also learn that both authority and trust are intimately intertwined with conceptions of compassion and mutual engagement, and therefore will be less inclined to act antagonistically towards those (such as educators and parents) who hold authority and trust.

When the possibility of a new way or language of dealing with violence was suggested to the five principals, they welcomed it, albeit reluctantly, because they realised that it would require a profound alteration of the 'way things have always been done'. But they also recognised that while violence would remain couched in a language of unpredictability and anarchy, the likelihood existed for their responses to be predictable, orderly and caring. One principal in particular managed to capture it best when he said that he was willing to try a language of mutual engagement, 'if only to make himself feel like a better human being'. What this statement reveals is that while the concern about violence tends to focus centrally on the effects on learners, little attention is given to the effect it has on those who are expected to manage it on a daily basis. It would appear, therefore, that inasmuch as a language

of mutual engagement is needed for its pedagogical value, it is equally required for its humane purpose.

In conclusion, we have shown that school leaders in post-apartheid schools are confronted with many different encounters with violence. To conceive that policies and safety programmes are sufficient to adequately confront encounters of violence is to undermine the complexity of the schooling environment. If school leaders wish to quell the language of violence of the learners and of themselves, then they need to adopt practices of becoming whereby they engage in intimate encounters with the other. These encounters should not be based on a desire to change the other, but rather to engage with the other's imperfections and humanity. As such, the purpose of mutually engaging with the other is to inhabit practices of coming into presence that are humane and just.

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TRANSITIONAL AND TRANSFORMATIONAL SPACES: MENTORING YOUNG ACADEMICS THROUGH WRITING CENTRES

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ABSTRACT

The effectiveness of writing centre interventions on student writing in higher education has been well-documented in academic literacies studies. This paper changes the focus of investigation from student to consultant and, consequently, explores the way in which an academic writing centre can function as a mentoring environment for young academics. As a collaborative learning space encouraging transition and transformation, the writing centre is an important site in which postgraduate student consultants are able to explore facets of their academic identities. The role the writing centre plays in the transition from consultant as student to professional is surfaced through a thematic analysis of interview data. We examine the textures of these transitions and the effect writing centre principles have had on teaching practice with particular reference to dealing with English additional language students and the incorporation of an 'academic development' perspective into mainstream teaching.

Keywords: Writing centres; access to higher education; academic literacies; transitional spaces; mentoring

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Writing centres are spaces that suspend daily life in order to engage with ideas, prompt new ways of seeing and provide opportunities for reflection. In this kind of 'learning space', the 'values of being are more central than the values of doing' (Savin-Baden 2008:8). Learning spaces are often places of transition and transformation, where individuals experience a shift in their perspectives or life worlds. 'Transition' implies movement from one place to another, and can be difficult, but can also be an opportunity for personal growth and change. Writing centres can be spaces that enable this kind of transition and transformation, signifying their liminality in ideation as well as in actualisation.

As a learning space that embraces its sense of liminality, the writing centre is situated in a unique position on the fringe of the university, whilst at the same time functioning as an integral part of the university's centre of academic activity (see Archer & Richards 2011). The role of writing centres has been conceptualised and reconceptualised at various points. A common initial impetus behind the promotion of writing centres in universities was one of remediation and acculturation of students into academic discourse. Here it was seen as a fix-it shop in the business of changing textual features of writing. Now, writing centres have developed into more process-oriented spaces equipped with the task of changing writers. One of the underlying premises of writing centre pedagogy is that a critical way of being develops through discussion and argument. Writing centres are thus dialogic spaces that embrace the complex relationship between the spoken and the written. Bawarshi and Pelkowski's (2003) proposition of postcolonial writing centres as sites that welcome and foster multiple styles, processes and perspectives in writers is one that acknowledges and supports the ideology of the liminal space which in Nichols's (2011) sense is also a safe space. Changes at the level of individuals often lead to changes at institutional level. As Trimbur asserts, 'social justice and the democratization of Higher Education have always been part of the mission of writing centres' (2014:67).

There are many challenges involved in developing and running writing centres in tertiary contexts in South Africa. These challenges include recognising the role writing centres need to play in the acquisition of basic academic literacy practices. They also involve emphasising writing as a mode of learning where higher cognitive functions such as analysis and synthesis are developed through verbal and written language. Academic discourse takes a distinct written form, often comprising unspoken conventions that dictate appropriate uses of lexicogrammatical structures. Each discipline also has its own particular 'dialect'. Acquiring these discourses can prove difficult to many students, not only English Additional Language students. One of the main challenges for writing centres is to provide access to academic and disciplinary discourses through making explicit how texts work in a critical manner, whilst at the same time inducting students into these discourses.

Theorists and practitioners have documented the value of the writing centre's role in successfully assisting students to navigate the murky waters of academic discourse. In South Africa, Lewanika and Archer (2011), Simpson (2011), Dowse

and Van Rensburg (2011) introduce the idea of shifting the lens from students to consultants in a reflective exploration of the writing centre as a community of practice that works towards shaping and even transforming the academic identities of consultants. For instance, Simpson (2011) expressly explores the development of one particular writing centre consultant in a detailed and nuanced way. He looks at how her understanding of academic writing changes, often through contradictory and dialogic moments in spaces created by the writing centre. The collaborative learning space offers consultants the opportunity to exercise a measure of agency which serves to inform their practices as academics-in-training. These kinds of transitional and transformational spaces are often hidden ones which are sometimes not valued or sufficiently acknowledged by university leadership. This paper aims to explore the contours of these kinds of spaces and how they are realised in writing centres in order to surface some useful teaching and learning practices, and specifically to look at the way in which young academics can be mentored.

WRITING CENTRE DEVELOPMENTAL PROGRAMME FOR CONSULTANTS

The writing centre at the University of Cape Town employs on average 14 part time student consultants each year (Masters, PhD and postdoctoral students). There is a strong emphasis on equity, multilingualism and multidisciplinarity in the selection process, and the group is diverse in terms of gender, age, languages spoken and nationality. Because we appoint from a range of disciplines, we are able to access the consultants' disciplinary knowledge, as well as establish strong links to their departments. Our training of the consultants aims to combine the generic and the discipline-specific. In the training programme we examine disciplinary discourses in depth, and the multidisciplinary nature of the group enables unique insight into writing practices. The interdisciplinary nature of the writing centre can thus be seen as a strength rather than a weakness.

We have had a comprehensive training programme since 2000 which aims to build a common writing centre ethos and raise the professionalism of the centre. The 20 hour initial training programme focuses on the theoretical underpinnings of our work, as well as the application of this in everyday writing centre practice. The ongoing training takes the form of weekly seminars, where issues arising from practice are located within a theoretical context. This training includes topics such as multilingualism, English as an additional language, disciplinary discourses, postgraduate issues, multimodality and new media, creative writing, referencing and academic voice. Consultants bring examples of their own disciplinary writing and also interview each other in relation to their own writing processes. The aim of the training is to develop a theoretical basis and common language to talk about teaching, learning and writing processes.

Since 2005, some of the writing centre consultants have been part of an internationally funded mentoring and bursary programme, the Mellon Mays Undergraduate Fellowship Programme. The long-term objective of this programme is to address the under-representation of black academics in higher education. The programme aims to do this by identifying and supporting students of promise and helping them to become academics of the highest distinction. Consequently, internships were formulated to enable these graduates to advance to postgraduate study through a mentored work-study programme. Programmes like this acknowledge the developmental potentials of the writing centre space, including developing future academics that are attuned to the academic literacy practices of their disciplines.

METHODOLOGY

Over the years, the writing centre at the University of Cape Town has been successful in developing 25 consultants who have become academics employed at seven different tertiary institutions, well-trained in teaching writing and academic argument. Seven of these were interviewed for the purposes of this research. They come from a variety of academic backgrounds and, at the time of interviewing, were employed across four institutions. Four worked in the field of Academic Development and three were lecturing in their disciplines. Maleson worked in language development, focusing on cultivating postgraduate writing. Anne worked as an Academic Development lecturer in the Department of Construction Economics and Management. Fuad and Nomfundo both worked in Academic Development, augmenting students' academic literacies across disciplinary contexts. Marie was a lecturer in Afrikaans, Joe a senior lecturer in English, Kate a nursing lecturer, researcher and writer.

Vandeyar (2010) has looked at how academics construct and negotiate academic identities in higher education in South Africa. Using narrative enquiry, Vandeyar looked mainly at the construction of narratives of experience, reconstructed through semi-structured interviews. Narrative inquiry is the process of gathering information for the purpose of research through storytelling (Clandinin & Connelly 2000). Our study is similar methodologically. We too used semi-structured interviews, as well as written reflections. However, we processed the data slightly differently. Vandeyar constructed the narratives of three participants, then analysed them using qualitative content analysis. Since our analysis spanned the interviews and reflections of seven participants, we had less space to reconstruct in depth narratives for each, and rather conducted a thematic analysis across the data. Our methodology is thus one of thematic analysis of the interviews and written reflections. Whilst we acknowledge that these interviews and reflections serve as textual representations of experience rather than ethnographic observations, they nonetheless raise interesting questions around academic mentorship.

‘A FULLSTOP IS JUST A FULLSTOP’: DEALING WITH ENGLISH AS AN ADDITIONAL LANGUAGE

A conceptualisation of the writing centre as a place of remediation often means that students who are considered to be on the fringe of grasping academic discourse are sent to be ‘adjusted’ according to the accepted ideal. Often, English additional language (EAL) students are propelled to seek assistance at the writing centre at the first sign of academic ‘dissonance’. Joe believes that his experience at the writing centre made him ‘more sympathetic to the barriers faced by students who are reading and writing in an additional language’ (Joe). Kate exhibits shades of the same mind-set: ‘I realised that academic discourse can be a major barrier for students, especially students coming from non-English speaking backgrounds’ (Kate). She is of the opinion that not enough time is spent on explicitly acclimatising students to specialist academic discourses within the discipline and subsequently the writing centre is commissioned to remedy the situation.

> Students are expected to naturally pick up the discourse during their studies, but this does not always happen. Students from non-English speaking backgrounds particularly struggle and this often results in students getting to postgraduate level without understanding the basics of things like referencing and academic argument (Kate).

In an environment where academic writing is the primary means of assessment, struggling with the essential elements of academic writing is problematic for many students. The situation is, however, exacerbated in the case of students with English as an additional language. Nomfundo and Fuad’s contact with the quandaries that these students face is particularly revealing. In her dealings with these students, Nomfundo was accosted with the reality that lecturers seem to place a lot of weight on grammar as a component of academic writing. In general, however, writing centre consultants tackle macro issues before micro ones are dealt with. Grammar is attended to after ensuring the argument is clear and whether there is sufficient evidence supporting the proposed argument. However, Nomfundo found that the writing centre’s practice of analytically separating the global and local components of revision did not reflect the type of feedback that lecturers give students.

> I found that most students would get comments from the lecturer saying you need to go to the writing centre to get your grammar fixed and therefore that was quite a barrier in terms of getting a good mark ... so one of the things that alerted me was that I got a lot of marking practice in different courses, you know, how people mark and the kinds of values I suppose that they operate within as they mark (Nomfundo).

As Nomfundo’s exposure to these issues increased, she became more and more critical of the university for accepting EAL students without ensuring the existence of good support structures. She argues that these students tend to know more than their writing exhibits in terms of answering the assignment topic.

> You find that the student knows exactly what goes into answering the essay question and so forth but grammar is such a stumbling block that you know the coherence is absent, everything else is just not there. But if you sit with them ... and you speak to them then it becomes clear that ... this student actually knows what is required ... [but] they get so caught up in the grammar and understandably so because it′s preventing them from getting a good mark (Nomfundo).

Sometimes students' writing insecurities are heightened by the comments received from lecturers. When Nomfundo encountered comments such as these, she experienced a combination of frustration at lecturers and empathy with students.

> Sometimes the lecturer would put it in a very crude way like you know 'your grammar needs fixing' or you know 'please go to the writing centre because your work is not of a good standard' … imagine saying that to a first year student who is still trying to find his or her feet in the discourse of the discipline (Nomfundo).

Increased interaction with EAL students and their writing practices can destabilise conceptualisations of what constitutes academic writing. Contestation around plagiarism is one of the issues that surfaced in Fuad's consultations with students. Definitions of plagiarism within the academy are clear-cut but Fuad asserts that with certain students, it 'wasn't plagiarism in the sense [that] "*I want to take somebody else's words and get away with it*", it was just purely "*I don't have the words*"' (Fuad). Socialisation and cultural trends also seemed to play a part in the task of referencing sources. Some students are socialised to believe that it is disrespectful to alter the words of an authoritative figure and, as a consequence, something as seemingly simple as paraphrasing becomes a conflict of interest. The principles of academic writing and by extension, the values of the academy, call the established belief systems of students into question, thereby reinforcing their sense of uncertainty. Fuad cites another example of this observation in action. In reviewing the writing of a Chinese student who had grown up in South Africa, he observed and commented that the student's sentences were extremely long to the point where one paragraph would be made up of one sentence. When enquiring about the trend, the student responded by saying 'from my background if you put a full stop in Chinese it means it's the end of that discussion. The full stop symbolises an ending, not *you can elaborate afterwards again*'. Fuad's engagement with this student made him realise that the academic writing principle of writing short sentences and elaborating and building an argument may not be so straightforward when other linguistic practices are taken into consideration: 'something like a full stop is just a full stop to me, but for certain students, it's much more than that' (Fuad).

TRANSFORMATIONAL SPACES: CRITICAL ACCESS TO THE ACADEMY

Consultants' immersion in the writing centre environment engenders an awareness of the invisible conventions within the academy, including the inner workings of the institution as exemplified in departmental imperatives, the established dynamic between lecturer and student, tutorials and workshops. The writing centre is empty of a fixed content—there is no curriculum and no assessment, and the commitment is to a space rather than to a particular agenda. The notion of a (transformative) space leads to a different conceptualisation than conventional teaching and, for this reason, writing centres can function as agents of change, contributing towards changing the dominant attitudes to language and culture by shifting authority (Nichols 2011). Prior to their induction into the writing centre, consultants acknowledged that some academic practices were relatively uncontested. Marie states that working at the writing centre 'forced [her] to know the "rules", it led to a critical look at why these rules are in place and whether they are still relevant or not. Understanding a system better automatically leads to questioning and exploring that system' (Marie).

Discursive practices are ideological in the ways in which they serve to maintain existing relations of power. Kate says that she generally felt that writing was an 'instinctive' process, that she just knew how to write without any direct thought about the process and what it entails. Her training as a consultant gave her insights into the conventions of academic writing and consequently enabled her to give voice to these conventions in a rigorous and logical manner.

> I realised that I had not been aware of the subtle 'rules' underlying good academic writing practices. My experience at the writing centre helped me to become conscious of those 'rules' and ... apply them in my own writing and in teaching students to write (Kate).

Similarly, Fuad recounts his initial struggle with articulating implicit knowledge in conversations with students about academic writing and establishes that 'the writing centre gave me the ability to speak about the reading and writing practices of the university in a more explicit way' (Fuad). In the case of Kate and Fuad, the writing centre experience offered a language in which they could communicate tacit knowledge to students thereby unmasking the hidden conventions of academic writing.

Maleson indicates that the writing centre opened up avenues for alternate ways of viewing institutional practices. He had harboured the notion that when students had learning difficulties, the problem was usually of their own doing. As a consultant, he discovered that 'sometimes when there is a learning problem, the real source of the problem can actually be ... the teaching staff' (Maleson). His approach to students and the academy has subsequently shifted from a top-down model to one that resembles interaction with students on 'a horizontal plane'. Archer has argued elsewhere that effective writing pedagogy involves dialogue between the

culture and discourses of academia and those of the students, 'offering students from disadvantaged backgrounds an empowering and critical experience, not just bridges to established norms' (Archer 2010b:508).

For those directly involved in Academic Development, progressing from the writing centre into their chosen specialisations is a matter of continuity. For the rest of the consultants, an 'academic development' perspective enhances their academic teaching practice insofar as they are more aware of some of the tacit issues that permeate the lives of students. This awareness has led to a conscious effort amongst those interviewed not to let established assumptions rule their practice.

Fuad's classification of 'the struggling student' underwent a transformation. Fuad reveals that he always had a desire to work with disadvantaged students, that is, those he perceived to be on the fringe of university life. The writing centre as a space occupying border residency in the grand scheme of academic citizenship provided Fuad with the impressions of who comprised the margins. The reality was much more complex than he had imagined.

> I thought of township students, second language, but it's much more than that. It can be first language, advantaged background, very good school, still can't survive and why not? What's happening? So … the mentoring space of the writing centre also got me out of that idea of 'it's *only* this type of student who struggles' … it's not just *only* ... township students, it's not just second language whose struggling, most students struggle at university with writing (Fuad).

This exemplifies the extent to which writing centre consultants are in a liminal space, somewhere between students and professionals. The power structures become apparent in these kinds of liminal spaces, in-between being students and lecturers.

While Maleson and Fuad reflect on particular subsets of the academic community, Anne looks at the situation more broadly suggesting that her positioning as a consultant encouraged self-reflexive engagement with the institution and its academic practices. She explains

> by sitting in the writing centre you're looking at academic writing from the outside so you become quite critical of those forms of writing and what the purpose of those forms are and the way they are constituted within the university and the practices within the university including your own discipline wherever that might be. I mean, I became more aware of academic writing practices as a sort of phenomenon (Anne).

In their vision of the postcolonial writing centre, Bawarshi and Pelkowski (2003:88-90) conjure up the idea of a mestiza consciousness as one that is 'marked by the ability to negotiate multiple, even contradictory, subject positions while rooted in the dominant discourse'. One of the goals of the writing centre is to help marginalised students and writers achieve this consciousness. Consultants, as seasoned writers and practising academics, engage in these multiple subject positions as evidenced by the transformations apparent in the narratives of Maleson, Anne and Fuad. They

seem to have embraced the ideology of a mestiza consciousness in a postmodern sense by recognising and reflecting on accepted norms and destabilising them in the process. Furthermore, by employing a critical 'academic development' perspective in their respective disciplines and teaching methods, consultants-turned-academics are better equipped to deal with the complexity of academia and effect change where it is warranted.

STUDENT-CENTRED PEDAGOGY: HOW ONE-TO-ONE FEEDS INTO THE CLASSROOM

The cognitive as well as the affective value of the one-to-one consultation is well-documented (Archer 2008; Harris 1995) and the walk-in nature of writing centres is seen as important in meeting students' immediate needs which may not be met in individual departments. The premise underlying the one-to-one consultant-student relation is Lave and Wenger's argument that learning is located in increased access of learners to participating roles in expert performances (1991:17). Also, that writing is learnt 'implicitly through purposeful participation, not through instruction' (Ivanič 2004: 235).

While consultants like Anne and Joe acknowledge the value of the one-to-one strategy, as mainstream academics the conflict between this form and traditional modes of teaching is slightly more difficult to navigate within their specialist disciplines. For Joe, students 'may have their own academic, personal or other problems but unless they contribute in class or approach me separately, they remain simply names and faces rather than individuals' (Joe). Anne contends that while she continually strives towards making the individual explicit in her teaching practice, there is a sense that her role in the academic community has shifted:

> Now that I'm a lecturer I actually tend to lead more. In the writing centre it's peer- to-peer, but here I think maybe the students expect more, more direction from me, but also maybe I feel that I have more of ... a discipline or content knowledge so that I can guide them better as well … guide them more specifically (Anne).

Maleson, Nomfundo, Fuad and Marie paint a different picture of the transition from consultant to academic, emphasising an approach that is student-centred rather than teacher-centred. Maleson draws attention to the notion of 'the ideal student' which is an imagined construct that lecturers and other academic staff use as a shorthand when dealing with a mass of students. In comparing the tenets of one-to-one practice to his own teaching methods, Maleson states that

> the ideal student is able to do ABCD. And everyone must fit into that model which I have in my head about what the ideal student is like. So, that's the kind of construct which I think is deconstructed when you work at the writing centre ... because you begin to understand, look

> a lot of students don't fit into that ideal. So when you go back to teaching a mass, I think you are more sensitive again of individual differences within the mass (Maleson).

While lecture theatres filled with large numbers of students are not likely to disappear from the academic landscape, Fuad asserts that 'yes, it's about a whole class of students but now the one-to-one teaches you about the individual as well ... the one-to-one has shown me that you first have to have a real human understanding before that academic stuff comes into play' (Fuad). In his practice as an academic, Fuad consciously highlights the difference between lecturing and mediating. The former is posited as a hypodermic transmission of knowledge whereas the latter is a style of teaching that 'is about trying to take a student from a certain point to another point of progress' (Fuad). This view of writing as a process and a social practice involves a shift from thinking of writing as an individual possession or 'skill' (Lea and Street 1998), towards the notion of an individual engaged in socially situated action, writing in specific disciplinary contexts (Lillis 2001:31). Writing is not only what people do, but rather what they understand of what they do and 'how it constructs them as social subjects' (Clark and Ivanič 1997:82). This notion of academic writing as a social practice encapsulates the 'academic literacies approach' (Lillis and Scott 2007:11) of our writing centre.

Fuad refers to the writing centre as an in-between space, one that is between the university and the student, between the novice consultant and the practising academic, between absolute despair and mediating confusion through communal meaning-making. For Fuad, the writing centre as a space that focuses on the student enables 'meaning-making to happen between student and consultant ... it's getting into the confusion' (Fuad) and aiding the student in the quest for academic success. Nomfundo reiterates this idea of empowering students when she recounts that the benefit of the one-to-one experience is that it gives students the space to speak: 'the consultation taught me that it's not ... like you are talking at the student ... there is a conversation that's happening between the two of you' (Nomfundo). This right to 'speak, to be entitled to speak and to share our perspectives is a vital space in academic life' (Savin-Baden 2008:65).

OWN RESEARCH AND WRITING PRACTICES: IDENTITY AND VOICE

Consultants claim that working in the writing centre environment has enhanced their understanding of academic writing practices through uncovering the hidden 'rules' as discussed earlier, engaging in debate with fellow writers or gaining writing experience through interaction with students. Maleson introduces the idea of 'writing vicariously' when discussing how his engagement with students' texts influenced his own writing practices. He acknowledges that engaging with various texts across the disciplinary spectrum and with students with differing individual needs 'feeds back

into your own writing, into the way in which you understand the practice of writing' (Maleson). Maleson believes that his awareness of and interaction with these various genres within the parameters of academic writing has allowed him to write with a sense of collective or shared writing experience.

> I write like somebody who has a lot of experience with writing ... but the interesting part I think is that the experience I have with writing is not ... experience that has come from my own writing. It's almost like I've gained experience by looking at the writing of other people (Maleson).

He claims that each time a student brings in a piece of writing, the consultant endeavours to revise the text with the hope of improving it in collaboration with the student. As a consequence, the consultant is directly involved in the writing exercise and through this involvement practises the art of academic writing, which in turn impacts on their own writing. Maleson concludes by intimating that 'I think I've become a much more mature writer and a much more ... lucid writer than I was before' (Maleson).

Nomfundo, Anne and Fuad also see the experience of working in the writing centre as having encouraged their transformation as writers. For Nomfundo, it was a case of practising what she was preaching: 'I couldn't talk about good structure and then go and do something different in my own thesis ... so what I was actually saying to the students in consultations and in the workshops was shaping how I was writing my own thesis' (Nomfundo). As a second language speaker herself, grammar has always been a sticky issue. Nomfundo narrates that because incorrect grammar had an effect on the readability of written assignments, she was often trapped in the minute details of word structure and how this aligned to form grammatically correct sentences. However, in advocating the principles of academic writing in the capacity of a consultant, Nomfundo learnt to put writing concerns into perspective. While she recognises the importance of grammar in the project of writing, she values the fact that working in the writing centre 'taught [her] to foreground structure over grammar' (Nomfundo). This change in standpoint enabled her to view writing in a more holistic way, helping her to structure the arguments in her thesis in a comprehensible manner without being caught up in micro grammatical considerations. Nomfundo admits that the principle of writing bigger than grammar was a constructive one because 'it had very good rewards for [her] research as well' (Nomfundo). Nomfundo's approach to academic writing thus underwent a change in strategy that was beneficial to her practice as an academic.

The writing centre as a 'transitional space' enables shifts in learner experience to occur. These shifts can be caused by 'a challenge to the person's life world in particular areas of their lives at different times in distinct ways' (Savin-Baden 2008:108). Whilst working with student writing, Fuad experienced a transition that added nuances of complexity to his writing that were previously absent. Fuad

recollects that at the time of writing his Masters' thesis, he presented his arguments in quite absolute terms.

> I would say my argument is this and I disagree with this … I was always polarised and stuff, I don't agree with that, I disagree with you. Then, I started to see how certain modals and certain words like 'some theorists have argued that' and shifts like 'also', 'however' … I became acutely aware of them, and I started to write very carefully. I sounded very confrontational in my Masters and now with the PhD, I'm much more tentative (Fuad).

Fuad's consultations with students were one of the primary avenues through which he recognised the extent to which his own writing was polarised. The confrontational stances present in some of their writing alerted him to the aggressive tone in his own writing. Accordingly, Fuad sought to make a change in his own writing, and while the transition is tentative, it is also more gratifying.

> It's just become much more complex, but in a good way. It's not debilitating. It really makes me think about things and I've asked myself continuously, who's writing here? Is it me? Do I see myself in the text? Whereas before, I would ... read my Masters and say that sounds like James Gee, that sounds like so and so, now when I read, I can say this is actually me. This is something that was built in that writing centre, a certain type of writer that I wasn't aware of before (Fuad).

The writing centre helped foster an academic that writes and thinks beyond the linear tropes of polemical certainty. In a sense, working in the writing centre environment challenged Fuad to question his own position in relation to his writing and thus afforded him the tools required to transition from confrontational fixity to exploratory complexity.

'HOME AWAY FROM HOME': WRITING CENTRE AS COMMUNITY

Writing centres have a strong sense of community and of the value of the individual. In this sense they are not 'centres' so much as safe houses (Canagarajah 2004) – extracurricular spaces that provide nurture and exist apart from and outside of surveillance by authority. Chihota (2007) reflects on how postgraduate writers' circles in a writing centre enable a space of supportive playfulness where students are able to try out 'graduateness' in a low stakes environment. Students need such spaces to practise being academics. As Vandeyar points out, the formation of academic identities is largely 'defined by power relations inherent and characteristic of an institution; the intricate and subtle workings of which play a pivotal role in affirming or negating academic identities' (2010:932).

For many of the consultants, the sense of collegiality that permeated the space provided a welcome measure of security. Anne, Maleson, Fuad and Joe allude to the solitude of the postgraduate experience and the writing centre as a space that

engenders dialogue between peripheral figures, offering a site where those on the fringe feel at home. When deciding to apply for the post of writing consultant, the idea of belonging to some form of a community appealed to Anne: 'it sounded like I'd get a chance to meet people 'cause I was struggling to meet people on campus … I didn't know anybody on campus at all when I first took up the job'(Anne). At the time, Anne had already commenced the second year of her PhD.

The sentiment of academic isolation and the need for companionship with a group of peers is well-expressed by Joe.

> Being a postgraduate student who was teaching part time, I typically felt that I was on the 'fringe' of the department in which I was based. While working at the writing centre I felt that I was a valued colleague of my fellow-consultants and others. This collegial atmosphere—in meetings, in a professional capacity or casually—was encouraging (Joe).

Lewanika and Archer (2011:152) contend that 'besides combating the isolation of postgraduate study, a community of practice like the writing centre helps to define an academic identity'. It is evident that the writing centre fosters a sense of collegiality amongst consultants and works towards cultivating their academic identities in a myriad of ways, most notably by creating a sense of belonging. Maleson relates the experience as akin to a homecoming: 'when I came into the writing centre it's like I identified with a certain closely knit group or a closely knit community ... and it almost became like my home away from home' (Maleson).

FINAL COMMENTS

Scott (2009:5) argues that 'the great majority of the educated and skilled people needed to take a country forward must be grown at home. While Higher Education has a range of roles in developing societies (not least the creation and application of new knowledge), producing good graduates is its central and unique responsibility'. In grooming consultants, the writing centre not only contributes to this responsibility but also actively encourages the production of good academics. Maleson refers to the writing centre as a 'seedbed' for future academics.

Their academic experience means that all consultants had some prior induction into academic discourse and institutional practices before joining the writing centre. Nevertheless, all commented on the significance of the writing centre to the development of their pre-existing ideas of academic discourse, particularly the barrier that this specialised discourse can pose to English additional speakers. Of importance was the access and exposure that the writing centre gave the consultants to academic literacies, both in a theoretical and practical sense. In addition to academic discourse, consultants felt they benefited from their writing centre experience insofar as it improved their own research, writing and teaching. It did this by allowing them to appreciate a wide number of different disciplines, to become explicitly aware of the 'rules' that they took for granted in their own writing and to shift the focus of

their teaching from 'teacher-centred' to 'learner-centred'. The specific experience of one-to-one teaching in the writing centre was beneficial in this regard. The writing centre was considered by all consultants as a critically important space for mentoring new academics.

What was beyond the scope of this paper, but would be most useful for future research, is the exploration of the potential of writing centres as transformative spaces for the institution more broadly. Of interest would be to explore the tutors' teaching practices beyond the writing centre, in mainstream lectures and tutorials. Future research in this area could look at the ways in which writing centre trained academics transfer aspects of writing centre pedagogy into mainstream teaching.

This paper has argued that there is a link between a particular learning space and the creation of an academic identity. A writing centre can play a central role in mentoring young academics through its unique positioning in the institution, its interdisciplinary nature (which needs to be reconstructed as a strength rather than a weakness), and its demonstrated ability to create coherent communities of researchers and writers. One of the underlying premises of writing centre pedagogy is that a critical way of being develops through discussion and argument. Writing centres are thus dialogic spaces that embrace the complex relationship between the spoken and the written, and how the written is understood by a reader. Transformation results through engaging in dialogue. Unfortunately, changes in academic life such as shifts towards performative practices and accountability have increasingly resulted in a regrettable reduction in dialogic spaces. It is thus imperative to recognise the value of such spaces as writing centres where contesting knowledge and subject positions are foregrounded, where interrogation within and across disciplines can occur, and even where the fabric of higher education can be questioned.

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‘WE ARE HISTORY IN THE MAKING AND WE ARE WALKING TOGETHER TO CHANGE THINGS FOR THE BETTER’: EXPLORING THE FLOWS AND RIPPLES OF LEARNING IN A MENTORING PROGRAMME FOR INDIGENOUS YOUNG PEOPLE

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ABSTRACT

This article explores the unique mentoring model that the Australian Indigenous Mentoring Experience (AIME) has established to assist Australian Indigenous

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young people succeed educationally. AIME can be described as a structured educational mentoring programme, which recruits university students to mentor Indigenous high school students. The success of the programme is unequivocal, with the AIME Indigenous mentees completing high school and the transition to further education and employment at higher rates than their non-AIME Indigenous counterparts. This article reports on a study that sought to deeply explore the particular approach to mentoring that AIME adopts. The study drew upon interviews, observations and surveys with AIME staff, mentees and mentors, and the focus in this article is on the surveys completed by the university mentors involved in the programme. Overall, there seems to be a discernible mutual reciprocity inherent in the learning outcomes of this mentoring programme; the mentors are learning along with the mentees. The article seeks to consider how AIME mentors reflect upon their learning in this programme and also how this pedagogic potential has been facilitated.

Keywords: indigenous education, mentoring, indigenous young people, pedagogic flows, youth and learning

INTRODUCTION

Over the past two decades, the Australian university population has grown significantly. One indicator of this growth over time is found in national studies of students' commencement rates. In the decade between 1994 and 2004, the total number of commencing university students in Australia grew by 36 per cent. The most recent statistics from the Commonwealth of Australia Department of Industry (2014) reflects this trend; the total number of students commencing university students increased by 4 per cent to 509 766 in 2012 compared with the same period in 2011.

The Australian university student population is now not only larger but also more highly diverse than ever. Yet, the increasing numbers and diversity of university students do not necessarily equate to more equity of access. Examining entry statistics reveals how comparable levels of access have not been possible for all student cohorts and certain sections of the community continue to be under-represented in higher education (James 2008). The Review of Australian Higher Education, led by Denise Bradley (Bradley, Noonan, Nugent & Scales 2008), identifies that students from remote areas, Indigenous students, and those from low-socio-economic (LSES) backgrounds remain the most 'under represented' in the higher education sector (Bradley *et al*. 2008:10). While research has indicated that once low SES students enter university, their success rates are similar to their high SES colleagues, this is not the case for Indigenous students (James 2008).

This finding by James (2008) is of considerable concern as an increased quality of education has often been cited as one of the most critical tools for combating a wide

range of inequities (e.g., health, socio-economic status, employment) Indigenous Australians have endured (Bodkin-Andrews & Carlson 2013). Critically, researchers need to acknowledge the negative legacy that both colonisation and the resulting educational practices have had upon the cultural, family, and personal wellbeing of Indigenous Australians. The long history of racist educational policies, programmes, and attitudes within Australia have not only alienated Indigenous Australians, but also sought to erase their very identities and epistemologies (Beresford 2012; Bodkin-Andrews & Carlson 2013).

Indigenous people remain the most educationally disadvantaged in Australia, as this cohort does not have parity of educational access and participation. While the retention of Indigenous school students (7–12 years) has increased across the decade, from 32.1 per cent in 1998 to 47.2 per cent in 2010, such impressive increases are not apparent in either the TAFE or university sector (Steering Committee for the Review of Government Service Provision (SCRGSP) 2011). According to Devlin (2009), while there are higher proportions of Indigenous students attaining school completion, levels of tertiary education participation remain consistently low. The number of Indigenous students who leave university prematurely is almost double that of non-Indigenous students and hovers between 35–39 per cent (ACER 2010). Examining these departure statistics powerfully highlights the significance of Indigenous student attrition. Each year in the 2001–2006 period, approximately 4 000 Indigenous students commenced university but only 1 000–1 200 succeeded in completing a degree during the same period (ACER 2010).

The reasons Indigenous students depart the tertiary sector are manifold, including lower levels of educational readiness and limited financial resources, but James (2008) cautions against an oversimplification of the reasons for attrition. Distance is one key inhibiting factor for Indigenous students from remote and rural areas, as attending university requires mobility or movement. Holt (2008) points out that 'mobility' is an ontological absolute for rural young people contemplating on-campus university attendance. This is an embodied move that not only necessitates geographical shifts but also shifts in identity and community connection, some of which may be difficult or complex to achieve. The complex nature of decision-making around university attendance for Indigenous students is echoed by Anderson, Bunda, and Walter (2008:2) who argue that attending university for this cohort is 'not simply a matter of deciding "yes" or "no" … such choices are socially patterned' . Equally, for those students who may be the first in their community or family to attend university, the challenges associated with this transition are increased as students may find themselves expected to 'navigate' the culture of this tertiary experience in isolation as educational pioneers (Harrell & Forney 2003:155). Many of the obstacles encountered by Indigenous students remain largely invisible, but these and other cultural and personal considerations all play a powerful role in decisions about attending and persisting at university.

Patterns of educational disadvantage within the tertiary sector are gradually beginning to shift; the Commonwealth of Australia Department of Industry (2014) is now reporting an increase in Indigenous student numbers across most broad fields of university education, although students who self-identified as Aboriginal and Torres Strait Islander still only comprise 1 per cent of all enrolments in 2012. Despite reported improvements, this arguably remains a significant under-representation considering that the Aboriginal and Torres Strait Islander people make up 3 per cent of the total Australian Population (Australian Bureau of Statistics (ABS), 2013). It should also be noted that more recent, and successive Australian governments have emphasised the need for redressing the long-term inequities in education between Indigenous and non-Indigenous students, yet scholarly criticism suggests that these macro policy agendas have been too strongly embedded within discourses of disadvantage and deficit (Altman, Biddle & Hunter 2009; Irabinna-Rigney 2011). Put simply, it may be argued that overarching policy approaches have ignored a growing body of research articulating positive programmes encouraging Indigenous student successes across all levels of education (Ainsworth & McRae 2009; Bodkin-Andrews Harwood, McMahon & Preistley 2013; Sarra 2011; Yeung, Craven, Wilson, Ali & Li 2013). What is notable about such research is the overarching emphasis on cultural respect, integration, and inclusion that is relevant to the diverse Indigenous communities they have been situated within.

Such research has often been led by Indigenous scholars who have revealed that within academia, there is a strong and positive knowledge base that can be tied to a greater understanding and application of Indigenous ways of being and knowing (e.g., Martin 2008; Moreton-Robinson 2013; Tuhiwai Smith 2012). It must be repeatedly emphasised that Indigenous knowledge systems in Australia have both been continually developing and evolving over a near immeasurable number of generations (Fredericks 2013; Walter & Andersen 2013). For this reason, it is critical that all researchers seeking to understand Indigenous education recognise, respect, and incorporate findings emerging from Indigenous Research Methodological standpoints (Foley 2003; Moreton-Robinson 2013).

One of the strongest themes to emerge from Indigenous Research Methodologies is that the often cited inequities between Indigenous and non-Indigenous Australians must not be considered as due to the deficit-orientated 'Aboriginal problem', but rather that the inequities must be more carefully understood by moving beyond culturally incomplete Western-based epistemologies (Carlson 2013; Walter & Andersen 2013). Effective educational research and reform must be driven within a foundation drawn from Indigenous perspectives and practices that respect the dynamic and unique relations Indigenous Australians hold with their culture, community, country, traditions and learnings (Martin 2008; Trudgett 2013).

The focus of this paper is on an Indigenous Australian-led programme designed to combat the repeatedly cited unacceptable levels of educational participation

outcomes for Indigenous Australian students. The Australian Indigenous Mentoring Experience (AIME) is an educational mentoring programme designed to improve high school completion rates of Australian Indigenous students and transition 100 per cent of their Year 12 students into university, further education, or employment. AIME has experienced great success for its mentees (details are outlined in the next section) and has subsequently grown 'exponentially'. In 2005, its first year of operation, the programme comprised 25 mentors from University of Sydney pairing up with 25 mentees (Indigenous high school students from one local high school). Eight years later, in 2013, 1 066 university students, at 14 universities and 23 campuses across the five states of Australia (see Table 2), mentored 2 789 mentees (AIME, 2014a) in school years eight to twelve, and AIME's current goal is to be reaching 6 000 students and 2000 mentors nationally by 2016 (AIME 2014b:para. 2).

Mentoring literature has identified the benefits of participating in these programmes for the mentees, particularly those from disadvantaged groups. These benefits include: increasing self-esteem, self-confidence and self-efficacy; decreasing stress; increasing satisfaction and retention due to mentor encouragement (where not provided at home); developing skills; decreasing absenteeism; and increasing grades (in secondary school) (Calton 2010; Rogers 2009; Stolberg 2011). The benefits to mentors are largely defined in terms of tangible rewards such as receiving credit for volunteer mentoring on performance reviews; the acquisition of employability skills such as leadership and some personal benefits, such as increased self-esteem and the good feelings associated with helping others (Owens 2006; Zeind *et al*. 2005). This article builds on this literature to consider the knowledge growth for the mentors involved in this programme and how this impacted their perceptions and worldview.

In the AIME programme there is a significant departure from the predominant view that methodical matching of mentees and mentors is important to successful mentoring relationships. For example, a number of studies have underscored the importance of attention to gender, ethnicity and common interests in matching mentor with mentee (Brown & Hanson 2003; Valeau 1999; Zeind *et al*. 2005). Contrary to this type of approach, in terms of the predominant view of a necessary parity of 'ethnicity', AIME mentees and mentors are largely from different cultural heritages. While all the AIME mentees are young Indigenous high school students, the university student mentors are predominantly non-Indigenous. This is perhaps to be expected given the low rates of participation by Indigenous Australians in university education (described above). Nationally, in the 2013 cohort, 90.5 per cent of mentors were non-Indigenous. This is reflected in the mentor survey, where 91.5 per cent of the participants identified as non-Indigenous with mentors being derived from all disciplines across each university site. Further detailed mentor and mentee demographics are available from the AIME Annual Report (AIME 2014a).

Drawing on data generated from surveys conducted with AIME mentors, this article will explore the particularities of the AIME approach to mentoring and how

this has impacted all parties. We argue that the AIME mentoring model moves away from 'expert mentor/inexpert mentee' relationship and creates a pedagogic flow that enables reciprocal learning and growth. The following sections explore how AIME has evolved and the particular approach to mentoring that has been developed before presenting the results from a survey conducted with 178 mentors after completion of the programme in 2013.

EXPLORING AIME'S MENTORING MODEL

The AIME programme has a twofold focus of social support using mentors as role models and academic support via tutors squads, where mentors volunteer to assist with homework and school tasks. Mentoring is voluntary with university students recruited from a range of disciplines and programmes, at all stages of their university studies (they range from first year undergraduate to post-graduate students). Although AIME recruits some mature-aged students as mentors, the mentors are predominantly school leavers and young people under the age of 25.

AIME was established by a group of university students. The founder, Jack Manning Bancroft, is one of the youngest CEOs in Australia and the organisation is characterised by a young and energetic spirit. AIME has drawn extensively upon social media and have caught the public imagination with fundraisers such as 'National Hoodie Day' and 'Strut the Streets' (in swimwear). In addition to a growing Australian national presence, AIME has developed a very structured approach to mentoring as outlined in the next section.

The AIME framework

AIME initially used a 1:1 mentoring structure in their Core Program, where Indigenous high school students would visit a university campus for up to 21 one-hour mentoring sessions throughout the school year. Although five Core Programs were in operation in 2013, (during the time of data collection), AIME's most common mode of programme delivery is the Outreach Program. AIME operated 34 outreach programmes across Australia in 2013. In this programme, the mentor to mentee ratio is closer to 1:3. The shift to the outreach model was to facilitate AIME's goal for reaching as many Indigenous high school students as possible as well as offering an alternate mode of delivery.

The Outreach Program delivers the same content as the Core Program, however, to address issues of geography and travel times, day-long sessions are offered throughout the school year to replace the weekly hour long sessions. This means that schools further afield, up to two hours away, are able to participate as they can take their students to the university campus for each of the programme days.

We know AIME works …

The impact of the AIME Program has been measured year on year within the organisation with grade progressions and Year 12 completions statistics published in their Annual Reports. AIME has reported four consecutive years of school progression and completion results that are significantly higher than the national Indigenous statistics. In 2013, the Year 11–12 progression rate for AIME students was 89.7 per cent, which was significantly higher than the national Indigenous average of 71.3 per cent and also higher than the national non-Indigenous rate of 86.8 per cent. Table 1 indicates the rate of progression across school years, the percentages of students who complete the final year of high school (Year 12) as well as those students who achieve a final score that would make them eligible for university.

Table 1: Mentee progression and transition data from 2013, compared to their non-Indigenous and Indigenous counterparts.

National Outcomes	Non-Indigenous students	Indigenous students	AIME 2013 students
Year 9–10 progressions	100.0%	97.8%	97.6%
Year 10–11 progressions	94.3%	82.6%	93.2%
Year 11–12 progressions	86.8%	71.3%	89.7%
Year 12 completions	99.2%	71.8%	93.2%
Year 12-university progressions	46.0%*	10.0%*	26.8%

**Refers to the percentage of students who attained an ATAR score that would gain them university entrance.*

Sources: ABS, Cat. No. 4221.0, Schools, Australia, 2013 and National Report to Parliament on Indigenous Education and Training, 2008 DEEWR.

Collectively, the statistics indicate that over 81 per cent of non-Indigenous students progress through to Year 12 compared with 41 per cent of Indigenous students but, for those affiliated with AIME, this progression increases to 76 per cent. The positive impact of AIME is repeated when Year 9-university progression rates are considered with 37.4 per cent of non-Indigenous students achieving a university entrance score, compared with 4.1 per cent of Indigenous students, again this figure increases to 20.4 per cent of those students involved in the AIME programme (AIME 2014a).

In order to better understand both the effects of AIME participation and the possible long-term repercussions on the lives of participants, the organisation commissioned two key independent research projects. An evaluation into the

effectiveness of the AIME Program and the associated mentee outcomes (Harwood *et al*. 2013) was completed and published in March 2013. On the basis of findings from survey, observation, document review, and interview data, Harwood *et al*. (2013) found that the AIME Program (and particularly the AIME outreach model) positively impacted mentees. Particularly, the evaluation reports that AIME's outreach model of delivery positively impacted mentees' (i) strength and resilience; (ii) pride in being Indigenous; (iii) making strong connections with Indigenous peers, role models and culture; (iv) aspirations and engagement for finishing school; (v) aspirations for continuing further study; and, (vi) school retention and progression rates (Harwood *et al*. 2013).

In addition, a pilot quantitative study by Bodkin-Andrews *et al*. (2013) found that Indigenous students participating in AIME were significantly more likely to aspire to complete high school (1.87 times more likely) and attend university (1.30 times more likely). In addition, not only did the AIME students have a higher sense of school self-concept and school enjoyment when compared with the non-participating students, but their stronger sense of school self-concept was found to have a higher level of predictive power over Year 12 and university aspirations (this was over and above the effects of the students' gender, age, home educational resources, and whether their parents went to university). These findings led the researchers to conclude that AIME actively promotes a more meaningful sense of confidence in education for Indigenous students. The programme also succeeds in building levels of confidence among participants, as well as understandings of self and others within a culturally appropriate environment. The ways in which such development manifests for mentors are the main thrust of this paper.

The strengths of AIME's outcomes were also backed up by an economic evaluation conducted by KPMG, which was completed and published in December 2013. Working on the economic premise that higher levels of education result in higher paid positions of employment, KPMG (2013:3) found that: 'An AIME student that completes a university degree can be expected to earn up to $332,000 more over their lifetime compared to an Indigenous student that does not complete high school.' Moreover, KPMG (2013:4) calculated that AIME generates impressive benefits for the Australian economy, 'for each $1 spent, $7 in benefits is generated for the economy'. Both of these evaluations reported AIME's outstanding success in their related fields of enquiry.

Nested in this mentoring programme that has successful outcomes for both its mentees and the Australian economy are strong indications of significant benefits for mentors. Benefits of mentoring, particularly the mentors' 'learning' in this context, are significant but, thus far, remained undertheorised. This article begins to address this gap in the mentoring research.

The AIME mentoring model

The AIME approach to mentoring deviates from more traditional mentoring programmes in a range of ways. AIME grew from the grass-roots level, was founded by young people and is Indigenous led. At the time of its inception, there was minimal available research on best practice for mentoring Australian Indigenous high school students, however, there was a need to raise school attendance and completions levels.

Mentoring is not a new concept for Indigenous Australians. Within this cultural context, there has always been an emphasis on connecting young people with significant others such as the cultural tradition of guidance and the sharing of wisdom through Elders (Walker 1993). With this in mind, the AIME Program fits well with Indigenous teaching and learning styles. For example, AIME is not only focused on ensuring the academic success or employability of the mentee. In line with Indigenous ways of learning and teaching, it is seen as an opportunity to share personal stories, past experiences, life lessons and traditional cultural teachings. The AIME Program contests the current deficit in educational outcomes by providing Indigenous high school students with a culturally appropriate mentorship programme with curricular activities designed especially with Indigenous perspectives in mind. The curriculum has been specifically designed for Indigenous Australian high school students by Indigenous AIME staff. All the AIME presenters who facilitate the sessions are Indigenous role models and the mentors are mostly non-Indigenous university students (76 Indigenous Mentors in the cohort of 1 070 in 2013).

AIME recruits mentors from the various university sites that the programme currently operates and in 2014 to date, the programme has recruited 1 390 mentors, a figure that will continue to grow. Of these, most were female (n=1 019) and from all fields of university study but predominantly studying at an undergraduate level (n=1 266). Recruitment is conducted via lecture presentations, college visits, o-week stalls, social media, and also by word of mouth. Potential mentors are invited to apply online and through this application provide details of why they wish to participate in the programme as well as explain what makes a good AIME mentor and why they should be selected. All applications are assessed by the AIME organisation and potential applicants are then contacted by phone for a further short interview. If deemed suitable for the programme, mentors are then required to complete two online training sessions on Australian Indigenous history and child protection and policy, respectively. This online training is complemented by on-campus training sessions that include topics such as cultural identity, mentoring techniques and also, details about the programme and associated responsibilities. However, training and learning about the programme and mentoring is an ongoing endeavour throughout participation, AIME mentors both engage in pre- and post-debriefing sessions, where they are encouraged to reflect upon their experiences during the day, their anxieties or concerns as well as provide feedback on what they consider is working

or not. AIME's organisational culture can be likened to what Cameron and Quinn (2011) term a 'clan culture, hence becoming an AIME mentor is not simply about attending sessions with mentees but instead through a range of social networking strategies and also, the AIME hoodies and caps, the organisation seeks to develop a collectivity based on shared goals, values and beliefs. This collectivity is further embedded within the training, which operates 'like an extended family. Leaders are thought of as mentors and perhaps even as parent figures …. Commitment is high. The organization emphasizes the long-term benefit of individual development, with high cohesion and morale being important' (Cameron & Quinn 2011:48).

While the survey data reported in this article did not explicitly gather data on mentors' motivations for joining AIME, in previous research (O'Shea, Harwood & Kervin 2011) mentors identified how involvement in the AIME programme provided gain in personal/professional qualities, including leadership, coaching and personal confidence. However, one of the most cited reasons for participating in the programme related to a desire on the part of the individual to engage or connect with community. This not only included local Indigenous communities but also the university community participating in the AIME programme perceived as a means to meet other students from across discipline areas and fields (O'Shea, Harwood, Kervin & Humphry 2013).

About the study

The study reported in this article grew from a research partnership between AIME and the University of Wollongong that was established in 2010. The main objective of this partnership has been to explore how AIME engages and supports Indigenous young people to complete their high school education and also consider further learning as a viable option. Particularly, there is a mutual desire to rigorously theorise, using empirical material, the AIME model of mentoring. This is because, although it is a very successful mentoring programme, insofar as it positively impacts the Indigenous mentees' rates of school completion and transition to university, further education and employment, it does not neatly map against existing mentoring and coaching models. The research reported here is nested within this research partnership. This part of the research was funded by Commonwealth of Australia Department of Industry and took place immediately following the 2013 AIME mentoring programme.

The focus survey for this paper is the AIME post-programme mentor survey. In 2013, 178 AIME mentors completed this survey online via Survey Monkey. In total 171 respondents indicated consent for AIME to share their responses with UOW researchers and after removing surveys that were incomplete, a total of 129 surveys were analysed for this article. The 129 survey respondents comprised 118 non-Indigenous and 11 Indigenous university mentors. These mentors were from

13 different university sites across Australia. A breakdown of number of mentor respondents by state and university is offered at Table 2.

Table 2: Distribution of mentor respondents by state and university site

State	University	Number of useable responses
New South Wales	University of Sydney	12
New South Wales	University of Wollongong	19
Queensland	Bond University	6
Queensland	Central Queensland University	1
Queensland	University of the Sunshine Coast	4
Queensland/New South Wales	Southern Cross University	13
South Australia	University of South Australia	16
Victoria	Monash University	18
Victoria	RMIT University	8
Victoria	Federation University (formerly University of Ballarat)	3
Western Australia	Curtin University	10
Western Australia	Edith Cowan University	3
Western Australia	Murdoch University	12
--	Not clearly indicated	4
Total mentor participants		129

The survey included a total of 31 question items that explored various facets of the programme and the mentors' perceptions of participating. The analysis of survey data presented here focuses on five key questions from the survey. These five questions were targeted because, considered together, they generated a rich picture on the mentors' self-reported learning from their AIME experience. None of the remaining 26 questions spoke to this theme, rather they comprised seven AIME quality control feedback questions; six questions measuring interest in and garnering ideas for developing AIME as an accredited university subject; five demographic questions; four closed questions regarding ranking personal skills (e.g. communication skills); four questions pertaining to different issues of consent for participation in the research project. The five survey questions that informed this article regarding the mentors learning in AIME are outlined in Table 3.

Table 3: Focus questions from the post-programme AIME mentor survey

Question 16	What did you learn from AIME?
Question 22	How has participation in AIME influenced how you connect and serve the wider community?
Question 23	What have the Mentees taught you?
Question 24	Has participation in AIME increased any of the following skills and attributes? Please choose as many as you want. Confidence Creativity Integrity Initiative Communication skills Critical thinking skills Problem solving skills Leadership skills Teamwork skills Ethical responsibility Cultural and social awareness Respect of Indigenous knowledge, cultures and values Knowledge of a field outside of your discipline Desire to implement constructive change in your community
Question 29	What is your message to other uni students who want to get involved in AIME?

Data from the surveys was imported into NVivo 10 and the qualitative comments were inductively themed. Axial coding was then conducted to provide insight into how responses related to the mentors' cultural backgrounds, gender and mentoring experience. In addition, frequency counts were conducted on the closed items to generate descriptive statistics.

The impacts of AIME mentoring on the mentors

Our findings reveal that exceptional mentor learning is occurring in the AIME programme, with analysis indicating that mentor learning occurs in three key ways. Firstly, their learning is described to be of exceptional scale. Here the case is made that the mentors are often learning 'more' than the mentees. Secondly, the mentors' learning is characterised as exceptional due to the importance of its content. Much of the mentors' learning centred on developing knowledge and appreciation of Indigenous Australian culture, a growing awareness of social injustices experienced by Indigenous Australians and a move away from prior knowledge characterised by racist stereotypes. Thirdly, what is both surprising and exceptional, are the mentors'

reports of how this new knowledge is being applied to benefit the wider community, via both the changed nature and capacity of their volunteer work and their proactive attempts to remedy racism in their professional and personal lives.

'Mentoring as learning' in the AIME Program

That mentors benefit and learn from mentoring is not a new idea (Beltman & Schaeben 2012), but the argument that mentoring can be construed primarily as a culturally enriching learning activity, on the other hand, is largely unexplored and undertheorised. In the 2013 post-programme mentor survey, respondents indicated how their learning was largely *about* Indigenous culture.

An initial indicator of this step-down from position of 'mentor as teacher' is the mentors' awareness that they mentor at AIME programmes within a relationship characterised by reciprocal learning with the mentee. For example, one respondent explained: 'You get to know these young people and they are as much your mentors as you are theirs' (Q29[1] non-Indigenous mentor); while another describes mentoring as 'a worthwhile experience. You will learn just as much from the students, as they will learn from you' (Q29, non-Indigenous mentor).

While the above quotations recognise the reciprocity of pedagogic flows as central to the mentoring relationship in AIME, what is striking is that the mentors typically positioned themselves as *learning* 'as much' as, *if not* 'more than', the mentees. Indeed, the survey data demonstrated that the mentors frequently equated mentoring with learning and being taught:

> You learn more experiencing the program first hand than you would having a uni lecturer tell you (Q29 non-Indigenous mentor).
>
> [Y]ou will learn greater respect for what the Aboriginal community is achieving under its own initiative. And you will benefit greatly by enjoying the privilege of being included in the Aboriginal community for a day, absorbing the beautiful culture with its wit, playfulness, passion for survival and brotherly/sisterly welcome (Q29 non-Indigenous mentor).
>
> Do it. We can't learn enough about Indigenous Australians and their culture and how to work more positively together (Q29 non-Indigenous mentor).
>
> They [the mentees] most definitely have taught me a lot (Q23 Indigenous mentor).

These and other quotations establish that a great amount of 'learning' is happening for the AIME mentors but it is important to consider *what* is being learnt. In educational contexts, learning is typically construed and deconstructed in relation to syllabi and graduate quality statements as skills and knowledge (and sometimes 'values'). In recognising this, the AIME survey quantified some possible learning outcomes for mentors in terms of skills and attributes. Question 24 of the survey was a multi-

response question: 'Has participation in AIME increased any of the following skills or attributes?'[2]

Table 4: What the mentors have learned from mentoring in AIME

Skills, knowledge and attributes	Number of positive responses (%) N = 129
Cultural and social awareness	112 (86.8)
Respect of Indigenous knowledge, cultures and values	104 (80.6)
Desire to implement constructive change in your community	87 (67.4)
Communication skills	84 (65.1)
Confidence	82 (63.6)
Leadership skills	79 (61.2)
Teamwork skills	79 (61.2)
Ethical responsibility	66 (51.2)
Initiative	59 (45.7)
Problem solving skills	47 (36.4)
Integrity	44 (34.1)
Creativity	38 (29.5)
Critical thinking skills	38 (29.5)

Table 4 points to multiple learning outcomes for mentors. What is striking about this data is the coherence of 'learning' from this cohort (over 80% of the mentors reported learning the first and second ranked outcomes). The coherence is striking given that the learning of mentors is not usually the focus of mentoring programmes. While there is a component of explicit teaching from AIME for the mentors in the form of ongoing mentor training, there has been little recognition in mentoring literature of the reciprocal learning relationships that are indicated by these survey responses.

Learning about Indigenous culture

Analysis of the qualitative data demonstrates that the scope, depth and impact of the mentor learning move it beyond 'incidental'. As described above, this article seeks to better understand the top three types of mentors' learning (as per Table 4). We analysed the qualitative responses to consider what it means for mentors to report increased 'cultural and social awareness', 'respect of Indigenous knowledge, cultures and values', and 'desire to mplement constructive change in one's community'.

Overwhelmingly, throughout the survey responses, the most frequently discussed 'learning' from mentoring was identified as gaining new understandings of and appreciation for Australian Indigenous cultures, history and peoples. Interestingly,

both Indigenous and non-Indigenous mentors reported this increase in knowledge and understanding:

> [I learned] [h]ow to work in a culturally sensitive manner and the importance of learning and understanding the true history of Australia (Q16 non-Indigenous mentor).

> I learned more about myself, which was surprising. I expected this experience to be of benefit to the kids but I found that there is so much more to learn about myself and my own culture (Q16 Indigenous mentor).

Of note here is the fact that learning about Indigenous culture and history was not only fuelled by the curiosity of the 'other' (i.e., from the non-Indigenous mentors). Apart from the creation of new understandings regarding Indigenous culture and history, there was extensive comment on the AIME Program's capacity to transform existing knowledge of Indigenous Australia. This finding is particularly encouraging as numerous Indigenous scholars have highlighted the need to break down pre-existing Eurocentric representations of Indigenous Australians, and to be more receptive to the unique histories and cultures of Indigenous Australians, not only within educational and learning initiatives (Price 2013; Yunkaporta & Kirby 2011), but across a diversity of disciplines (Dudgeon & Kelly 2014; Walter & Andersen 2013).

Participating in the AIME Program also impacted mentors' learning by effectively supplanting their existing understandings of Indigenous culture and people with new knowledge. Particularly, the mentors 'unlearned' racist knowledge and stereotypes of Indigenous persons. Overall this type of learning for mentors in the AIME Program was neatly summarised by one Indigenous mentor in her message to future mentors, who explained how participating in AIME 'really breaks down some of the misconceptions that people have about Indigenous culture' (Q29).

For the non-Indigenous mentors, this deconstruction of misconceptions was variously evidenced in the survey data. Typically, this was presented as an increased awareness of social justice issues and empathy for the difficulties faced by young Indigenous Australians:

> Being more aware of the hardships faced by Indigenous kids and wanting to change people's attitudes and empower these guys to be proud Indigenous superstars in their community (Q22 non-Indigenous mentor).

> I guess I just see two sides of the story now, and have more awareness of how people are treated (Q22 non-Indigenous mentor).

> What didn't I learn? The one thing that sticks out the most for me was discovering just how amazing the AIME kids were, and there [sic] aspirations to achieve more (Q16 non-Indigenous mentor).

Occasionally, mentors explicitly recounted an overt turnaround from understanding Indigenous Australians through the lens of racist stereotyping:

> That not all Aboriginal people follow the no job, drinking stereotype (Q23 non-Indigenous mentor).

> It opens your mind and blows past all the preconceived, media driven notions you have of The First Peoples (Q29 non-Indigenous mentor).

> It really opened my eyes! I never considered myself a racist person but I was shocked at how little I knew about the wonderful cultures of the ATSI[3] [Aboriginal and Torres Strait Islander] people … it was a humbling experience (Q22 non-Indigenous student).

While such accounts of eye and mind opening learning are incredibly powerful, they were reasonably rare (n=12). More often mentors expressed their unlearning of negative and racist stereotypes as discernable shifts to non-judgement of Indigenous persons:

> The AIME experience reminded me to respect all people, all ages, all backgrounds. And also reminded me to connect by listening well and not judging (Q22 non-Indigenous mentor).

> It makes me more conscious about my actions and the way I behave in relation to other cultures (Q22 non-Indigenous mentor).

One aspect of moving away from 'judgement' towards non-judgemental understandings of Indigenous cultures and peoples related to revising perceptions of 'Aboriginalism' (Mackinlay & Barney 2008). This is the name for the process of othering Indigenous Australians based on essentialist stereotypes of what makes a 'real' Aboriginal (lives in the bush, plays didgeridoo, does traditional dancing, etc.). That is, there was a collection of statements that demonstrated an abandonment of understanding of Indigenous people in terms of stereotypes informed by skin colour, social class and living environment. This collection of statements can be analysed across aesthetic and temporal axes.

This shift from knowledge resting in perceptions of the 'other' to knowledge grounded in diversity of Indigenous people's experiences was evidenced in un/learning stereotypes that all Indigenous people are defined by skin colour. Some mentors demonstrated an abandonment of racialised stereotyping based upon preconceived notions of 'racial types'[4]. Such comments were derived largely from non-Indigenous mentors and indicated the pervasiveness of this type of stereotyping across non-Indigenous communities:

> It's pretty stupid and ignorant of me but while I intellectually knew I hadn't really internalised the fact that not all Aboriginal Australians had darker skin, "looked a certain way". If I hadn't been told they were Aboriginal I would never have guessed. And a better understanding of how being Indigenous informs their identity (Q16 non-Indigenous mentor).

> That being Indigenous isn't how you look but how you identify (Q23 non-Indigenous mentor).

These quotations explicitly refer to an unlearning of the misconception that all Indigenous Australians are 'dark-skinned'. New understandings of the diverse appearances of Indigenous Australians were discernible in this data. For example, six non-Indigenous mentors described what they had learned from AIME by quoting the adage, 'never judge a book by its cover'. The importance of these findings is reflected in the writings of numerous Indigenous researchers and scholars who have pointed to the stress emerging from a pervasive contemporary public resistance that Indigenous Australians have been forced to endure when attempting to embrace their sense of identity (Carlson 2013; Nakata 2012; New South Wales Aboriginal Education Consultative Group (NSW AECG) 2011).

The 'unlearning' of stereotypical assumptions was also evidenced in mentors' comments regarding contemporary Indigenous culture, which indicated how mentors' understandings had shifted from historically based understandings of 'Aboriginals'. For instance, one mentor described not having a conception of the urbanity of Indigenous Australians prior to involvement in AIME:

> I am able to work with Indigenous Australians in metropolitan Melbourne without travelling to an Indigenous community (Q22 non-Indigenous mentor).

Fredericks (2013) has shown that urban Indigenous Australians are too often, and mistakenly, perceived as not being authentic, however, this author points out that both urban and metropolitan locations are closely tied to many Indigenous Australians' connection to country and culture. Indeed, it can be argued that most Australian urban environments contain strong symbols of Indigenous sovereignty through artworks, signage, murals and active cultural community organisations and practices. Promisingly within this study, many of the comments in this vein spoke to developing a new appreciation of the diversity of the contemporary (as opposed to historically constructed) Indigenous culture:

> [From AIME I learned about the] [d]iversity of the Aboriginal experience (Q23 non-Indigenous mentor).

> It made me want to learn more about the history and the contemporary life of Aboriginal Australians (Q22 Indigenous mentor).

The knowledge and understanding gained from their participation in AIME was both profound and powerful. Aside from discrediting socially embedded racial stereotypes, this learning is also significant in terms of effects on the mentors. The following section describes how mentors reflected upon these new knowledges and how they applied this understanding.

Going wider – moving to advocacy and promotion

The qualitative results of our survey offer firm support for identifying a relationship between the mentors reported 'cultural and social awareness', 'respect of Indigenous knowledge, cultures, and values', and their 'desire to implement constructive change in [their] community' (the top three learning outcomes reported by the mentees, see Table 4). However, this knowledge did not just impact the individual respondents, instead, the mentors report utilising this newfound understandings and respect for Indigenous knowledge, cultures and people to similarly educate others. The focus of this educational and advocacy work is characterised by an intention to reduce racism in their communities, become more involved in volunteer work and alter their workplaces and work practices for the benefit of the Australian Indigenous community.

Many mentors expressed a sense of needing to disseminate their learning from AIME, for the benefit of their family, friends and colleagues. For example, a number of non-Indigenous mentors revealed awareness of the racist stereotypes made about Indigenous Australians. These stereotypes retain currency in Australian society, a problem profoundly illustrated by the racist slurs made by non-Indigenous crowd members to Australian Rules Footballer, Adam Goodes (Lutz 2014). One mentor explained holding a commitment to 'educating friends and people I meet that to be Aboriginal doesn't mean that you are a person who is a criminal or doesn't do the right thing. It sometimes just means they have disadvantages and they are living life the best way they can figure out with the resources they have' (Q22). Similarly, another mentor described how participating in AIME provided skill in 'how to respond to casual racism heard in public, but now I'm more confident about politely telling someone that I've had great experiences with Aboriginal people and I appreciate them not speaking about them disrespectfully' (Q22). A number of mentors overtly described how AIME had instilled a lack of tolerance in relation to stereotypes and racism. These responses included statements such as:

> I no longer turn a blind eye to racist or discriminatory comments. I have become a great advocate for this program and for Indigenous awareness in general (Q22 non-Indigenous mentor).

> AIME has given me the voice to spread the word to other people about why the program is vitally important in changing the futures of Indigenous kids (Q22, non-Indigenous mentor).

Such perceived increases in skills for dealing with and reducing racism in the community and a 'giving of voice' to take an ethical stand on this matter are profoundly important outcomes from this participation. Indeed, the importance of this finding is highlighted in research that suggests that Indigenous Australian students who experience racism are significantly more likely to disengage from school (Bodkin-Andrews, Denson & Bansel 2013) and increase the risk of poorer

performance in school exams (Bodkin-Andrews, Denson, Finger & Craven 2013). This is a somewhat invisible and unreported consequence, which also arguably has repercussions for the broader Australian community. Given the magnitude of this issue, these are clearly beneficial outcomes of participation in AIME that have potential impact for the Australian community given the numbers of university student mentors involved in AIME across Australia. This flow-on effect is identifiable via references to the mentors' increased volunteering and community involvement. In total 23 mentors reported increased participation or aspirations to participate in voluntary or community-based activity.

The knowledge derived from their involvement in AIME did not only impact upon the mentor's actions and reactions but also had broader repercussions as well. Some of the respondents made reference to the 'ripple' effect that this participation had engendered, impacting on professional and educational contexts.

> My knowledge of Indigenous Australia and the difficulties that Indigenous people face in completing school … has increased my appreciation for and the need for diversity within the workforce, which is extremely important in my role as a Senior HR Advisor (Q16 non-Indigenous mentor).
>
> We have been working on an Indigenous employment/training program at work since my involvement with the AIME Program (Q22 non-Indigenous mentor).
>
> It has been part of the motivation for me to seek employment in the Indigenous Education sector (Q22 non-Indigenous mentor).
>
> Studying Primary Teaching, I have decided that after gaining 2–3 years teaching experience, I will teach in an Indigenous community (Q22 non-Indigenous mentor).
>
> I want to become much more involved with the youth in my community. AIME demonstrated just how far kids can go when someone is there to support them and their achievements. After I graduate, I would also like to spend some time working with Indigenous youth in other parts of Australia (Q22 non-Indigenous mentor).

In exploring the mentors' perceptions of participating in the AIME Program, a range of unexpected and somewhat invisible outcomes have been noted. While traditional understandings of mentoring rest on the tenet that an expert with an interest in fostering success in others will 'share' their expertise to ensure the success of an individual otherwise identified as 'at risk' of failing in the focus task/capacity/role (Rogers 2009; Zeind *et al*. 2005), the quotations above suggest a very different dynamic. Rather than the traditional flow of mentoring whereby the mentor is cast more as the teacher and subsequent learning is attributed as an unexpected 'bonus', we contend that this programme ruptures this traditional pedagogic flow. This rupture is indicated by the importance and impact of the learning undertaken by the mentors at AIME; the mentors learning is far from trivial, it is re/defining their knowledge

of Indigenous cultures and subsequently impacting how they engage with their communities and places of work. The next section will discuss both the implications of this shift and explore how a programme such as AIME can be actioned in other educational contexts.

CONCLUSIONS

The success of the AIME Program can clearly be measured both in terms of its impact on the mentees and also on the mentors who clearly articulate deep and profound effects. Significantly, the AIME approach is very much grounded in the mentors' capabilities, adopting a 'bottom-up' (collaborative and democratic) approach to engaging the mentees. This included encouraging mentors to adopt the role of learner by providing opportunity for the mentee to instruct the mentor and also, avoiding prescriptive outcomes or objectives. We have detailed the characteristics of this organic approach in another publication (O'Shea *et al*. 2013) but the literature in this field also underscores the importance of gender, ethnicity and common interests when matching mentors and mentees (Brown & Hanson 2003; Valeau 1999; Zeind *et al*. 2005). The AIME Program does not subscribe to this view and does not require gender or ethnic parity in its mentor relationships. Instead, by providing a 'culturally safe' (Harwood *et al*. 2013:62) space for learning, these mutually beneficial transactions are facilitated, resulting in positive outputs for all involved.

The positive flow-on effect of such knowledge creation is noteworthy. This not only included increases in personal knowledge and skills sets but also, more importantly, offered the opportunity for non-Indigenous people to develop a cultural tool-kit that promoted a 'zero tolerance' approach to racism. Arguably, such positive and demonstrable transformations can only occur when mentor/mentees do not share an ethnic background; instead both mentor and mentee are positioned as learner and leader, their relationship is one of reciprocity with dual pedagogic flows. The following figure highlights how we perceive the pedagogic flows that exist in the AIME programme and how these differ from more traditional mentoring programmes. The exchange of knowledge moves between mentees and mentors, neither is positioned as more knowledgeable or more powerful in this relationship:

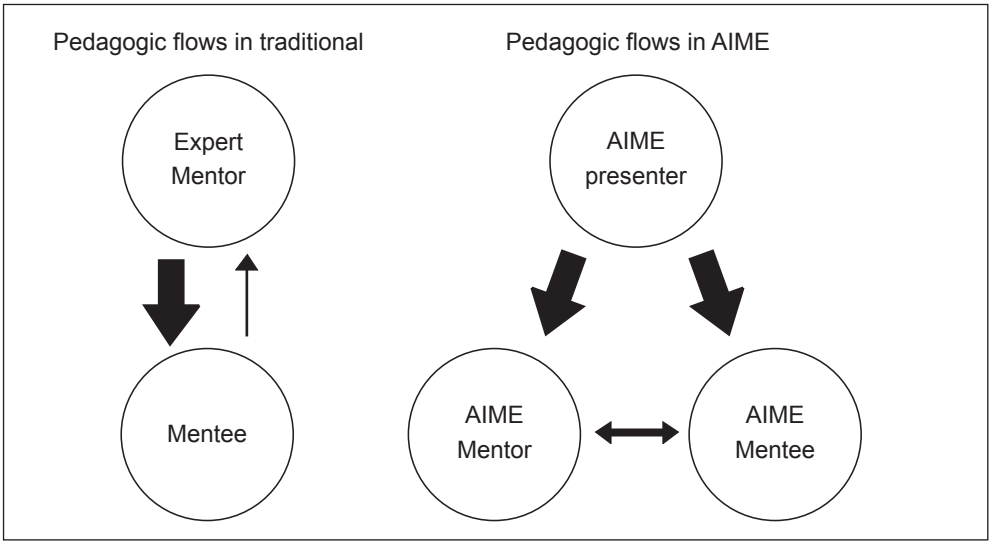

Figure 1: Diagram of Pedagogic Flows in AIME Program

This approach differs significantly from other types of 'engagement mentoring' models where mentors seek to transform 'young people's attitudes, values, behaviours and beliefs – in short, their dispositions' (Colley 2003:79). Instead, the AIME mentoring programme seeks to engender a more collaborative model, involving the mentors, the mentees, school representatives and key community members in this process. This is a model that seeks to work 'with' rather than 'on' people, a collective network that does not deny the agency or the habitus of the participants. Moving away from deficit constructions of mentee as somewhat 'lacking', the AIME programme draws upon the rich cultural heritages of participants, providing space for these to be both celebrated and foregrounded.

In closing we wish to emphasise the valuable experiences that mentoring provided for Indigenous university mentors. Such benefits can include providing links that sustain these students at university (O'Shea *et al*. 2013). These are not the only benefits, as AIME encourages a strong sense of collegial responsibility and leadership.

> AIME made me realise how closely the younger mob are watching us. Even if we do not intend to lead, we are influencing their journeys (Q16 Indigenous mentor).

This mentor's awareness of being closely watched reveals not only the extent of their sense of responsibility, but also a strong feeling of how they, as mentors are '*influencing* [the young people's] *journeys*'. The ripples and flows of learning reported here impacted all parties, the Indigenous mentees as well the mentors, both Indigenous and non-Indigenous – such a level of reciprocity not before reported in this field.

RECOMMENDATIONS

The question remains how might other mentoring programmes replicate this approach, and so we conclude this article with a series of recommendations, drawing upon both this empirical work and pedagogical theory. The following suggestions are designed for other programmes that may be drawing upon mentoring as a means to engage with young people and extend their educational futures.

- Develop respect and regard for all participants – this should be a mutual relationship, not one based upon power
- Build 'teaching moments' into the programme for both mentors and mentees
- Recognise that mentors who are from different ethnic, or socioeconomic backgrounds than their mentees may need support when trying to understand cultural differences in their cross-cultural mentoring relationship. AIME addresses this challenge through cultural awareness training for their mentors
- Provide regular and substantive opportunities for mentors and mentees to meet. These meetings need to be authentically framed, including opportunities for all parties to demonstrate their respective cultural and knowledge capitals.

NOTES

1 Q29 refers to 'Question 29' of the survey.

2 There is a parallel research project within the AIME Partnership Project that investigates whether mentoring with AIME enhances the university experience of the mentors. The list of attributes in Question 24 of the survey was designed to align with the university graduate attributes of universities participating in the AIME Program. To achieve this, the 'graduate qualities'/'graduate attributes' policies of each of the participating universities were read and key words in each of these documents were tracked (both for frequency and variations across universities). This data was then analysed to come up with the list in Question 24 (see Tables 3 and 4).

3 While quoting this statement from a mentor, we note that the term 'ATSI', while used in some governmental and wider public contexts, is not a preferred term for the Aboriginal and Torres Strait Islander peoples of Australia.

4 As explained by the Runnymede Trust (and cited on public anti-racism site, Racism No Way), terms such as 'race' 'are *remnants of a belief formed in previous centuries*, now discredited, *that human beings can be hierarchically categorised* into distinct "races" or "racial groups" on the basis *of physical appearance*, and that each *so-called race* or group has distinctive cultural, personal and intellectual capabilities' (Runnymede Trust 1993:57, cited by Racism No Way)

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THE PRE-UNIVERSITY PATHWAYS OF DISADVANTAGED STUDENTS FOR GAINING ENTRY TO UNIVERSITY STUDY

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ABSTRACT

This article focuses on the pre-university access pathways of disadvantaged first-generation students studying at a South African university. Based on data collected via qualitative methods, it draws on findings from a study of purposively selected students at a university in the Western Cape Province. It explores the ways they access and gain admission to the university. Combining Bourdieu's (2006) notion of 'cultural capital' with Yosso's (2005) notion of 'community cultural wealth', the article attempts to understand how these students use the resources in their families and communities to gain entry to the university. The article shows the decisive role that family capital and productive township networks play in the students' university admission pathways. Their ability to navigate around the 'darker' aspects of their impoverished communities and establish peer and community support networks is crucial in making their desire for university study a reality. The article illustrates the longer and circuitous admission routes that they take to gain university entry, one key consequence of which is that they adjust their aspirations to settle for less prestigious university programmes. Settling for programmes of 'lower' prestige was a way of securing admission to the university.

Keywords: Disadvantaged students; pre-university engagements; cultural capital; access practices; admission; lowered aspirations

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INTRODUCTION

This article is a discussion of how disadvantaged students establish a pathway to apply for, and gain admission to, university study. It discusses these students' navigation of their pre-university living contexts and the practices that they establish to apply for, and gain entry into, a university. The focus is on the difficult and circuitous paths they take to gain university entry in light of living in impoverished community circumstances. Central to the article is my attempt to provide an understanding of how they go about establishing their admission paths in these circumstances. The article is intended to provide understanding about the practices and identities of disadvantaged students as they struggle to access university study. Fuller recognition of the complex ways these students mobilise their community and family based 'cultural capitals' would enable universities to support their university study more adequately.

The article is set against the backdrop of the current debates on disadvantaged students and their access to, and participation in, higher education. Discussions in the reviewed literature about disadvantaged students' access to higher education in South Africa emphasise two aspects: 1) access for success, and 2) access for participation. The former concentrates on the students' acquisition of knowledge on courses and programmes (see McKenna 2012 & Boughey 2012), and the latter on admission, financial capacity and social equity (Akoojee & Nkomo 2012). Expanding on the notion of access for participation, the article explores the crucial period before students enter university, a period in which, I argue, they establish practices that enable them successfully to apply for and gain admission. The article will focus on the ways that disadvantaged students mobilise the networks, resources and cultural capital in their impoverished families and communities that secure a path towards university entry for them. It discusses how the students selected for this study went about establishing a path that eventually led to their admission to a university, in this case a university in the Western Cape Province.

The article builds on the work of Thesen (1997), Smit (2012) and Kapp, Badenhorst, Bangeni, Craig, Janse van Rensburg, Le Roux, Prince, Pym and Van Pletzen (2014), who call attention to the nature and extent of university students' navigations within their community and family contexts that enable them to access university education. These authors argue that the knowledge and practices of working-class township and rural students provide them with important resources for their university education. Factoring these resilient practices and resources into their educational platforms would provide universities with a key basis to get students to participate more meaningfully in their university education. Universities would be able to organise their student engagement platform better to work with the community-based cultural capital that disadvantaged students bring with them to university.

The argument of the article is based on two premises; first, that it is the accumulation and mobilisation of resources via extended pre-university paths that enable them to ultimately gain entry to university study, and second, that these students' admission paths are much more circuitous compared to those of more middle-class students who make comparatively smoother transitions from high school to university (Reay, Crozier & Clayton 2009). I discuss how the students managed to accumulate enough resources, networks and assistance to enable them eventually to gain entry to the university. Research on disadvantaged students in higher education refers to students' social and cultural histories as significant in understanding how they access the university (Boughey 2012; McKenna 2012). Yet few studies have focused on the connections between the students and their families in explaining why and how they apply at university. The article draws attention to the lack of understanding of how disadvantaged students utilise the resources and cultural capital available to them to gain admission to university study.

THEORETICAL FRAMEWORK FOR THE STUDY OF STUDENTS' PRE-UNIVERSITY ADMISSION PATHWAYS

This article employs Bourdieu's (2006) notion of 'cultural capital' and Yosso's (2005) 'community cultural wealth' (CCW) to understand how disadvantaged students create pathways to gain admission to university. Bourdieu (2006) argues that middle-class homes reproduce the type of cultural capital that is in alignment with their formal education. Cultural capital refers to the knowledge, skills, habits and values that one acquires through being part of a particular social class. He contends that the cultural capital of different classes is unevenly valued. He explains that the value placed on any particular form of cultural capital is arbitrary—that is, it 'cannot be deduced from any universal principle, whether physical, biological or spiritual' (Bourdieu & Passeron 1977:8). Bourdieu (2006) gives credence to the family as a source in which cultural capital is created and argues that it is 'the best hidden and socially most determinant educational investment'—that is, the domestic transmission of cultural capital (Bourdieu 2006:107). He argues that what is generally seen as natural 'ability' or 'talent' is actually the product of an investment of time and cultural capital by the family. He thus argues that cultural capital is not naturally acquired, but that it is arbitrarily formed and that the cultural capital of the middle class has a higher status than that of the working class. Bourdieu (2006) argues that time is needed for the acquisition and accumulation of cultural capital.

Extending Bourdieu's views on cultural capital, Yosso (2005) points out that his conceptualisation is limited to understanding how middle-class homes reproduce cultural capital for their children in alignment with their formal education. She contends that Bourdieu does not provide explanatory purchase for understanding how the cultural and social capital and networks of poor people are put to work in their

educational processes. Yosso challenges traditional deficit approaches, which claim that working-class students do not have the cultural capital to engage successfully in their education. Instead, she (2005:82) argues that 'poor families draw on their community cultural wealth (CCW) in order to establish social and racial justice'. Community cultural wealth refers to the 'accumulated assets and resources found in the lives and histories of disadvantaged students' (Yosso 2005:77). She argues that there are various forms of capital that are nurtured in impoverished communities that must be recognised in order to understand how these students access and engage in their education. She identifies aspirational, linguistic, familial, social, navigational and resistant capital as forms of capital that students draw on to access the resources and networks present in their communities and families. Yosso (2005) explains that disadvantaged students acquire various forms of capital characterised by the abilities, skills, resources and knowledge that they build up over time. They use cultural resources such as family and community support networks to navigate the social structural contexts in which they live and to access their education. Yosso (2005) maintains that each form of capital is made up of a dynamic process that develops, intersects with, and corresponds to forms of resources upon which students rely. She argues that a CCW framework provides one with the ability to understand the 'multiple forms of cultural wealth' (2005:78) that are located in communities and families, as well as the 'various types of capital' (2005:78) that are mobilised by disadvantaged students in their educational processes.

Informed by a CCW framework, the discussion below focuses on how the selected students use the cultural capital and resources within their families and communities to enable them to gain admission to the university. I specifically show the role that families, especially mothers, play in the provision of what Gillies (2006) calls 'emotional capital' to broaden the understanding of the types of capital that support the selected students' pathways to the university. This type of capital refers to the ways in which maternal figures in the students' lives support them in their educational quest. Emotional capital refers to the mothers' role in offering support, encouragement and a caring environment, which are crucial in the academic access practices of the students.

Another theoretical element at play in this article is the students' recognition and utilisation of community circumstances, social resources and networks. The students deploy these as forms of capital in their quest for a university education. Some of these circumstances are unstable and dysfunctional, and pose a constant threat to their educational aspirations. Zipin (2009:330) refers to 'dark life world assets' that poor students encounter and navigate to establish their pathways to university. Zipin (2009) shows how disadvantaged students who manage to succeed in their education are confronted on a daily basis by tough (dark) community circumstances. They are, however, able to employ a range of navigational assets (various forms of capital) to circumvent the worst consequences of these community influences.

The ways students navigate their paths in light of these circumstances are central to understanding how they gain admission to the university. My theoretical approach emphasises the agency of students who establish their educational engagements in difficult circumstances; it stresses the forms of capital and social networks that they mobilise in order to access and maximise their chances of gaining admission to the university.

Through my combining of Bourdieu's (Bourdieu & Passeron 1977:2006) concept of cultural capital and Yosso's (2005) CCW and other forms of capital, I provide a framework for an analysis of the students' construction and navigation of their application and admission routes to the university. By highlighting their pre-university social locations, this framework allows me to look beyond normative or linear expressions of admission pathways that fail to register the multifaceted routes, processes and difficulties that disadvantaged students have to navigate to gain entry to university study. My approach thus allows me to offer a perspective that acknowledges the diverse routes and complex ways in terms of which disadvantaged students gain admission to university.

METHODOLOGY

This article draws on a larger study which I did on the engagement practices of disadvantaged students at a university. The study adopted an interpretive qualitative approach as a way of ascertaining the viewpoints and perspectives of the selected participants. My preference for qualitative research is tied to the opportunities it affords participants for self-expression, the chance to express an opinion and the satisfaction of sharing important events associated with their lives. Patton (2002) suggests that qualitative methodologies attempt to understand the viewpoints of the participants as they live and experience events and phenomena. Participation was facilitated by the purposive selection of four students whose selection allowed me to illustrate the circuitous and complex routes students take to acquire university admission as well as to gain an in-depth understanding of their university access and admission practices. Purposive selection of participants was guided by the study's requirement to concentrate on first generation students from disadvantaged backgrounds taking a course in the university's Extended Curriculum Programme. Purposive sampling allowed me to select information-rich participants who are knowledgeable about the issue under investigation (Patton 2002).

I collected the data for the study via semi-structured interviews and focus group discussions with the selected students. The interviews took place in one and a half hour sessions and concentrated on questions that examined how they approached their families, communities and schooling contexts in their quest for access to university studies. The focus group discussion enabled me to clarify themes that emerged from the semi-structured interviews and allowed students to share their journey towards higher education.

Based on the CCW framework and through a process of thematic analysis, the data were coded and categorised to identify themes for analysis. Themes are regarded as unifying concepts that emerge from the data to offer general insights (Boyatzis 1998; Ryan & Bernard 2003). Data were collected about (i) the students' family lives and their families' attitudes towards university; (ii) the communities that students come from and the educational support and perceived outlook of people towards them as they attempted to pursue university studies; (iii) the students' schooling histories and the strategies they adopted in order to gain access to university; (iv) their support networks while trying to gain admission to the university; and (v) their application processes and how they gained admission to the university. I particularly probed the influence of their families, social networks and communities, and schooling en route to university.

In identifying the meanings that emerged from the data, I concentrated on the codes that focused on students' cultural capital and resources in families and communities as they built a path towards university admission. Particular attention was paid to what students were able to do, the resources they were able to draw on, and the support they were able to get to achieve their aspirations for university study. The data were coded using the constant comparative method of coding, after which units of meaning in the data were identified, compared and categorised. Through the inductive method of analysis, important concepts and themes were extracted and patterns of data were highlighted. Tesch (1990:96) suggests that 'the goal of the constant comparative method is to discern conceptual similarities, to refine the discriminative power of categories, and to discover patterns'. The themes highlighted were: (1) family discourses about education; (2) shared family resources; (3) emotional support from mothers; (4) students' marginal position in their communities; and (5) accessing supportive networks within their school and community environments to assist with university admission. These themes enabled me to offer an analysis to achieve my research objective, which was to explore the pathways by which the selected students gained admission to the university.

The four students selected for this study provided rich stories about their circuitous paths towards university admission. They are all currently registered at the university for an Extended Curriculum Programme (ECP) in three different programmes related to the Applied Sciences. Each of the four selected students was given a pseudonym. Noluthando hails from the Eastern Cape. She moved to Cape Town after she completed high school. She comes from a single-parent home and is the first in her family to study at university. She currently lives in Khayelitsha. Pulane moved from the Eastern Cape when she was in Grade 10. She completed high school in Philippi, Cape Town and lives with her aunt in Cape Town. Her mother and younger siblings live in the Eastern Cape. Thabisa grew up in a family of three in Temba township in the Gauteng Province. She came to Cape Town after she was accepted at the university, where she lives in a university residence. Sindiswa comes

from Hammanskraal in Gauteng. She is the youngest in her family of five children and the first one to attend university. She currently also lives in a university residence.

ACTIVATING FAMILY CAPITAL TO PURSUE UNIVERSITY STUDY

This section presents a discussion of the four selected students' engagement within their family contexts and how they used their family-based capital to open a path to university study. Family capital refers to the 'cultural knowledges nurtured among families that carry a sense of community history, memory and cultural intuition' (Yosso 2005:79). I focus on the students' accounts of their parents' role in assisting them to pursue university studies, the role of the extended family and the mother's emotional support as resources that students utilise in their quest to gain access to the university.

The data show that their parents played a crucial role in laying the foundation for the four students' aspiration for university studies. They reported that their mothers and fathers instilled in them the desire and need for education. Noluthando explains why her mother encouraged her to further her studies:

> My mom she would always say, she's not educated but she will always say the fact that she was not educated that wouldn't mean she doesn't want her children to get education, because I think it's because of the experiences she has been facing throughout growing up, because now if you're not educated you can't go get a better job. And she was working like I don't know how many hours, but she must be going to work by 5 am and come back by 5:30 pm and she was earning just a little money, so maybe that's why she was always encouraging us to go to school (Noluthando).

Noluthando's account showed that her mother referred to her own lack of education and low-skilled job to motivate her to apply to go to university. Similarly, Thabisa's mother, a nurse, motivated her to study further by constantly reminding her of the need to be employed and have a qualification. She described some of her mother's ways of motivating her to study:

> My mom like she comes from a poor background and she would make examples of somebody who picks up the dirt from the streets and people that watch people's cars when you're not there. My mom would tell me like such things, like you see if you don't go to school, this is what will happen to you. And like you end up working hard on things that you're not supposed to work hard on. So you better go to school [university] and work hard (Thabisa).

This quotation is an example of the type of discussions that Thabisa and her mother had about furthering her studies and the emphasis placed on education as a means to escape poverty. Sindiswa related having similar discussions with her father. She was a good student at school and was the only one in her family who went on to

university. She reported that her father motivated her to further her studies and spoke about his lack of opportunity to go to university:

> My dad said that he didn't go to university because he was supposed to like take care of his brothers and sisters. But some they did manage to go to university but they didn't graduate and all that because of financial problems. I'm going to be the first one to graduate from university, that's why they're pushed me like hard like to go to university (Sindiswa).

This comment by Sindiswa highlights how the lack of financial resources could prevent poor students from pursuing higher education. Sindiswa's family was motivated by the possibility that through education they could escape poverty. Noluthando's, Thabisa's and Sindiswa's parents' overwhelming moral support for them to pursue university studies provided them with the motivation to find a way to achieve their goals of attending university. This type of motivation for pursuing university education is rooted in their families' awareness of their own lack of opportunity and resources in the past to pursue further education. Yosso (2005) refers to this as the memories and histories of disadvantaged students' families which inspire students to pursue university education. The ways in which their families talked about university and obtaining a qualification served as a powerful motivating factor for the students. These four students drew on the discourses of the family that viewed education as a route to break out of poverty. These discourses in turn acted as a resource and a form of capital to encourage Noluthando, Thabisa and Sindiswa to apply for a university placement.

The students in this study relied on extended family members to support them in their quest for university admission. Aunts, uncles, brothers and sisters were actively involved in the students' lives by giving advice, recommending places for further study, assisting with application forms and providing financial assistance to gain entry to the university. Their mothers and fathers were often constrained by low-paying jobs and as a result the students relied on other family members for such support. Extended families provided the instrumental and financial support to students to ensure that they were able gain entry to the university. Noluthando's older sister was very supportive towards her. She explained that 'my sister, when I say financial, she will give me money, for travelling and at some point she bought me a laptop because she saw that I'm suffering' (Noluthando). Sindiswa's father was retrenched at the time she submitted her application to study at the university in Cape Town. She relied on her older sister to support her financially and to provide her with money for transport and food. Pulane also depended on her siblings to support her financially when she was eventually accepted for university study. She pointed out that 'my siblings are the ones who are supporting me in terms of providing me with money for transport and food' (Pulane). Family members thus contribute financially by assisting students with short-term financial support for registration, travel, food and transport. Yosso (2005:79) describes these support mechanisms as 'instrumental support', which is an essential part of the family-based social capital upon which

students draw. Yosso (2005) suggests that families become connected with each other around common issues and share family resources. The family members of these students were willing to pool their limited resources to invest in the students' education and used their resources to engender a supportive network, which opened up the possibility for the four students to enter higher education. The extended family members were therefore influential in activating the processes necessary for opening up a pathway to the university.

While extended family members provided them with financial support, the students depended on their mothers to provide love, care and encouragement as they pursued their educational goals. This emotional support took on various forms. For example, Noluthando reported that her mother often consoled her after a difficult test during her matric year and persuaded her to aspire and not to give up on her goals. The mothers of the participants offered them emotional support and encouragement to apply at the university. Although their mothers played an essential affective role, they generally lacked the ability to support their children's education financially. Pulane gave an account of her mother's support by explaining that 'my mom she is very supportive but not financially, because she doesn't have money to support me. But as her child she does support me' (Pulane). Pulane explained how she told her mother about her application:

> In those days she didn't know and I didn't want to worry her about that because if I said to her that I want to further my education, she would wish me to do so but she didn't know how to help me to do so. I just decided to tell her when I was accepted. (Pulane)

Pulane did not want her mother to be concerned about her financial needs. Sindiswa expressed a similar sentiment when she said that, 'financially she [her mother] is not there, because she does not have money, she supports me emotionally, and I can say she is there. When I need her she is there' (Sindiswa).

These findings are similar to those of Gillies's (2006) study of working-class mothers, which shows that mothers' emotional support acts as a resource and a form of capital that is advantageous to their children. The type of love, care and encouragement that Noluthando, Pulane and Sindiswa received from their mothers is described by Allat (1993) as a form of emotional capital. Allat defines emotional capital as the 'emotionally valued assets and skills, love and affection, support, patience and commitment that even wayward children can draw upon' (1993:143). Mothers compensate for the lack of financial support by encouraging, caring and motivating students to further their education. The mothers' emotional capital served as a driving force that motivated these students to seek a university education.

This section highlighted aspects of the students' family contexts in their quest to gain access to the university. It discussed the type of resources and support available for them to establish a path towards university entry. Their engagement with their families is key to understanding their access paths. Parents' moral discourses about university education, the instrumental support of extended family networks, and

mothers' emotional capital are significant resources that the students drew on to open a path to university. The next section focuses on how the selected students accessed and worked with their township community resources to prepare them for university entry.

MEDIATING THE COMMUNITY CONTEXTS TO OPEN UP A PATHWAY TO THE UNIVERSITY

This section concentrates on how the selected students mediated their township community contexts to secure a path to university studies. Socio-economically, the students in this study hail from low-income townships in the Western Cape and Gauteng provinces. They describe their communities as places with a myriad of social problems that present challenges in terms of everyday survival. They identified social problems they witnessed daily while growing up as including alcohol abuse, lack of care for orphaned children, unemployment, teenage pregnancy and crime. Noluthando explains some of the social conditions in the township:

> Most of the time you will find people drunk, that's what they do. There are children who don't have parents, they stay on their own and only sometimes the social worker takes time to go there (Noluthando).

Similarly, Pulane describes young people's attitude towards education:

> You see in my community there's a lot of, I can say the people at my age are not that interested in education, I can say most of them they don't even have their matric. The learners that I was studying with, they are just having babies, they are not doing anything in their lives (Pulane).

Pulane's observation here shows her ability to recognise the challenging circumstances of the community that young people face living in the township. The students reported on the strategies they adopted to deal with these negative circumstances. For example, Pulane reflected on how people have to present themselves in order to avoid being robbed:

> If you are wearing nice shoes, they will say take them off. Even the jacket, take it off. If you are going from home about, early hours, you have to wear like not clothes like, you know, that they would want (Pulane).

They explained that crime is a ubiquitous phenomenon in township life. Noluthando explained the strategies she adopted to avoid becoming a victim of crime by suggesting that,

> when I was doing my in-service training I had that situation, travelling very early. So I was like okay, let me have my phone for the sake of them. I have a phone I will have something to give them (Noluthando).

Noluthando's example indicates that she had to work out strategies to deal with the crime in the area in order to navigate the township community. Pulane reports on how she dealt with violent incidents in the community by explaining that 'for us you see our structures, our homes, we normally use, when there is a gunshot, you always sneak down. Sometimes you find it difficult to study. You learn to accept the situation' (Pulane). Pulane's comments show the difficult township environment she had to mediate to enable her to establish a path towards her university education. Sindiswa describes similar complex living conditions in her township:

> In the township there are 24-hour taverns open and they are busy playing music. But you just have to cope with the situation because you have nowhere to go. The township library is only open at 10 and at about 2 pm they are closed. I'm not sure what's happening in those libraries (Sindiswa).

Sindiswa's attitude of trying to cope with her environment and using the library as a possible place to study indicates that she was aware of the difficult circumstances that surround her life, but at the same time she looked for opportunities in her environment to achieve her goals for university study. While crime and complicated living conditions were prevalent in their communities, the selected students also had to be cautious about the types of friends they chose in the community. Thabisa described some of the people in her community and how she had to choose her friends carefully:

> [but] you see when you grow up or when I chat with my mom, for instance, most of them [other peers] they didn't go to school. So she always tells me that, even their parents they are not happy with their children not going to school or being. Ja, so she always said I must always watch my back all the time and know everyone I will want to make friends with, if she or he's a good person or a right person. So I must look after the friend. I should not make friends with everyone because not everyone wants goods things for you, so I was always careful (Thabisa).

Thabisa's description of her peers in the community shows that she had to choose her friends carefully in order to maintain her goals for further studies, as most of the young people from her community did not go to school. Similarly, Sindiswa explained why she does not have friends in the township by suggesting that,

> because most of the time, the things that we talk about, they don't connect, it's just, it's easy like when I talk about education, but then it would be like you are bragging to them, because they don't do that and then most of them they don't have a Matric (Sindiswa).

Sindiswa's and Thabisa's accounts show the lack of connection that they felt with their peers in the township as they pursued university studies. They did not talk to people in the community about their plans and ambitions for fear of eliciting bouts of jealousy and gossip. Sindiswa described some of the people in the township as having negative attitudes about university studies. She pointed out that,

> where I come from you know from the townships, if you go to university, they don't wish you well; they don't have that positive thinking. They always talk bad things and stuff, so they don't really motivate somebody to go forward because they would start talking about you (Sindiswa).

The students stated that they chose to withhold information about their studies, making a concerted effort to hide their plans from other peers who did not have similar interests. Thabisa did not talk to people in the township about her plans to go to university. She felt that people would think that she was more privileged and would be jealous of her. She perceived them as 'being jealous that they were not privileged to go to varsity' (Thabisa).

The selected students chose to manage the negative aspects of their township living circumstances, instead opting to focus on the positive support in the community. Zipin (2009) describes such experiences as part of the 'dark lifeworld' that students encounter and have to overcome if they want to make it into higher education. Although students were confronted with difficult circumstances in their township, they were able to utilise the supportive structures within the township to support their aspirations to get to university. The students, for example, made use of extracurricular classes, peer support and the church to support them in their attempt to gain a Grade 12 pass, with degree endorsement, which is necessary for gaining university entry. Pulane explained that she attended extra classes offered by an older student who had passed matric the previous year: 'He gave us tutorials for Physics, actually, for all the matric subjects' (Pulane). She also attended extra English classes at school and explained 'there were people or staff from the South African Environmental Educational Programme (SAEP) [non-governmental organisation], there in Observatory, who come to school and teach us English lessons after school' (Pulane). Thabisa attended a winter school during her matric year:

> I went to winter school at home with the other learners. The schools around the area organised the winter school because it was all the matrics, almost all the matrics who gathered together for the winter school (Thabisa).

These extracurricular classes served as a crucial form of support to those students who wanted to apply for university admission. The students sought out peers who were studying at university for support and advice. They formed study groups with peers who had similar aspirations for university study. Study groups helped them feel supported and motivated to study for their school examinations. Sindiswa reported that she formed a small study group with four of her school friends. Pulane explained the support that she received from a classmate thus:

> And one of my classmates that I got to pass with he was very supportive and I still thank him, even today. He arrived during my matric year from Joburg and the rules were that a student that came to the school in the matric year is not normally allowed to be accepted in a school. But he was accepted due to his marks. He passed very well. And what he will do, if you are

> being taught something in a class and you don't understand, he wouldn't just give you the answers or you would be given the homework to do and if you don't understand that thing, he would show you how to do it. So that even if you are writing a test or an assignment, you get to know how to do it. He wasn't just going to give you answers just to copy. He would teach you how to do it and you get to know (Pulane).

Pulane was assisted by this student to work productively through her schoolwork. She thus formed a strategic relationship with him to reach her goals for university entry. The selected students thus managed to find some support from like-minded peers and community-based initiatives that supported them in their schooling and preparation for the final Grade 12 examinations.

Besides peer support from like-minded peers and extracurricular classes, their respective churches provided them with religious support and spiritual comfort while they were preparing for and writing their examinations. Sindiswa commented that 'we used to have exam prayers for matrics on a specific day. Ja, so we get like, we get that strong feeling that we have to go on and on' (Sindiswa).

Pulane participated in the youth sessions provided by the church that she attended, where they were able to 'talk about school, you know when you talk of what is it that you can do after matric' (Pulane). Thabisa reflected on encouraging announcements at church:

> at church as well, like you would hear announcement like you know like there are bursary forms available at the city council and what not so, you know people would pass on messages like that to inspire you (Thabisa).

The students were thus able to draw on the motivation and support that the church provided. Yosso (2005:79) refers to this as the social capital found in disadvantaged communities in which 'networks of people and community resources, peers and other social contacts provide both instrumental and emotional support'. The participants in this study made use of the supportive structures available in the township and developed strategic engagements with the people in the township to strengthen their chances of gaining entry to university. These engagements served as a means to achieve their aspirations for university study. At the same time the students had to navigate their community's darker aspects such as crime, unemployment and negative peer pressure. Yosso (2005:80) describes this navigational ability as the 'individual agency' that students develop in response to the constraints they face in their community.

The selected students' ability to steer between the 'dark' circumstances that they are faced with, on the one hand, and their ability to draw on and participate in the supportive structures of their community, on the other, represents the complex paths that the students had to walk in order to stay on course for entry into university study. Their capacity to generate positive networks and recognise and steer around the 'darker' aspects of their township life was central to their paving the way towards

university admission. I argue that the students' ability to differentiate between the constructive and the negative aspects of their community is a critical practice in their educational lives. I now go on to focus on their application processes, aspirational routes and eventual admission to the university.

CIRCUITOUS ROUTES TOWARDS THEIR UNIVERSITY ADMISSION

One of the most striking features in the data is the high aspirations that the four students had while in high school about the types of careers they wanted to pursue. Thabisa's aspirations were related to her intense interest in Biology. She wanted to pursue a career in the science field. Sindiswa thought that she was good at Mathematics and Science when she was in high school, which informed her initial interest in studying in a science direction. She explained that 'I always felt that I'm a science person. I want to pursue something in science. I wanted to become a doctor'. Because of low marks for Physical Science and Mathematics for her Grade 12 examination, she lowered her aspirations. She describes why her aspirations changed:

> I think when you grow up, you get low marks for key subjects, you start to realise like it's not only medicine, there are other courses that you can do. There are a lot of things that you can do and maybe you find that you're not that type. You don't want to be — how can I say? Like you don't want to be in the hospital, maybe you want to do other stuff (Sindiswa).

While Sindiswa made a realistic assessment of the types of courses she would qualify for, she maintained her interest in the field of science. Pulane's choice represents a similar pattern. She wanted to become a chemical engineer and was very practical about her aspirational routes: 'What changed me were my marks, I did not get good marks in Maths and Physics, but I wanted to do work in the science field' (Pulane). Pulane reported that her teachers and older siblings informed her about the benefits of studying Science. Explaining how she began to think about her potential field of study, Pulane said 'When you're doing your – when you did Physics, you can even be a pilot. You can even be a doctor. I was hearing like there are so many opportunities when you did your Physics' (Pulane). Pulane's account illustrates that she identified studying courses in the science stream in secondary school as a route that would provide her employment in an attractive profession. At the same time she recognised the constraints of her low marks in Grade 12, but remained committed to the possibility of obtaining a university education.

Noluthando similarly aspired to become a doctor when she was in high school. Her aspirations changed quite markedly while still at school. She settled on aspiring to become a social worker. She explained why her aspirations changed by expressing a desire to help others in her community:

> I don't think the social workers or there are not enough social workers, because there are people who need help out there, but there are not enough social workers around the community I'm living in, because I think if I can be a social worker I can see to the things that are there that people need to be attended on, so that further steps can be taken to help people (Noluthando).

Noluthando's statement shows her desire to improve her community's living conditions, to make a difference in her township and her awareness of the township community's needs. The selected students had high career aspirations, but when they were confronted with their low marks in the Grade 12 examination, they adjusted their aspirations and settled for lower aspirations that would still give them entry to the university.

The data showed that the participants followed indirect pathways to secure their admission to university study. The participants in this study followed various avenues to apply for, and gain, university admission. Noluthando worked at a furniture shop after she matriculated, because her applications to two universities were unsuccessful. She continued to apply at several universities while she was working. In her first application after Grade 12 she applied for a Social Work degree, which was one of her aspirations, at another university in Cape Town, but was unsuccessful. She was able to save money for her registration fees while working. During her second year of work she submitted two unsuccessful applications to universities, one of which was to study teaching. Noluthando persisted in applying, continuing to hold out hope that she would be accepted. She explained how she had to apply and gain acceptance at the university:

> I got the forms, I came here myself. And I was tired of sending the forms and you don't get a reply. So I thought maybe it would be better if I come here myself [to the university]. And then I got a letter saying that I'm not accepted for Education. And then I came back again, same year, asking them which course I can apply for, if Education is full. They showed me the courses that are still available. I applied for this course. I submitted the form again, same year and I was waiting for the response. I didn't get any response. I came back again to ask them for the response. The lady at reception, she said she will call; I will get the response before the 5th of December. I said to her and then if I don't get the response what must I do? She said you can come to me – and I was like I will come, luckily I got the response (Noluthando).

Noluthando's actions illustrate her ability to find her way through the application process and her persistence and determination to gain entry to the university. After submitting three applications, she was eventually accepted for the Extended Curriculum Programme (ECP) in the university's Applied Sciences Faculty. Persistently applying over a two-year period thus eventually paid off. Noluthando's actions demonstrate her ability to 'navigate through the spaces and places of institutions' (Yosso 2005:80) before she gained access to the university.

Pulane did not have the financial means to attend university immediately after school. She worked for two years at various retail outlets to save money for her university studies, and in particular to pay for her registration fees during her first year. She initially wanted to study chemical engineering, but after obtaining poor results in Mathematics and Physical Science, she adjusted her expectations. She was still determined to do a course in the science field for which she would qualify with her lower Grade 12 results. Pulane approached an older student who was already studying at the university to help her with her application:

> I realised that the time is running, I'm running out of time now. I have to study and I asked the gentleman who was doing this course to bring me the forms and he got them for me. So I applied and they said in three months they will respond but they didn't. So, I had their telephone numbers, everything, so I called (Pulane).

Pulane planned her application route during the two years that she was working. She found information about the type of courses for which she could apply by, for example, approaching a university student about various courses. She made short-term financial plans to pay her registration fees. She planned to apply for financial aid once accepted. Pulane, too, had to opt for the (ECP) Applied Sciences, a course that accommodated her low results in Grade 12 Mathematics and Physical Science.

The other two participants took different routes to gain admission to the university. Thabisa applied to two universities after Grade 12, but was unsuccessful because her applications were late. Thabisa's aspiration to study in the field of biology could not be realised because of her Grade 12 results. She decided to look for other more practical options in the science field and decided to apply at a Further Education and Training College for a more realistic option. After attending the college for six months, struggling to pay the fees, she decided to apply for her current Biotechnology (ECP) course at the university in Cape Town. Her university entry was thus delayed by a year because of her enrolment at the FET College. Keen on university study in Cape Town, she got an uncle to assist her with the application process. She explained that,

> He actually stood by me. He actually helped me to fax all the papers. Ja, he's the one who asked for my information – there's this university where you can apply there. You can apply to Cape Town. You can apply to whatsoever universities. Yes and he was the one who was talking me to about all these things (Thabisa).

Sindiswa also took a somewhat roundabout route to gain her university admission. She aspired to study botany, but her father wanted her to study chemical engineering after she passed her Grade 12 examinations. He encouraged her to apply at the University of South Africa (UNISA) to do distance learning after she was unsuccessful with her other university applications. She studied chemical engineering for two years at UNISA, but did not like the correspondence distance-learning nature of the course. She wanted to attend a university where she would be supported more directly. She

explained her frustration with UNISA: 'At UNISA you only study and you're writing your exams. And there were assignments. You've got a lot of time but you don't even know how to do it' (Sindiswa). Frustrated with distance learning, Sindiswa wanted to find an institution that would be suitable for her academic needs. After her two unsuccessful years at UNISA she began to plan her application to the university in Cape Town. Sindiswa's sister motivated her to apply at the university and assisted her with the application process. Applying at the university in Cape Town was facilitated by her older sister. Sindiswa explained her sister's role: 'My sister was working in Cape Town and told me; she told me that Cape Town is a good place to study' (Sindiswa). She applied and was accepted for the Biotechnology (ECP) course. Despite her ambition to study chemical engineering at first, she opted for the ECP diploma in the Applied Sciences department. This diploma was an alternative option made available by this university for students, such as the selected students in this study, who had lower qualifying Grade 12 marks in the required subjects.

The students settled for a specific extended course as part their strategy to gain entry to the university. Settling on a course for which their Grade 12 marks qualified them is a strategy informed by what Yosso (2005:77) refers to as a form of 'aspirational capital', which is 'the ability of students to maintain hopes and dreams for the future even in the face of real and perceived barriers, by dreaming and nurturing a culture of possibility beyond their present circumstances'. The students' determination to gain university entry is reflected by some of them taking on stints of work and finding alternative educational avenues, while still maintaining their aspirations to study at university. Their tenacity to remain engaged and committed to their aspirational quest for a university education was an important aspect of their admission and access routes. It is clear that they had to deploy a type of 'aspirational capital' (Yosso 2005:77) in their desire to gain entry to the university. They displayed endurance and focus in their commitment to gain entry, despite having to travel more challenging and varied application and admission paths than their middle-class peers. They had to contend with raising money and finding information about courses from friends and acquaintances. Applications were often made to more than one university over two years. The selected students were supported by family and community members in their applications to the university. These supportive mechanisms can be regarded as the forms of capital that students utilise as they plan to seek admission to a university.

CONCLUSION

In this article I presented four disadvantaged students' pre-university pathways towards their university application and acceptance. I argued that recognising these pathways would provide universities with a basis for establishing an appropriate access and engagement platform to immerse these types of students effectively

into university study. The discussion showed the ways in which the students were positioned in their family and township networks, and how they went about maximising their contextual resources to gain university entry. They activated family capital such as parents' moral discourses, extended family networks and their mothers' emotional support as a means of channelling themselves in the direction of university study. They made strategic decisions to deflect and avoid some of the 'darker' aspects of their poor communities that would have prevented them from achieving their academic goals. The selected students were able to utilise support structures in the community in their attempt to establish an educational pathway.

The findings show that the routes that these students took to gain university entry were complex and circuitous, causing them to take much longer to gain admission to university study. The study also showed that although students maintained their aspirations for university study, they lowered the scope of their aspirations as a result of the constraints that they encountered within their social and schooling contexts. Taking courses that corresponded with their lower Grade 12 results is as much informed by settling for a realistic option as it was a means of staying on course on the path towards fulfilling their educational aspirations. Settling on lowered aspirations is a distinctive feature of the selected students' entry to the university. Gaining entry, albeit not for the courses they initially intended to follow, is an outcome of their desire to construct a pathway to, and stay on course for, acquiring a university education.

The article provides insight into students' complex mediations of their community contexts and mobilisation of available networks. It is clear that these students have considerable and sophisticated intellectual mediating capacity which ought to be harnessed appropriately during their university study. Providing rigorous educational support processes that recognise and work with their social and intellectual capability would enable universities to engage disadvantaged students in their studies. Their community-based cultural capitals should therefore be acknowledged by the university when admitting students from disadvantaged backgrounds. This is a core challenge that emerged from my study. It is clear that if universities fail to adapt more rigorously its reception, student engagement culture and educational support practices to the requirements of these students, they will continue to offer mere access without providing such students with a platform for educational success.

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NEGOTIATING SERVICE LEARNING THROUGH COMMUNITY ENGAGEMENT: ADAPTIVE LEADERSHIP, KNOWLEDGE, DIALOGUE AND POWER

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ABSTRACT

This article builds on two recent publications (Preece 2013; 2013a) concerning the application of asset-based community development and adaptive leadership theories when negotiating university service learning placements with community organisations in one South African province. The first publication introduced the concept of 'adaptive engagement'. The second analysed empirical findings from the first phase of an action research project that endeavoured to take a teamwork approach to service learning placements. This paper reports on the larger, second phase. Different student teams were each tasked with undertaking an activity that had been identified by an NGO as an area of development need. The paper discusses this approach filtering the above-mentioned theories through a Foucauldian lens for analysing power relationships, knowledge and ownership over decision-making. Findings highlight the multi-layered complexity of community engagement, communication and power relations, and the limiting nature of institutional governmentality in terms of student contributions to sustainable community outcomes and university recognition of community-based knowledge. But the findings also demonstrate the potential for contributing to community change and knowledge sharing when an adaptive leadership approach of clarifying competing goals and values is used alongside respect for community assets of experiential, or subjugated, knowledge.

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INTRODUCTION

Community engagement and service learning are now popular concepts for universities in South Africa and the wider world. Global and international networks exist to encourage debate and networking. A prime example of the interconnectedness of this movement is the 2014 Talloires Network Leaders Conference in Cape Town, South Africa, which is co-sponsored by the South African Higher Education Community Engagement Forum (SAHECEF) and promoted by significant other organisations such as the Global Universities for Innovation (GUNI). Similar national networks (such as Community Engagement Australia) and networks of networks (such as the PASCAL International Observatory) exist throughout the world. A journal focusing on community engagement issues is currently under consideration in South Africa and other dedicated journals exist, such as the *Journal of Higher Education Outreach and Engagement* in the United States.

Community engagement (CE) research has now become an academic field in its own right. Several models for CE have been promoted, ranging from the silo, intersecting and infusion models as articulated by the Council for Higher Education (CHE 2006), to the entrepreneurial, networked, traditional and consultancies matrix as outlined by Kruss (2012). The different forms of CE have been analysed by O'Brien (2012) to reveal that they range from philanthropic models to those that actively promote change and community empowerment. The scope of CE partnerships is wide. At a macro level, universities act as network players in broad lifelong learning agendas for learning regions or cities (UIL 2013). Universities also develop industry and government knowledge production partnerships as entrepreneurial activities (Laredo 2007). At the more traditional, micro level of small-scale activities, universities link with local community residents to contribute to a specific area of need (Preece 2013a; O'Brien 2012).

Service learning (SL) is one form of community engagement (Van Schalkwyck and Erasmus 2011), although SL research has tended to focus more on its pedagogical and curriculum purpose for the participating students (for example, Bender 2008; Hlengwa 2010; Petersen & Henning 2010). This paper concentrates on the community-student relationship.

A number of writers have questioned both the feasibility and quality of short-term SL projects in relation to the longer-term goals of CE (for example, Mahlomaholo & Matobako 2006; Osman & Castle 2006). A further concern is that the community voice is less often heard within research analysis (Alperstein 2007; Nduna 2007), and the community-university power relationship is insufficiently analysed in relation to CE (Camacho 2004; Nduna 2006; Osman & Attwood 2007; Parker, Myers, Higgins,

Oddson, Price & Gould 2009). More recently Preece (2013) has presented the notion of 'adaptive engagement', which draws on community development theory and organisation management theory as a conceptual framework to facilitate analysis of power dynamics between students and their communities.

This article discusses recent literature that reflects power in the community engagement relationship. It revisits Preece's (2013) theoretical framework that uses asset-based community development theory (Swanepoel & De Beer 2011; Ferreira & Ebersöhn 2012) alongside Heifetz's (1994) concept of adaptive leadership. It then outlines the methodology for the study followed by analysis and discussion of the findings and recommendations for future practice.

Power and dialogical relationships in community engagement

This paper adopts a Foucauldian notion of power as a relationship in which individuals may collude or resist, but which operates through discourses or common sense rationales as a means of bringing power relations into being. Other writers have also drawn on Foucault, particularly in relation to service learning. Osman & Attwood (2007), for instance, analyse a service learning project in South Africa in order to critically assess the fluid nature of power relations between the different community and university participants. Lounsbury and Pollack (2001) draw on Foucault to assess the shifting discourses of service learning in an American university. Camacho (2004) does not explicitly refer to Foucault in his discussion of power and privilege in Tijuana, but does adopt a similar critical theory perspective to assess 'sites of power' (2004:13) in terms of how students respond to power relations in service learning contexts.

According to Foucault (1980), power and knowledge are interdependent. Although power is everywhere, dominant forms of knowledge are discursively protected through a complex system of techniques and curriculum structures in educational institutions. Subjugated knowledges are localised knowledges that are often ignored by institutions. In this study, subjugated knowledges refer to knowledge that is vested in communities. Power and knowledge are associated with authority to know, and circulated through agents of power (university academics, students, community members) (Preece 1999; Osman & Attwood 2007). An act to disrupt the flow and balance of power can be initiated through enhanced awareness by the participants. Dialogue is the interactive process of renegotiating that relationship requiring 'multiple layers of involvement' (Caister, Green & Worth 2011:35). The above writers have illustrated a concern for a more consultative form of leadership in the community engagement process, recognising that power is a relationship that needs to be de-stabilised in order to facilitate shared ownership of change.

In an effort to address this power challenge, Stephenson borrowed Heifetz's (1994) notion of adaptive leadership (AL) as a university strategy for enabling communities

to take responsibility for decision-making, thereby steering communities away from developing a dependency relationship with the university. Heifetz's (1994) concept of AL does recognize power differentials within a leadership relationship, but he is concerned with using the power relationship as a resource to mobilise dialogue and respect for diversity of views, with the ultimate goal that people will take responsibility for decision-making through a process of facilitated clarification and dialogue. He thus shifts the notion of leadership from one of authority to know to that of a practice that can be used where there is a need to focus on change. AL has been cited as a progressive form of leadership that is gaining increasing credence as being suitable for responding to complex challenges when there is a need for more collaborative approaches to solving problems (Hartley & Bennington 2011). Heifetz (1994:99) argues that community problems or challenges are often complex – defined as either type II ('defined problem, no clear-cut solution') or type III ('ill defined problem') situations. Type I problem is understood as one whereby a mechanical or surgical 'quick fix' can produce an isolated solution. But imposed technical solutions do not necessarily address the needs of complex community contexts. Type II or type III problems require a more organic and evolutionary approach to change. Addressing such problems entails ongoing dialogue, compromises and clarification of competing goals and values among the participating actors. In a later work (Heifetz, Linsky & Grashow 2009), the authors explain that the adaptive process focuses on building on past ideas in order to examine what is no longer useful, with a view to encouraging shared awareness and interest in adapting and responding to new ideas.

The notion of AL has been used by the medical profession to facilitate new approaches to home-based health care reform (Eubank, Geffken, Orzano & Ricci 2012). It has also been a point of reference for exploring new ways of engaging the public in environmental sustainability issues (Burke 2007). The concept has been likened by Grint (2005:1473) to 'Rittell and Webber's (1973) typology of *Tame and Wicked* Problems'. 'Tame' problems are, like type I problems, resolvable through 'unilinear acts', which have clear solutions. 'Wicked' problems are complex with no easy solutions and reflect Heifetz's type II or type III descriptions. Other concepts, such as the 'collective impact' approach (Kania and Kramer 2011) have also been compared with AL to describe the changing nature of a leadership style that recognises the multi-dimensional nature of community challenges, whereby shared ownership of solutions is advocated.

In spite of these varied sources of support for AL, the concept is not without its critics. Baylor (2011:30), for instance, suggests that the approach is still embedded in a corporate business model that favours 'charismatic personas, masculinity and Western culture'. Moreover, the skills required to manage potential resistances to change are seen as oversimplified. From a Foucauldian perspective, this system of leadership reflects a particular technique of 'governmentality' (Marshall 1990; Moss 1998), whereby under a discourse of care, justified through practices that legitimate

acts of consultation, the institution ensures political obedience by participants who are acted upon as consultees.

Nevertheless, Stephenson (2011) suggested that AL values can be applied to a CE process whereby universities act as facilitators to help communities interpret and define solutions to their own problems.

This requirement poses challenges to university community service learning, which draws on students who are often young and inexperienced in the application of their theoretical knowledge to real work contexts and where engagement is time-limited. Service learning (SL) itself is a particular university technique and apparatus of power-knowledge that is embedded in a discourse of community engagement, which operates as an instrument of community care. It is commonly defined as an academic programme whereby students undertake a time-bound community placement and are assessed on the learning they derive from the experience. The experience is aimed at increasing a sense of social responsibility among students and providing them with an opportunity to put theory into practice. However, it is also expected that the SL is a negotiated activity that meets agreed upon goals with the community agency (Stellenbosch University 2009; Bringle & Hatcher 1995).

A number of people have critiqued the extent to which SL is either a dialogic or a mutual relationship between the participating stakeholders (see, for example, Mitchell & Rautenbach 2005). Mahlomaholo & Matobako (2006) identify at least three potential levels of community relations in SL. These are the levels of charity 'in the community', project activities in or of the community, and finally a genuinely collaborative activity 'of the community' (2006:204). This third activity has emancipatory potential whereby university engagement activities may focus on change within communities. Mahlomaholo and Matobako claim that the government enshrined policy approach to service learning (DoE 1997; DoHET 2013) is too academic and has lost its connection to the communities themselves. More recently, O'Brien (2012), in a study of 36 SL experiences, produced a framework of four SL engagement 'Discourses', which were defined as scholarly, benevolent, democratic and professional (2012:208), covering distinctions of purely academic interest, technical inputs, and more collaborative arrangements. O'Brien (2012), among other writers, stresses the challenge of negotiating differential power relations in a situation where university knowledge has greater legitimacy over locally constituted knowledge. From a Foucauldian perspective, the university is a site for the exercise of power that generates particular forms of knowledge through disciplines legitimized in the name of expertise. O'Brien emphasises that engagement relationships that build on dialogue – as opposed to merely consultation – are more likely to contribute to social action or change where the emphasis of the engagement relationship shifts to 'understanding the other's life space rather than necessarily converting that space to mirror one's own' (O'Brien 2012:203). In such contexts she emphasises that the pedagogical goal of the SL activity is to raise awareness among participating students

of these differential power relations and the need to foster 'interdependence' rather than dependence. This aspiration raises power-knowledge tensions that the students have to navigate in their community relations.

This tension is also historically constituted through notions of governmentality (Miller and Rose 1993) whereby university procedures, techniques and knowledges have already defined, labeled and characterised communities as marginalised, poor, disempowered and in need of care. This has a particular resonance in post-apartheid South Africa whereby universities' responsibilities to their communities were enshrined in government reform policy for higher education. Thus the act of SL as a benign act upon communities is legitimated. The theories of community development and AL reinforce these discourses. Nevertheless, the AL theory (essentially recognising the leadership role that universities inevitably play in the service learning initiatives) is offered as a contribution to community development theory that focuses on participatory reflection and building on community assets as essential resources for the community empowerment process. The combination of AL and asset-based community development theory was captured by Preece (2013) as 'adaptive engagement'. It is a possible discursive resource that reverses the institutional domination of knowledge and provides space for subjugated knowledges to be recognised.

The concept of asset-based development, as articulated by Swanepoel and De Beer (2011) and Ferreira & Ebersöhn (2012), still recognises the role of intervention in communities as a process of planning 'with the people' (De Beer & Swanepoel 1998:7), but it takes as its starting point the position that all communities have existing resources of resilience, coping skills and knowledge that need to be built into any development process: 'The goal in community development is to work with and build on existing assets in order to construct a resource-led foundation for development which is controlled by the community rather than by external agents' (Preece 2013a:990) – in other words, recognising power and knowledge 'from below'. The dialogic process of engagement for community development is an ongoing one of collaboration (Schmied, Mills, Kruske, Kemp, Fowler & Homer 2010), where competing aims are often re-visited and where communication takes time and effort. However, the multi-layered nature of engagement often poses communication challenges and tensions of power relations whereby one layer of the community may have been consulted, but that consultation does not necessarily filter down to other layers (Osman & Attwood 2007; Preece 2013a).

The study that this paper refers to was conducted in 2013 at the University of KwaZulu-Natal. It asked local NGOs to identify small-scale projects that could be undertaken by students with the NGOs' constituent community members and that would contribute to the development goals of the participating organisations. Efforts were made to ensure students and different participating members (for example, the NGO leaders and their community-based workers) had an opportunity to consult with one another prior to project commencement.

The concept of 'community' – a contested term that this paper does not have space to expand on (see Hall 2010, for example) – was normally defined for the purpose of this study as a non-governmental organisation (NGO) or community-based organization. The reason for this was because the student interventions were necessarily time bound and it was important that dialogue could take place with established structures in order to avoid some of the sustainability issues of short-term engagement that have been articulated by writers such as Mahlomaholo and Matobako (2006). However, in two of the case studies, grass-roots community members – as employees or client groups of the NGO – were also involved. Reflexivity (Osman and Attwood 2007) through action research was the process that examined power relations and the effectiveness of the dialogic processes.

METHODOLOGY

The study took a multiple, comparative case study approach and was a partnership between the Faculty of Education at the University of the Free State Qwa Qwa campus and two schools (Education and Politics) in the College of Humanities at the University of KwaZulu-Natal (UKZN) Pietermaritzburg campus. It formed the second cycle of an action research study that was initiated in 2011 with four case studies at KwaZulu-Natal. That cycle informed the larger study through findings that highlighted the need for greater clarity of competing goals and values at project inception (Preece 2013a).

Both action research cycles drew on the UKZN's CE/SL strategy to support the notion of 'responsible community engagement' (UKZN goal 2). It is in line with the UKZN College of Humanities Community Engagement Strategic Plan 2012–2016, which aims to examine the potential for integration of CE work across disciplines, through education and training of UKZN students and solving community issues as part of an ongoing engagement relationship.

The research questions pertinent to this paper were:

- To what extent does a theoretical framework of adaptive leadership and asset-based development illuminate the CE process?
- How do students and communities negotiate power relations and co-creation/sharing of knowledge?

Action research is traditionally 'concerned with improvements within the context of a study [i.e., solving a given problem]' (Tomal 2005:5). It is a common feature of educational research since it includes research intervention for implementation, rather than simply a data collection process. The action research inquiry process is cyclical. In addition to collecting and analysing data, it also includes communicating outcomes, capturing stakeholder views and taking action in response to those views in order to improve or resolve the issue under investigation (Stringer 2004).

Since the project included the development, and implementation of, action plans within each participating institution in the pursuit of practical solutions with potential for repeating this cycle, such an interventionist research approach was deemed the most suitable for this study. The following definition of action research, cited in Stringer (2004:4), was used:

> A participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes .... It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people.

To reflect that process, each cycle of the action research applied four phases: initial consultative meetings with community-based stakeholders, a planning process involving negotiations between community and university stakeholders, an implementation phase that was evaluated, followed by a fourth phase of stakeholder consultation, revised action planning and policy recommendations.

This second cycle at UKZN involved eight case studies, across five academic courses, in which 38 students from a variety of Humanities disciplines participated. However, for reasons of space, only three case studies will be discussed here. They were selected because in these projects students were specifically asked by the NGOs to facilitate change as one of their goals. This concept was presented differentially at grass-roots level by each NGO, but was usually articulated as an opportunity to 'learn from each other'. They therefore provided an opportunity to explore the dynamics of power relations between students and community members.

Rule and John (2011:4) define a case study as 'a systematic and in-depth investigation of a particular instance in its context in order to generate knowledge'. The case studies in this instance represent units of study, products of investigation and also a methodological process (*ibid*.:5). Their purpose was primarily explanatory (Yin 2003) in that the research project was attempting to explain what was happening in each context. But there was also a comparative element to the case studies to strengthen understanding of the findings in relation to the research questions and counter criticisms regarding lack of generalisability for case study investigations.

THE CASE STUDIES

The case studies were small-scale activities, each involving a minimum of two students from two or more disciplines with a community organisation or service provider. The service learning commitment was approximately 30 hours over a time frame of approximately three months, though these 30 hours sometimes included desk-based research or preparation time in addition to practical participation in the field. The community contacts operated on several levels and with varying degrees of complexity. The following table summarises the projects and participants.

Table 1: Summary of SL projects undertaken between August and November 2013

Project	Students	Community members interviewed	Task
CS1 – early child development project in a peri-urban location	Year 3 Education and development SL students (S1 and S2)	Community coordinator CC Community facilitator (CF) Parents (P1-P2)	Assist in conducting and improving non-formal crèche activities in garden of a township house
CS2 – publicity material for disability advocacy NGO in the city	Year 4 Media Studies Honours students (S1-S12)	NGO staff (NGO1-2)	Improve the NGO's corporate image with enhanced publicity material
CS3 – national reading club campaign NGO in a rural location	Education and Development students (S1 & 2); Master's students studying M & E (S3 & S4)	Reading site manager (RCM) Reading club facilitators (RCF 1-4)	Implement new M & E tools requested by NGO and feedback findings

Case study one (CS1), an early child development project, managed by a community college, trains unemployed grass-roots community members of a peri-urban township to run non-formal crèche activities for children whose parents are either too poor or situated too far from the township's pre-school. An initial meeting between two students, the college trainer, the local crèche coordinator and community facilitators established who would work with the students, the kind of activities that the crèche provided and the days on which the students would participate as co-facilitators. Parents were not involved in these discussions though two attended the activities and were subsequently interviewed.

The second case study (CS2) was a disability advocacy non-governmental organisation (NGO) with two full-time staff members and a part-time assistant. The NGO presented its overall objectives and a specific request for assistance with improving its corporate image through publicity material to a class of twelve Media Studies Honours students. The students worked in two teams to devise publicity brochures for corporate communication and general publicity about the NGO's activities.

Case study three (CS3) was a multi-layered NGO initiative to facilitate a national reading campaign for young children. The NGO asked students to assist with monitoring and evaluation of the reading clubs. Four students (two from Education, two from a Master's level monitoring and evaluation research module) received initial training in the use of the monitoring and evaluation tools with the national

coordinator via Skype; one student then liaised with the local coordinating NGO and the reading clubs site manager to identify times when the students could visit and monitor four of the reading clubs (run by unemployed grass-roots community members). The grass-roots facilitators in this case did not meet the students prior to the project but were informed by the regional coordinator of the students' involvement. Thus, the multi-layered nature of this project meant that not all participants shared in the initial negotiations, though all were interviewed as part of the research.

At the end of the field work phase, participating student teams, community members and NGO implementers for each case study were interviewed separately with questions that sought to examine levels of satisfaction with the engagement experience as well as efforts to understand experiences of working together, communicating and learning from one another.

In order to ensure trustworthiness of data (Savin-Baden & Howell Major 2013), a number of strategies were used. First, triangulation included collecting data from a range of participants (academic, NGO, student and community members); data collection also included several site visits and field note observations from research assistants. Second, an audit trail of data was assured through digital recordings of interviews, which were then transcribed verbatim (though the research assistants translated isiZulu recordings direct into English in most cases). Third, data and findings were subjected to 'member checking' whereby all participants were invited to respond to the initial analysis phase. The data were subjected to an open and axial coding process as advocated by Glaser and Strauss and cited in Savin-Baden & Howell Major (2013). This entailed reading and re-reading the data, through an inductive process, whereby key sentences were identified and compared across the different interviews as patterns, which were then coded into initial themes. This formed the open coding process. The axial coding process required the data to be subjected to a second layer of analysis whereby the initial themes were categorised and converted into umbrella themes that could be interpreted critically in relation to the theoretical framework. This was obtained through a process of 'constant comparison' in order to 'compare codes and passages to those already coded' (Savin-Baden & Howell Major 2013:437). The themes that are discussed here relate to the dialogic process of knowledge sharing and co-creation, addressing power relations and the related issues of working together and communication. These themes are also discussed in relation to the theoretical concepts for AL and asset-based development.

Findings

The following themes are selected from the overall findings and the interview quotations illustrate those themes.

Knowledge – sharing and co-creation

Knowledge, in Foucauldian terms, is defined by the 'possibilities of use and appropriation offered by the discourse' (Foucault 1972:183). It is therefore an instrument of power and held in place by techniques and practices that claim its legitimacy. The academy is accorded authority to know through its internal techniques and procedures that maximise its domination over knowledge through disciplines. The students in the early child development project quickly realised, however, that the knowledge they possessed was only a partial resource that needed to build on existing community assets (subjugated knowledges):

> They had so much knowledge already. So our role was just to add on that factor of knowledge …. The experts are the people themselves … as compared to as much as I might sit here at UKZN and learn about early childhood development and community work … whatever I have learned at [university] for example, it is not the same. The real experts of that area, of that programme are the people that are going through that experience so ... whatever I have learned that is on paper … we could say we are the real experts whereas we get there and introduce something that we think they need, [but] they might probably think that "no this is not for us" (CS1, S1 & S2).

Thus, their experience of working with people labelled as deprived exposed them to contradictions that disrupted their own regime of truth that they were the ones who had been vested with expertise through their immersion in the governmentality of the university. The community members, however, in two of the projects, described knowledge more as a resource to be shared, where ownership over knowledge and authority to know appeared more fluid:

> If they have an opinion they would share and I would also do the same when I had an opinion about the children … see they are also educated – they came with the shapes and the robots … [but] this one day they finished with shapes and proposed to teach them about robots. We told them no, they shouldn't – these children are still young, they shouldn't learn everything at once in a day … we also learned that whenever you give a child paper they should write their name and surname at the top of the page (CS 1, CF).

> They (reading club facilitators) also picked up a few lessons from the students … working with other people is nice, sharing ideas, you here interacting with us, asking us questions. We love things like this, to be able to learn how we can improve our work (CS3, RCF4) .... What I learned was that you should be able to sit down with a person and listen to them, try to understand everything they say (CS 3, RCF3).

Such forms of knowledge are often referred to as mode 2 knowledge or 'socially robust knowledge' whose locus is in practice-based contexts (Gibbons 2006:28). Most of the knowledge being constructed or shared in the engagement activities could be associated with mode 2 knowledge. Within their own domains, community members saw their subjugated knowledges from a different perspective. While the academy had inscribed its own mode 1 knowledge as superior, within the community-

based discourses other rationales came into being that reflected Gibbons's mode 2 knowledge. In case study one this was most evident as the community facilitators resisted the students' efforts to appropriate their own sites of knowledge, thus resisting the power imbalances. But there was also mutual recognition of the potential of fresh ideas coming from mixed sources. From the point of view of the NGO in case study two for instance:

> It has been interesting to have people outside the disability field looking at what they think should be in the brochure that we might not think of would be so applicable so it's quite nice getting the outsider's view …. I also gave them quite a lot of information to be included in the different brochures (CS 2, NGO1).

Similarly the students recognised that 'knowledge' extended beyond the formalised curriculum:

> We learnt about the plight of the NGO and their reaching out to a different sector that we were not really knowledgeable of before ... we were also able to learn about things that weren't really part of our curriculum … we were able to learn about disabilities and things that surround issues of disability ... and by really understanding and feeling what those people are going through we were able to communicate their message better (CS 2, S3 & S4).

These observations occasionally resulted in insights that deconstructed the discontinuity between mode 1 (academic and discipline specific) and 'socially robust' knowledge:

> I find that we often go into situations with a very singular thinking and we think only from our own perspectives and the information that we have in our head and everything that we have been taught, but when you work with other people who are specialist in their fields as well you see something from a different perspective and it teaches you to respect their knowledge and respect what they have put in years and years of work to build up and develop (CS 2, S5).

Power, however, also manifests itself in relationships, especially in contexts where the normative status of individuals is inscribed through institutional labels such as a university. This power relationship played out in different ways and is identified here as different discursive forms of power.

Addressing power dynamics

Power itself is a dynamic process that puts into circulation certain forms of knowledge colonised by apparatuses of power such as the university. One student represented this site of knowledge but also saw herself as a subject upon which the university and community both acted. She saw herself both as a subject who is acted upon by, and also a vehicle of, the university's power dynamic:

> As a student, when I'm here [in the university] I see myself as a nobody but then when you get to places with people [in community settings] being a student is a big thing (CS1, S1).

These different power dynamics had to be managed. For instance, even though the early child development students felt they could contribute added value to their placement (power knowledge):

> Since we are students … I think we have like more, fresher ideas of teaching children compared to the facilitators there; even though it was threatening but then we had fresher ideas. We had new ways of implementing the teaching … we tried to have more fun ways of learning for the kids (CS1, S2);

They soon became aware that the introduction of those ideas required a conscious awareness of community sensitivities (power resistance):

> What I learned was the facilitators they take this job very seriously, it is kinda like it's their baby and if someone else from the outside tries to intrude somewhere … you are attacking them personally so … if you want to intervene … do it in a way that … does not seem as if you are attacking them, in a way that we are here to learn (CS1, S1).

Sometimes that meant holding back in terms of the knowledge they felt they could contribute:

> This was a learning curve that this [project] is their baby so we were afraid to raise some points because maybe she would take it as though you are undermining her position. That was also a challenge for us (CS1, S2).

The students' concerns not to exploit or abuse the engagement relationship applied also in case study two when working with their NGO leaders, indicating several flows of power that circulate between the university students as agents of disciplinary knowledge that has discursive authority and the client relationship that requires a more consultative power dynamic:

> I think it is also important to understand that when you work with a non-profit organization that a ... consultative partnership is very different so you're working on the line of participation more and not overwhelming the other party with all your knowledge and saying "we can do this we can do that" we learned to pace all our knowledge and adapt to the capacity of the organisation that we were working with ... so it taught us to hold back and only give what they can use (CS2, S5).

However, the students in this case study did not really reflect on the contingent nature of their discipline specific (mode 1) knowledge in terms of whether that knowledge was 'socially robust' enough to be used by the NGO. The university's power status could, nevertheless, be used to good advantage as a motivator and a legitimating form of recognition of community-based work that is done by people with little formal education. The reading club facilitators emphasised this point:

> They [the students] made me see the importance of having people coming to evaluate your work, see how you are doing, point out your mistakes and your strengths (CS3, RCF1);
>
> I can say we have benefitted a lot because the presence of someone outside the programme especially the university makes every worker be at their best ... the reading clubs that have been visited have become more alert and motivated compared to those that the students have not visited … also … the attendance of the clubs have increased because they know students from the varsity will arrive … even the children have changed (CS3, RCM);

The early child development workers echoed similar sentiments:

> We were very happy to be with you [students] and the children also saw – and I also saw that I am also important … the children and parents saw that this is a legitimate thing …. Your presence helped because some parents thought this was just a game. Some even refused to allow their children to come … now they saw that this thing of teaching from home is serious … because of the students that came and brought some of their things as well and they saw. The children kept their stars as well … they made a star for a child that did well … we wish that you people could come back again because your presence has been noted by the parents (CS1, CF).

The community-based workers felt they were thus given greater status by their fellow community members because the university appeared to be showing interest in their work. In other words, the differential power relationship was taken as given but was appropriated by the grass-roots community members in a form of reverse discourse. But, within these relationships, it was important that the students showed respect and did not exploit this differential status:

> When they [the students] arrived here they showed us love. They didn't have that attitude of treating us like strangers … they showed us love and we united (CS3, RCF4).

Power in terms of status, therefore, when managed sensitively could be a positive feature of the engagement relationship. But although both parties reflected on these positive experiences, the SL activities in themselves did not disrupt the perception of power imbalances. It will be seen later, however, that there were occasions when community members did reverse this relationship.

Other power dynamics could manifest themselves more subtly, particularly with day to day interactions. The projects were designed to encourage students to plan and work together in teams. But working together also meant working with the community organisation members. The different projects made different demands regarding the extent to which students were required to work with, rather than for their host organisation.

Challenges of working together

The overall engagement goal, as articulated by the NGOs as mediators of the power relationship between university and the grass-roots community, was not necessarily

to promote change in any organisational sense, but it was to motivate community members to take responsibility for decision-making and to provide added value to existing activities. There were occasions when the power relationship seemed to 'hang' between the participants.

For example, students in the early child development project cited one occasion where they were in a dilemma about how to work in harmony with their community partners, particularly on an individual basis. They were expected to contribute to an existing morning activity in the township, which was led by the community facilitator, and bring in resources that could be used during the activity sessions:

> We didn't know how to do certain things with her [the community based child development facilitator], how do we engage with her in doing something because … we took the plastics to her and said here are the plastics what should we do? … and she was like "eish I don't know as well" (CS1, S1).

But they learned to find ways of mingling their ideas with the facilitator's existing ways of working, thus reflecting the objective of working with and building on existing assets, mobilising possibilities for dialogue:

> When we arrive B would have started already … our duty was to intervene … with our creative ideas … it's not that we used to change their whole plan … just get in between what she is teaching … she used to arrange her day her own way in most things but we would intervene here and there (CS1, S2).

It was apparent from the community members' perspective that respect for diversity of views and dialogue did take place, which allowed a level of power 'from below' whereby the community members became the subjects rather than objects of power:

> We had different ideas and worked in a good partnership … we used to discuss things; agree that they can take over now. They would tell the story they prepared and I would also tell some of their stories that they've told (CS1, CF);

> They [students] just joined in. Sometimes we gave them a day from the beginning to start everything since they have seen, then let it be their day to do everything. They did it well, I must say ... I learned that if you are teaching each other we have to listen to each other and accept each other … the main thing is to work together equally and in harmony … we worked well together, it was nice (CS1, CC).

In one instance, the interview process itself stimulated new thoughts about working together. The early child development NGO had been trying to encourage parents to get involved in their children's learning activities. Two parents had not been party to the initial consultations but were nevertheless interviewed since they attended the crèche sessions. The university interview stimulated some parental reflection on the role they could play:

> No I haven't played any role [in the crèche] … but now that you have asked me this you have motivated me to start taking part (CS1, P1).

It must be acknowledged, however, that the grass-roots community members were also in a power relationship with the student interviewer and some communication and participation issues for them could have been glossed over in an effort to please the interviewer. It was evident, for instance, that at NGO level a different power dynamic took place. The NGO was a self-constituted institution with its own governmentality and self-regulated role as a provider of services. Here the community voice was stronger so that the disability advocacy NGO was more willing to critique the working relationship between students and their organisation. When one group of Media Studies students complained that they did not get prompt replies to their questions while preparing the organisation's publicity brochure, the NGO defended their position by drawing on experiential knowledge that they felt the students did not have:

> The students [have] got to .... realize for example we are not always in the office and that's a real experience of working in a company or an organization in that you cannot always get hold of the people you want when you want and you have to adjust and not do things at the last minute (CS2, NGO1).

This latter point raises further challenges about the limitations of SL as a CE strategy that aims for mutual benefits for both community and university. The university's discursive machine and its apparatus of governmentality was a hindrance for community relations. The students who needed to work to an examination deadline impeded the natural flow of the organisation itself and this experience highlights the fine line between academic and community priorities that cannot always be anticipated in the initial negotiating process.

Of course, working together requires communication at all stages of a collaborative relationship. And communication would not simply be a practical, logistical arrangement. Its success also depended on *how* one communicated. In two case studies, after the initial meeting between the NGO lead contact and university staff member, communication was primarily between the students and the community participants. Students had to sometimes feel their way through this process and there were indications that ongoing power differentials occasionally hindered understandings at the grass-roots and among students of what was required.

Communication challenges

One issue in community engagement relations is the multiple layers of communication. That is, it was not sufficient for the students to simply communicate among themselves:

> What we learned … if we have ideas that we want to implement … inform her that okay, we are thinking of this, to do this, is it alright? So that the other person is in the loop … by the time we arrive she knows already that this is what's going to happen (CS1, S1 & S2).

But in instances where there are several layers of contacts and multiple agents of power, all with their own apparatus of governmentality, it was not always easy to keep communication channels constantly open. The students whose task was to monitor and evaluate the reading clubs submitted their findings directly to the national coordinator. The reading club facilitators, at the end of the communication chain, felt that the monitoring and evaluation exercise required an additional feedback loop between the students and themselves:

> It would be nice if you also expressed your views and suggestions where you see that no this is a mistake … share with us your opinion because we are not hundred percent sure about how you viewed our work and we would like feedback on the work we do (CS3, RCF2).

DISCUSSION

An exploration of the power dynamics in these case studies suggests that within a short space of time, it is possible to stimulate new understandings among students about the nature of knowledge and how mode 1 knowledge has its limitations when applied in the real world. But the time-limited nature of such small-scale projects prevents deeper understandings of how subjugated knowledges can be integrated into the academy itself. Although these three projects were generally regarded as 'successful' in that student tasks were completed to the satisfaction of the participating institutions, communication issues that were unresolved indicated that, no matter how much competing goals and values appear to have been discussed at the project initiation stage, such goals and values can shift during project duration. Similarly, the extent to which people feel able to articulate legitimate concerns and make new decisions is an important power dynamic that needs to be recognised by the agency, which has been discursively inscribed as having the most authority to know. Furthermore, the nature of SL as a discourse that is embedded in the governmentality of university procedures and structures that define the university curriculum has implications for how usefully students can engage with their communities. In SL the focus is on helping students learn. In CE the focus is on responding to community expressed needs.

The AL philosophy of helping participants clarify competing goals and values provided a lens for examining how and when this happened. It also revealed there are several layers of communicating and working together that evolve during the relationship. It is, as Heifetz (1994) argues, necessary to be sensitive to context. The goal of AL is to enable individuals or groups to take responsibility for their own decisions and it was apparent that the students in these projects respected this

process. The interviews illustrated the critical reflection that students undertook to maintain a working relationship, but the extent to which they allowed themselves to be objects rather than subjects of power varied.

The asset-based development theory provided a framework for exploring the extent to which community assets (subjugated knowledge in terms of skills, attitudes, knowledge and resources) were mobilised and expanded. Some of the projects lent themselves more readily than others to this purpose. The monitoring and evaluation project, for instance, by its very nature, was not designed to be a collaborative venture with the community reading club facilitators. It was responding to the middle level of the multi-agency chain of command. Similarly, the media studies students were completing a task that utilised the NGO's knowledge and experience, but essentially they were constructing a technical resource that had been requested by the NGO. The child development project, albeit on a small scale, did enable students and community participants to see how local knowledge could work with university knowledge in order to contribute to change (Ferreira & Ebersöhn 2012).

The discursive goal of AL combined with asset-based community development is to reduce dependency on external mobilisers for change. By encouraging communities to identify their own needs and levels of technical expertise required to address those needs, ownership of the development process remained in the hands of those communities, so that the projects worked 'within society's own frame of reference' (Heifetz 1994:25). But the multi-layeredness of power dynamics in some CE projects revealed there may be several frames of reference to work with. The added value that Ferreira and Ebersöhn contribute to this goal of reducing dependency is that communities already have resources within their own communities that need to be harnessed. The early child development project was perhaps the best example of students and community members working together in dialogue to achieve that purpose. But it required constant vigilance regarding power dynamics that were vested in status, ownership over knowledge and communication that was sensitive to context.

CONCLUDING REMARKS

This article has discussed some practical and philosophical realities of university community engagement that employs service learning students to respond to community-expressed needs. It only discussed three out of a total of eight case studies, but in doing so highlighted some of the complexities of working with multi-layered community contexts. The combined theories of AL and asset-based community development, filtered through the Foucauldian lens of power/knowledge, explored power dynamics, knowledge construction, decision-making and communication challenges that all serve to deconstruct the ideological notion of community engagement. The case studies revealed that reflective practice can

produce tangible outcomes on a small scale for all participants. Recommendations for future CE practice that involves SL include the need to keep projects local and small and establish clear parameters at the outset regarding identification of participating members. University curriculum and timetable constraints need to be factored into all negotiations and the student community working relationship requires ongoing monitoring throughout the placement to ensure priorities and goals remain on track. However, the epistemological challenges of recognising mode 2 knowledge within the academy itself require long-term engagement relationships that can facilitate a more reciprocal relationship between community knowledges and university, discipline-specific knowledges.

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LINKING CLASSROOM AND COMMUNITY: A THEORETICAL ALIGNMENT OF SERVICE LEARNING AND A HUMAN-CENTERED DESIGN METHODOLOGY IN CONTEMPORARY COMMUNICATION DESIGN EDUCATION

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ABSTRACT

The current emphasis on social responsibility and community collaboration within higher education has led to an increased drive to include service learning in the curriculum. With its emphasis on mutually beneficial collaborations, service learning can be meaningful for both students and the community, but is challenging to manage successfully. From a design education perspective, it is interesting to note that contemporary design practice emphasises a similar approach known as a human-centered design, where users are considered and included throughout the design process. In considering both service learning and human-centered design as foundations for design pedagogy, various philosophical and methodological similarities are evident. The paper explores the relationship between a service learning community engagement approach and a human-centered design approach in contemporary communication design education. To this end, each approach is considered individually after

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which a joint frame of reference is presented. Butin's service learning typology, namely the four Rs – respect, reciprocity, relevance and reflection – serves as a point of departure for the joint frame of reference. Lastly, the potential value and relevance of a combined understanding of service learning and human-centered design is considered.

Keywords: design education, human-centered design, service learning, curricular community engagement, experiential learning

INTRODUCTION

From a global perspective, there is currently an increased emphasis on social responsibility as well as the role of community engagement within higher education. More specifically, the focus is placed on curricular and research-related community engagement where community engagement activities are formally integrated into the curricula of undergraduate and postgraduate programmes. The aim of these activities is to establish a mutually beneficial and respectful collaboration in the teaching, learning and scholarship of educators, students and external partners such as schools, community service agencies and organisations, to name a few.

When mutually beneficial collaborations take place, such activities are referred to as service learning. Robert Bringle and Julie Hatcher (1996:222) define the activity of service learning 'as a course-based, credit bearing educational experience in which students participate in an organised service activity that meets identified community goals and reflect on the service activity in such a way as to gain further understanding of the course content, broader appreciation of the discipline, and an enhanced sense of civic responsibility'. Furthermore, according to Anne Colby, Thomas Ehrlich, Elizabeth Beaumont, Jennifer Rosner and Jason Stephens (2000:xxix), service learning considers the development of the student as an accountable and engaged participant in society.

Owing to the pedagogic foundation of service learning, it needs to be adapted for use by different disciplines as part of disciplinary specific curricula. For purposes of this article, service learning is considered for use within the discipline of communication design. Drawing on the abovementioned focus of service learning, it is worth noting that contemporary communication design practice shares a similar viewpoint about collaboration and social responsibility. In order to deliver more responsible and sustainable design products, contemporary design practice is increasingly focused on what is known as human-centered design approaches, where the user is considered and ideally included throughout the design process. A greater understanding of users and their context is reached through an iterative design process, which includes user research, co-creation, prototyping, continuous reflection (in-action and on-action) and critical evaluation of outcomes.

Human-centered design is not a new concept but has evolved over time to indicate a shifting emphasis from a focus merely on desiging products, to designing for, and with, the people who use those products. In this way, end-users are given a face and are not just seen as a homogeneous entity. A human-centered approach therefore emphasises relevance, sustainability and accountability throughout the process and aims to create products that 'make life better' (Frascara 2002:39). Here the word 'product' does not only denote tangible products but extends to intangible outcomes such as experiences as well.

Design students need to be made aware of their roles and responsibilities within the design industry and broader society, not only in terms of commercial enterprise, but also social enterprise. This stance of design as a social enterprise is supported by current trends in design discourse, which include themes such as design for social change (Shea 2012) and design for development (Oosterlaken 2009). In order to prepare communication design students to realise their widespread potential and contribution to social innovation, educators need to include experiential learning opportunities in the curriculum to instil and foster civic and social values such as responsibility, accountability as well as empathy.

Considering higher education in general and more specifically design education outlined above, the aim of the article is to theoretically align a service learning community engagement approach and a human-centered design approach. Each approach is defined and considered individually by means of a literature review before a joint frame of reference is presented. Dan Butin's (2003) service learning typology, namely the four Rs – respect, reciprocity, relevance and reflection – serves as a point of departure for the joint frame of reference between the two approaches. This comparison is done in order to explore the value of new methodologies for experiential learning within the context of design education. Reference is made to students' reflections on a design project to illustrate some of the theoretical concepts and to show the link between theory and practice.

This research is of particular significance to communication design educators at tertiary institutions in South Africa and abroad since they have the responsibility of putting theory into appropriate and meaningful teaching practice. To this end, the research aims not only to inform pedagogy but also to act as a springboard for additional research to advance the body of knowledge on community engagement within design.

SERVICE LEARNING

As noted in the introduction, community engagement, and more specifically service learning, is increasingly found on the agenda of higher education institutions as a core value, both nationally and internationally, and is a practice that draws on the knowledge base of the scholarship of engagement. Frances O'Brien (2009:30)

acknowledges that the scholarship of engagement is a concept that was advocated by Ernest Boyer, 'who expanded the (Western) traditional notion of scholarship as purely research – the discovery of knowledge – to include the teaching, integration and application of knowledge'. More specifically, Boyer (1996:20) positions the scholarship of engagement as an activity that connects the resources of a university with pressing social, civic and ethical problems with a larger purpose in order to create 'a special climate in which the academic and civic cultures communicate more continuously and more creatively with each other'.

Within this context of engagement, there are various forms of service programmes that are adopted by teachers and students. Drawing on Andrew Furco's continuum (Figure 1), the South African Higher Education Quality Committee (HEQC) differentiates between these forms of service programmes by considering their position on the continuum in terms of two variables: 'the primary *beneficiaries* of the service (i.e., community or student); and the primary *goal* of the service (i.e., community service or student learning)' (HEQC 2006:21).

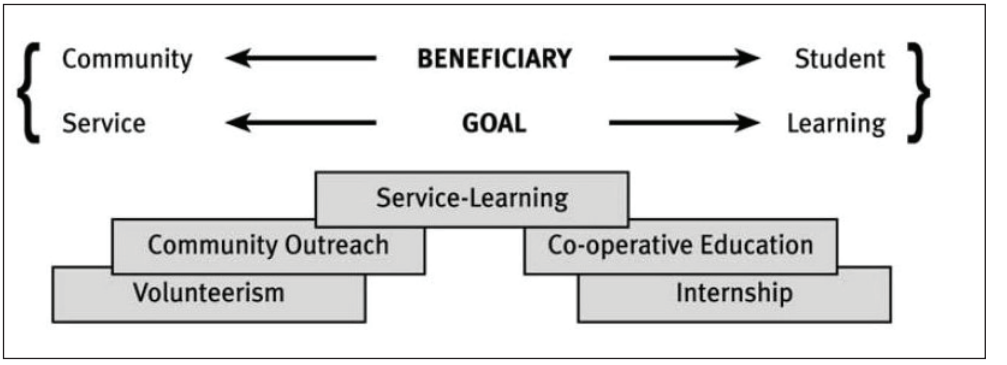

Figure 1: Distinctions among Community Engaged Learning (HEQC 2006:21).

As one type of community engagement, service learning sits in the centre of Furco's continuum. This implies that there is a balance between the intended beneficiary of the service and the goal of learning. A number of authors, including Furco (2011) and Dwight Giles and Janet Eyler (1994), attribute the definition of service learning to Robert Sigmon, who claimed that it is service learning when both, those who are providing the service and the recipients of the service, learn from the engagement with each other. Hence, service learning can be defined as 'an experiential education approach that is premised on "reciprocal learning"' (Sigmon, in Furco 2011:71).

However, there is still some confusion with regards to terminology. Butin (2003:1676) recognises the multitude of definitions of service learning by referring to the many descriptions used when trying to define service learning activities, namely:

'academic service learning, community-based service learning, [and] field-based community service'. From a South African perspective, Lesley Le Grange (2007:3) lends a critical view to the discourse by stating that service learning 'continues to be the subject of debate and deliberation'. Butin (2003), however, sees merit in this deliberation of definitions because he believes that the different conceptions allow for flexibility in the enactment of service learning across different disciplines. The fluidity of definitions for service learning speaks to the idea that service learning should be adopted as an approach or a mind-set. Therefore, although service learning may be interdisciplinary in its practice, it is inextricably bound to the application of disciplinary specific skills to familiarise students with course content; the definition of service learning by Bringle and Hatcher (1996), provided in the introduction, supports this viewpoint.

Despite the lack of a single definition, experiential education as a theoretical and pedagogical foundation for service learning is a recurring premise in service learning literature (Giles & Eyler 1994; Saltmarsh 1996; HEQC 2006; Le Grange 2007). Furthermore, there is also the recognition that service learning has its roots in the educational pedagogy of constructivism, which is consistent with experiential education's stance that knowledge is gained through personal experience (HEQC 2006:14). John Dewey, a pragmatic philosopher and one of the key twentieth century thinkers, emphasised the importance of hands-on learning and although he did not use the term 'service learning', his insight and his philosophy of experiential education have subsequently informed and contributed extensively to the pedagogy of service learning (HEQC 2006:15).

Dewey's succinct analysis of American education in his seminal book, *Education and experience* (1938), introduced his philosophy of experience. His philosophy is premised on the idea that learning scenarios and educational experiences are necessary for students so that they do not operate in silos, far removed from the real world. Furthermore, he argued for an education that had the potential for social and ultimately, political transformation. To this end he supported the idea of a democratic community through face-to-face interaction in education contexts. Dewey's (1938) sentiments about face-to-face interaction also extend to the interaction between the educator and the student. He believed that there should not be a top-down hierarchy between the teacher and the student and that there should be mutual respect and participation between the two. These tenets of experiential learning as proposed by Dewey have been instrumental to the discourse of service learning and are further considered in the joint frame of reference.

David Kolb (1984), also influenced by the work of Dewey, explored the learning styles and processes of experiential learning and developed his own model, namely the experiential learning cycle (Figure 2). This cycle 'explores the cyclical patterns of all learning' (HEQC 2006:17) and comprises four stages, including experience, reflection, conceptualisation and action. The four stages are closely linked to the

following criteria for service learning programmes at a tertiary education level (HEQC 2006:25):

- Relevant and meaningful service with the community
- Enhanced academic learning
- Purposeful civic learning
- Structured opportunities for reflection.

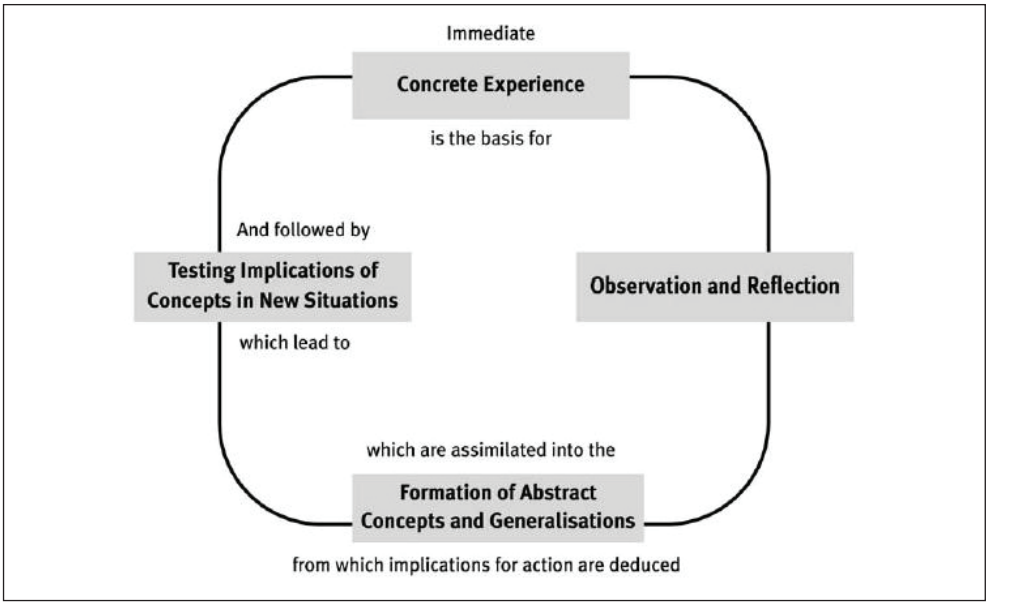

Figure 2: A depiction of Kolb's (1984) Experiential Learning Cycle (HEQC 2006:18).

The abovementioned criteria for service learning form a particular conceptual framework for service learning as pedagogy and also as a form of inquiry. The framework is informed theoretically by Dewey and is evident in the literature on service learning by authors such as Giles and Eyler (1994) as well as by Saltmarsh (1996). Their research is carried out as a means of 'advancing a body of knowledge and as a guide for pedagogical practice' of service learning (Giles & Eyler 1994:77). Accordingly, Giles and Eyler (1994) argue that theory drives the research agenda for service learning. Although focusing on the theoretical foundations of service learning (Le Grange 2007), as well as service learning in practice within the context of higher education (Butin 2006) have been criticised, the aim of this article is not to critique the theory and practice of service learning *per se*, but rather to present

the nature of service learning in order to facilitate the subsequent comparison with a human-centered design methodology.

HUMAN-CENTERED DESIGN

Design is inherently connected to human concerns and has been advocated as such by seminal design theorists Richard Buchanan and Jorge Frascara. Buchanan (2001b:9) defines design as the 'human power of conceiving, planning, and making products that serve human beings in the accomplishment of their individual and collective purposes'. Similarly, Frascara (2002:37) sees design as a 'problem-oriented, interdisciplinary activity' that deals with complex interrelationships between people and their products. According to Buchanan (2001b:14), an increased awareness of how products influence human experience, as well as how products mediate interactions between people and their social and natural environments, has led to a shift towards what is known as human-centered design. Frascara (2002:33) also calls for a greater understanding of the complexities of 'people-centered design', where the focus of the design activity is on people instead of solely on products. This viewpoint shifts the contemporary understanding of design away from the modernist adage that form merely follows function. This view is further supported by Klaus Krippendorff (2005:13) who explains how design in the post-industrial society has shifted from being product-or production-centered to being a human-centered activity. More recently, Sabine Junginger (2012:171) has provided the following comprehensive summary of the principles of human-centered design, which serves as a working definition for purposes of this paper:

> A human-centered design approach fully embraces the social, political, ecological and economical context in which individual interactions take place. Furthermore, human-centered design pays attention to the ways in which any product or service enables, encourages or discourages, even disables, a person to engage with other people, objects, services and environments. A focus of human-centered design is therefore on the human relationships people and groups of people have or may have.

Although the terms 'human-centered design' and 'user-centered design' are often used interchangeably, various theorists such as Buchanan (2001a), Bruce Hanington (2003), Junginger (2012) and Krippendorff (2005) identify distinctions between the terms. Krippendorff (2005:59), for instance, finds the phrase 'user-centered design' problematic since it oversimplifies the user as a 'statistical artifact' that needs to be targeted, often at the expense of others who may also be influenced by the production or use of the design product. Junginger (2012:172) also argues that human-centered design relates to a broader responsibility connected not only to the individual but also to relationships and collective experiences, acknowledging for example that certain products may be meaningful to some while being detrimental to society or the

environment. As a result, both individual and collective experiences are considered in human-centered approaches.

Furthermore, the term 'human-centered design' clarifies and humanises the understanding of the practice, beyond that of usability and user testing to include a vast range of 'softer' human concerns that need to be addressed such as 'product desirability, pleasurable interactions, and emotional resonance' (Hanington 2003:10). Frascara (2002:39) also considers the broader range of human needs that moves beyond mere product efficiency and recognises three areas of design practice: 'design that works to make life possible, design that works to make life easier, and design that works to make life better'. This last objective, 'to make life better' is particularly complex as it focuses on promoting sensual and intellectual enjoyment, mature feelings, higher consciousness as well as cultural sensitivity (Frascara 2002, 39). Design activities from this perspective are thus aimed at improving the overall quality of life. Similarly, Buchanan (2001a:37) provides a holistic understanding of human-centered design practice as that which aims to 'support and strengthen the dignity of human beings as they act out their lives in varied social, economic, political and cultural circumstances'.

In order to produce products that are highly usable, meaningful, ethical and ultimately sustainable, designers need to acquire an in-depth understanding of users and larger communities. Human-centered design thus emphasises research as an 'integrated process that includes active consultation with people (users) through various means of primary research during all phases of design development' (Hanington 2010:18). Newer approaches to human-centered design research specifically encourage the active participation of users and communities throughout the design process. Elizabeth Sanders (2002:6) describes this shift towards participatory design approaches, also referred to as 'post-design'. This shift indicates a blurring of boundaries between designer and researcher and the user becomes an integral member in the design team (Sanders 2002:2). Sanders and Pieter Jan Stappers (2008) describe co-design as an important shift in design practice, where the creative collaboration between designers and other people not trained in design leads to more appropriate solutions. Sanders (2002) acknowledges the different extents to which end-users are part of the design process; nonetheless, they should be consciously considered and consulted in order to make more appropriate and also ethical design decisions.

Human-centered design thus indicates a shift away from the designer as 'lone genius or authority' towards a practice where the designer collaborates with users and other stakeholders (Krippendorff 2005:36). This realisation that designers cannot simply impose their solutions onto others indicates an increased level of respect and sensitivity towards those who will be affected by design products. Consequently, the main aim of human-centered design is to create more relevant and sustainable products through socially, politically and environmentally responsible approaches.

This changing emphasis in design practice has implications for design education as well. A new generation of designers need to be educated in a way in which values such as responsibility and sustainability become integral to their ways of design thinking and practice.

At the Design Education Forum of Southern Africa (DEFSA) conference in 2000, Buchanan (2000) argued that principles of human-centered design need to be built into a new framework for design practice, design education and design research in South Africa. The vast amount of social, political and environmental problems faced in contemporary South African society needs to be addressed by upcoming young designers and in order for them to do so, they will need to acquire a 'broader humanistic point of view' that will help them understand the complexities surrounding these problems (Buchanan 2001b:38). Buchanan's call for human-centered design, although over a decade ago, continues to have urgency because there are increasing social, political and environmental problems that need to be addressed. It is this social and historical backdrop of South Africa that motivated the recent introduction of the Critical Citizenship module at Stellenbosch University within the Visual Communication Design curriculum (Constandius & Rosochacki 2012). Pedagogic undertakings such as these are significant insofar as they aim to change the cultural and historical attitudes and perceptions of students as well as narrow the divide between the academic environment and society at large. Within this practice-based context, a dedicated theoretical model, such as the proposed joint frame of reference for service learning and human-centered design, may prove useful.

LINKING CLASSROOM AND COMMUNITY

Contemporary research and/or practice that focus on the link between service learning and human-centered design have recently surfaced at the EPICS Engineering Program at Purdue University, where 'multidisciplinary teams of students partner with local community organisations to identify, design, build, and deliver solutions' to meet the community needs (Zoltowski, Oakes & Chenoweth 2010). Carla Zoltowski, William Oakes and Steve Chenoweth (2010) explain how service learning, as increasingly part of tertiary curricula, may offer 'synergistic opportunities to create a human-centered design experience'. They acknowledge that teaching human-centered design within the undergraduate curriculum proves challenging because students are required to work directly with users (Zoltowski *et al.* 2010). However, despite Zoltowski *et al.* (2010) realising the benefits and challenges of 'teaching human-centered design within a service learning context', they do not explicitly explore or analyse the underlying similarities in both these methodologies. To this end, the following discussion aims to address the similarities between the two methodologies from a design education perspective. There has been an emergence on literature on service learning within the disciplines of architecture and urban planning (Angotti,

Doble & Horrigan 2012) for example, but there is a general scarcity of information pertaining to communication design. As such, the vantage point in this paper is communication design education and, more specifically, theory is illustrated in relation to a particular Design for Development project.

In an attempt to develop students' understanding of human-centered design and provide them with a civic and an accordingly 'broader humanistic point of view', as advocated by Buchanan (2001b:38), Design for Development projects are regularly included in the Information Design curriculum at the University of Pretoria's Visual Arts Department. In their fourth year of study, students are required to complete a service learning module and this specific project is traditionally aligned with ideals pertaining to design for development and human-centered design. In March 2012 the final year Information Design students participated in a Design for Development project at a local correctional facility. The project required students to identify specific needs within the correctional facility context and to conceptualise innovative design solutions that are aligned with the overall goals of the South African Department of Correctional Services.

As part of the project, students visited the correctional facility on four occasions and interacted directly with the offenders in focus group settings. Throughout their research process, students identified needs related to issues in health care, education, and skills development, among others. During the latter sessions students had the opportunity to test prototypes of their design ideas and gain feedback from the user community. Students also interviewed wardens and social workers to help them identify relevant needs and challenges within the correctional facility. As a short, three-week project, students were able to conceptualise, develop and, in a few cases, test prototypes.

Throughout the project students were required to reflect on their experiences, by means of writing two reflection essays – one prior to the first focus group session and the other after project completion – and also by documenting the project in log books. Students were asked to reflect on their concept development and design process as well as their role in affecting social change, both within the specific project setting and the larger context of their environment and profession.

The inclusion of the reflection essays and log book requirements served multiple purposes. Firstly, as recommended in service learning literature, reflection encourages critical thought and helps to embed knowledge gained throughout the educational experience. Yates (1999:21), for example, affirms that '[a] number of service researchers have recommended essay reflections as a way of accentuating the influence of service experience'. From the educators' perspective, the essays were useful in gauging whether students found the community engagement project meaningful and whether similar projects should be included in the curriculum in future. Lastly, the reflection essays also contain valuable insight on the students' perspectives of service learning and human-centered design projects in the

curriculum. Excerpts from these Design for Development project reflection essays are referred to in the following joint frame of reference, in order to illustrate the theoretical links between service learning and human-centered design approaches.

A joint frame of reference

From the respective discussions of service learning and human-centered design above, it is evident that an emphasis on community engagement and collaboration is a shared attitude in both methodologies. Furthermore, similar philosophies, regarding responsibility and accountability in practice, are also found in both approaches. These similarities therefore provide a point of departure to compare the two approaches in more depth. For purposes of the article, Butin's (2003) simple, yet inclusive, typology of service learning, namely the four Rs – respect, reciprocity, relevance and reflection – is adopted as a joint frame of reference for the subsequent discussion. This choice is not to impose a limit on the objective of this study but rather to serve as an entry point for further consideration of the similarities between service learning and human-centered design methodologies. Each of the four Rs is first briefly defined and then related to service learning and human-centered design, respectively.

Respect

Respect can be regarded as a cornerstone of service learning as it relates to an increased value of community and also promotes civic and, more significantly, democratic ideals. Accordingly, respect relates not only to political ideals but to actions and conduct in accordance with good morals and ethics. It is a characteristic that is articulated consistently in writing about service learning as well as human-centered design in terms of the need for respect of circumstances, views and ways of life of the various project participants. The immediate and direct engagement that is required in service learning involves student participation in a community. Such active civic participation calls for social responsibility in the identification of pressing needs as well as an attitude of justice in the provision of a service to address those needs (Saltmarsh 1996:17).

Dewey was of the belief that education, by its very nature, is a social process and that 'education involves socially interconnected action for a particular social end' (in Saltmarsh 1996:16). The interconnected action comprises 'face-to-face' association with the community and this in turn lends itself to an education and practice of cultural democracy. According to Dewey, the development of one's sense of self is dependent on engagement with other people. Saltmarsh (1996:16) also notes that Dewey spoke of a 'community of interests' where the common good is given priority over self-interest. Within an African context, it is worth mentioning that this position is in keeping with the humanist philosophy of *Ubuntu;* summarised well by the

familiar idiom: I am because we are. Students are therefore challenged to pay careful attention to cultural diversity as well as to respect differences in power, privilege and prejudice when working with a community (Academic Service-Learning 2009).

As mentioned previously, human-centered design is also rooted in principles of human dignity and human rights (Buchanan 2001a:37). In order to reinforce human dignity and rights at all times, designers need to employ sensitive and ethical methods throughout their process. Krippendorff (2005:60) describes that respect in a human-centered design process is 'granted by attentive listening and acknowledging what people say, not necessarily complying with what they want, but giving fair consideration to their views and interests'. In this regard, one student explicitly expressed the importance of respect as follows:

> The main point I took away after completing this project is the fact that even though we were designing for people who have made mistakes in their lives, does not mean that they deserve less from us. The final deliverables of my project could work within a variety of different contexts and this is because I went in with the notion that I was not designing for prisoners, but I was designing for people. I believe this is a very important lesson to keep with you when involving one's self in community engagement projects. By treating the people you are investigating as one of your own, by showing them respect and by giving them a real chance to express themselves openly, you will really get a sense of what it is they are going through, and this will truly help when it comes time to come up with solutions to help them.

Open communication and dialogue are thus necessary in building mutual trust and respect. Frascara (2002:34) also argues that 'unidirectional communication is unethical and inefficient' and that ethical communication design should incorporate dialogue, partnership and negotiation with communities of use. If approached correctly, research activities within community settings can be incredibly valuable since immersion and direct engagement forge 'a sense of empathy between designer and user' (Hanington 2003:17). This empathy in turn potentially leads to an increased sense of civic responsibility and an increased understanding and urgency in assisting communities through the production of truly meaningful products. One student recalls a conversation with one of the offenders, which had a remarkable impact on the design process:

> The simple act of sharing his dream humanised him; he was no longer just a prisoner, he was a person – a connection was made .... I believe this is why community engagement and intervention is so important as it helps us understand that community and sympathise with them; it helps us see things from their perspective, which enables us to design for that community.

Both service learning and human-centered design focus on collaborative or participatory approaches as this shows a greater level of respect in allowing users to express their own needs and desires, instead of making assumptions about them. This view is substantiated by Stephen Percy, Nancy Zimpher and Mary Brukardt

(2006:x) who believe that 'successful partnerships should be: of the people...by the people ... and for the people'. A similar sentiment was echoed by another student:

> I think I learned patience when working with an unstable community, to not just come with my questionnaire and logbook, but to engage in casual conversations. I absorbed much more by talking with the inmates than talking to them.

From the authors' experience of community engagement projects, it should be noted that although the above principle of participation outlines an ideal service learning approach, in reality, deeper understanding and sensitivity do not always come automatically to students and/or community members. Participants are likely to fail in some regards, and perhaps even offend certain partners they work with. Nonetheless, increased exposure to such complex situations is perhaps necessary to make students and community members aware of any biases or prejudices they may need to resolve. Service learning opportunities can therefore provide a valuable opportunity and experience to nurture and hone civic engagement skills for greater respect.

Reciprocity

The identification of respectful collaboration and engagement above naturally leads to the characteristic of reciprocity. The word reciprocity refers to the mutual benefit of all those who are participating in an engagement or activity (Butin 2003:1677). Reciprocity in a service learning context means that mutual benefit is gained by both the students and the selected community. In the service learning context, communities are therefore regarded as active partners and not as recipients (HEQC 2006:24). Dewey also maintained that for a service to be most successful, it needs to be a mutually beneficial and reciprocal relationship with the identified community. Therefore, the attitude with which the service should be approached should be one of justice and not of charity. In addition, a service relationship is one 'defined by opportunity, choice, social responsibility, and social need' (Saltmarsh 1996:17). It is therefore essential for student actions to address pressing social needs and instil a sense of responsibility in the participants in an empathetic rather than a pitiful manner.

However, the issue of real reciprocity, where both students and community benefit equally is extremely challenging. From the Design for Development project, it became apparent that students were acutely aware of this challenge as well. Many students expressed their concern in their reflection essays about whether their project prototypes would ever be implemented and some students felt guilty about 'using' the community as research subjects without being able to guarantee a mutually beneficial outcome. The following quote highlights this viewpoint:

> The fact that the project was set in a real environment made the project more interesting and more inspiring but I also feel somewhat guilty of exploiting the offenders and I hope that something materialises from the project.

Despite the question of product implementation and the resulting benefit of the engagement, there was a clear indication of the intrinsic value of the community engagement among the students. One student articulates this point in an encouraging way:

> One never understands the value you add to other's lives. This is exactly how I felt after this project. I was constantly concerned if we're really going to add true value to these inmates' lives. Are we going to lighten these problems or solve them? But after completion, I realised that our participation, our presence and visits were more than enough for them. Although we couldn't solve huge issues we could inspire and motivate and lighten smaller underlying problems.

It is, of course, important to acknowledge that students' perceptions cannot suffice as a reflection of the community's experience of benefit. True reciprocity requires that all parties express an experience of value. Therefore, both parties would need to be consulted to fully investigate the value of service learning projects. Carol Mitchell and Hilton Humphries (2007) question the common lack of evidence of community benefit (or lack of community voice) in service learning research. Accordingly, their research indicates that more participatory approaches should be used when engaging with communities. As such, they also advocate a justice-oriented approach to service learning. In the same vein, in any design endeavour, there are multiple stakeholders and participants. For example, both the designer and client receive benefit through financial or other incentives, while the consumer benefits from the use of the product. However, Krippendorff (2005:29) explains that technology-centered design focuses mostly on factors important to the designer and client, even though products are usually consumed and used by larger communities. In contrast, human-centered design considers the benefit to the user or community in greater depth. This becomes extremely relevant in contemporary design education settings where students need to not only develop their design, research and problem solving skills but also increase their accountability, to contribute meaningfully to the communities they engage with.

The acceptance of communities as partners is a condition that allows for reciprocity in both service learning and human-centered design approaches. Nonetheless, to reiterate, reciprocity in both contexts is ideal and a fair exchange is actually one of the biggest challenges identified in practice (Butin 2006; Drentell & Lasky 2010). Project timelines connected to curricular goals are often too limited to facilitate the longer-term investment needed to bring about real community benefit. Furthermore, the perception of benefit is also very difficult to measure, since it would be based on the opinions provided by stakeholders with vastly different expectations to begin with. This is, however, a challenge that must be consciously addressed, in order to be true to service learning and human-centered design principles.

Relevance

Relevance can be regarded as the pertinence of engagement (Butin 2003:1677). This highlights the fact that for service learning to be successful, the engagement or service provision needs to be relevant and meaningful to all the participants, including the students, the learning institution and the community. When service learning is implemented correctly, the aims of the engagement are usually developed within the context of the community. Hence, service learning calls for 'the institutional reorientation of the school/college/university in its relation to the community' (Saltmarsh 1996:15). This, in turn, helps to ensure relevance of the engagement (Butin 2003:1677; Saltmarsh 1996:15).

According to the HEQC (2006:25), the service rendered needs to be 'relevant in improving the quality of life for the community, as well as achieving module outcomes' (Bringle & Hatcher 1996:222). These ideas resonate with Dewey's philosophy that both education and service play a mediating role in society, whereby the intention is to break down the barriers between different groups of people (distinguished by different circumstances and privileges) and to ensure that each person is 'occupied in something which makes the lives of others better worth living' (Dewey, in Saltmarsh 1996:19). In this regard, the idea of relevance extends to the pairing of the community and their needs with the needs of the students being trained in a specific discipline. These viewpoints also speak to the notion of reciprocity; hence, it must be acknowledged that even though the four Rs are discussed individually in this paper, they are interdependent.

In Frascara's (2002:35) view, human-centered design also ensures greater relevance in that it aims to rise above fads and fashions to 'penetrate all dimensions of life with a view to improving it'. Thus, Frascara (2002:34) calls for greater accountability, relevance and sustainability in contemporary design practice. The idea of design for the sake of self-expression is thus no longer considered relevant, as it does not look towards the user's needs and desires. One student clearly expressed an understanding of this:

> Although we, as designers, know that we design for our clients and not for ourselves, our personal opinions and tastes always find a way to break through our concept development stages and they become represented in our designs in some or other way. For the first time however, my likes and dislikes fell away completely and gave way to those of the consumer.

Buchanan (2000) also asserts that from a human-centered design perspective, it is essential for design products to be appropriate to the situation of use. Buchanan (2001b:14) defines propriety as 'the proper mixture of emphasis on what is useful, usable, and desirable in a product'. To this end, Buchanan encourages the practice of rigorous research throughout the design process in order to ensure that design outcomes are relevant and meaningful. In keeping with the theory, it was therefore

encouraging to note how one student commented in particular on how the project facilitated the development of research skills:

> The value of this project to us as designers can be seen the way our process skills were challenged and developed. I think that, most of the time, we tend to not take the research part of the process seriously enough. Not only that but we also tend to consider Internet research as the primary source for idea generation and needs identification. We tend to take for granted that groundwork is already done by someone else and sitting on the Internet for us to use. This project definitely showed us the value in primary research and personal engagement with the targeted community.

Following from this, it is evident that service learning and human-centered design value appropriateness as a measure of relevance; they are both inclined towards human and environmental needs created by and/or resulting from human action. Charles Owen (2007:21) also identifies appropriateness as a measure of design. He asserts that most design solutions are contingent and interdependent on the context in which they operate and therefore, unlike science, right/wrong cannot be used as measures since they are absolute and do not lend themselves to the complex nature of design.

By highlighting the importance of truly relevant outcomes, both service learning and human-centered design approaches emphasise the value of interdisciplinary collaboration. Within contemporary communication design, in addition to working more closely with end users in the design process, designing relevant products also requires the input of experts in other disciplines, especially from the social sciences. Designers therefore need to realise the limitations of their own knowledge and work in collaboration with other key players to ensure that they employ best practice methods. These viewpoints from professional practice therefore support collaborative experiences, such as service learning, at a tertiary education level.

Reflection

As advocated by Dewey (1938), the purpose of the link between education and experience is to learn from action. Reflective enquiry is necessary to move learning ‘beyond conditioning, [and] beyond the classroom’ (Saltmarsh 1996:18), and to maintain the link between thought and action. Moon (1999:4) indicates that the word reflection denotes a form of mental processing and the act goes beyond mere experience to provide context and meaning for the experience, resulting in the creation of new knowledge (Butin 2003:1677). Since learning is essentially about transformation within the context of education, reflection is a valuable tool for students who are involved in service learning. One of the core characteristics of reflection is the generation of own knowledge (insight) directly tuned to practice. Another important characteristic of reflective enquiry is ‘to make the connection between intent and result of conduct’ (Saltmarsh 1996:18). Reflection, as a

mandatory requirement of service learning, is therefore a means of transforming experience into knowledge about the module content, a more holistic understanding and appreciation of the respective field of study as well as improved personal values and social responsibility (Bringle & Hatcher 1996; Giles & Eyler 1994). In addition, reflection has the potential to influence the application of knowledge in further action and thereby have a longer-lasting and sustainable impact with a view towards creating a 'just democratic community' (Saltmarsh 1996:18). As a result, educators must ensure that there are structured opportunities to reflect during service learning projects.

Similarly, from a human-centered design perspective, the act of reflection is integral to practice. Human-centered design draws on Donald Schön's (1983) concept of the reflective practitioner and advocates that the design process is iterative in nature. Bryan Lawson (2006:299) notes that there are essentially two interpretations of reflection: reflection-in-action and reflection-on-action. Reflection-in-action is carried out during the teaching/learning process and reflection-on-action is done after the engagement has been completed. Reflection-in-action is meant to enhance the design process and the subsequent outcome and reflection-on-action is a means of embedding knowledge and considering the broader implications of design practice.

Continual evaluation and reflection feed back into the design cycle in order to ensure the creation of more effective products. For example, Hanington (2010:21) explains how research in human-centered design is conducted throughout the design process, in the exploratory, generative and evaluative phases. Prototype testing, as a form of reflection-in-action, is a valuable method of generating feedback that can be incorporated into another iteration of the design process, providing continuous improvement and higher levels of assurance that solutions will be appropriate and effective. It is owing to this iterative design process that Jorge Frascara and Dietmar Winkler (2008:11) prefer to use the term 'response' instead of 'solution', since they believe that design problems can be reduced but never fully solved. The preference for the word 'response' when discussing a design solution is in keeping with Herbert Simon's (1969) concept of 'satisficing', a term which refers to finding appropriate solutions as opposed to absolute ones. This more modest approach acknowledges that better responses may be achieved 'when more information becomes available, or when a more intelligent designer meets the problem' (Frascara & Winkler 2008:11). This belief therefore substantiates the need for reflection-on-action in order to advance design knowledge.

Consequently, in order for any service learning or human-centered design experiences to be meaningful and have value, embedded knowledge needs to be arrived at and this is facilitated through the practice of reflection. Zoltowski *et al.* (2010) support this viewpoint when they argue that students' collaboration with users is only valuable alongside reflective activities, which leads students to 'see how important knowledge of the users is and how it creates better designs'. The

importance of understanding the end-user in a design process as well as the change in attitude towards a specific community through engagement is a prominent theme that emerged from the students' reflections. For example, the following reflection by a student highlights personal growth and a marked improvement in the student's attitude towards people he or she would otherwise not have engaged with:

> My assumptions and beliefs has definitely changed, before I went to visit prison, I was very judgemental about prisoners, and didn't feel sorry for them at all, my view was that if they ruined someone's life, they deserve prison forever. But after the visits, I found myself feeling sorry for a murderer, seeing that he is also just a person who made a mistake.

In addition to embedding disciplinary-specific knowledge gained from the service learning activity, reflection on a more personal, civic level can be used meaningfully to learn from the community engagement experience. Through reflection activities, students gain a better understanding of their roles and responsibilities as designers to bring about positive change in society. One student describes this realisation as follows:

> After completing this project I recognise how privileged I am to be completing a university education. Many do not have the opportunities I do and resort to drastic measures in order to survive. Looking into the future I feel that it is my duty to partake in community engagement projects whenever the opportunity arises. Society cannot continue to turn its back on the less fortunate. It is my responsibility as a university graduate to make small changes wherever I can.

Although many potential problems have been highlighted, through the act of reflection, failures can be transformed into stepping stones towards more respectful, reciprocal and relevant engagements in future.

DISCUSSION AND CONCLUSION

The above discussion of the similarities between service learning and human-centered design indicates that the two methodologies share common ground (especially in bridging theory and practice) and that Butin's (2003) four Rs may serve as a suitable interface between the two. This article therefore suggests that, where relevant, the two methodologies can be combined to inform a new pedagogic approach of linking classroom and community in contemporary design education. The call for new and more engaged ways of teaching and learning are substantiated by a number of reasons, which are discussed briefly below. More pragmatically, a number of challenges are also highlighted with regard to the inclusion of service learning in the curriculum.

Dickson (2003:60), speaking from an architectural design position, recognises the need for new teaching methodologies by stating that an increasing number of educators are moving away from 'traditional teacher centric teaching methodologies

that have focused on passive learning activities, and move toward skills that foster greater student centered inquiries in a more interactive setting'. In addition, his affirmation that the simulation of real world problems is central in design-based education substantiates the important role that experiential learning plays in educating designers. Owing to the blurring of boundaries between various design disciplines today, design educators also have the responsibility of preparing graduates for non-traditional design roles and contexts. For instance, human-centered design, as a methodology, is gaining increasing exposure as a result of global design companies, such as IDEO, which promote their Human-Centered Design toolkit, a free 'innovation guide for social enterprises and NGOs worldwide' (IDEO 2012). Students being trained in such methodologies within higher education may therefore increase their opportunities for work within a widening domain once they graduate.

Another advantage of taking learning outside the traditional classroom is that design students have a better opportunity of engaging in research. This view is supported by Buchanan (2004:37) who argues that 'design schools that prepare students for stylistic and formal expression address only a small part of the discipline of design'. Instead, he believes that the design curriculum should 'strive to integrate stylistic and formal expression with the ability to conduct user research, task analysis, and a variety of other technical activities suited to different branches of design'. Despite research being an important part of the designer's problem-solving skills set, Hanington (2010:20) has more recently argued that design students are rarely formally educated on research methodology. Christopher Crouch and Jane Pearce (2012) aim to address this need in their book, *Doing research in design*. Following from their argument that design research informs design for social change, institutionalising community engagement as a means to facilitate a better understanding and application of research skills by design students is of great importance.

Human-centered design principles can optimally only be taught and embedded through practical community engagement. Such experiential engagements fully immerse students in the complexity of human-centered design problems where there are no easy solutions. By allowing engagement with communities as part of the curriculum, service learning modules may provide a valuable platform for teaching human-centered design as well as nurturing civic competencies. William Drenttel and Julie Lasky (2010) also support the need for students to learn the necessary 'tools and training to explore and address social-design problems', and they note that it 'has been a growing mission of educators'.

As noted earlier, despite its value, human-centered design projects do, however, pose particular challenges, specifically in terms of providing equally beneficial outcomes to both students and the community (Mitchell & Humphries 2007). This concern was also raised at the Winterhouse Symposium on Design Education and Social Change held in 2010, where Jamer Hunt questioned which participants were

being served foremost, the students or the target community (Drenttel & Lasky 2010). He expressed his frustration 'at the superficiality of a lot of projects that often end up making students feel better about themselves with no impact' (Hunt, in Drenttel & Lasky 2010). It is in addressing this challenge that service learning may have a significant role to play in terms of promoting and moving towards mutually beneficial engagements.

Another challenge of service learning relates to the duration of such projects. Even though service learning is curriculum-related community engagement where students receive credits for the completion of their modules, it is not a practice that dominates most curricula. As such, it is often limited and often restricted to one module per year or sometimes one module per course. The fact that service learning is limited throughout a course is not in keeping with Dewey's belief that experiential learning opportunities should be continuous and supported by previous experiences. A similar viewpoint is shared by Robert Putnam (2000) who, when speaking about building social capital, states that 'episodic service has little effect'. This stance has implications for the community participants too; they should not feel used by the students during the service learning project. Follow-ups are necessary to ensure the sustainability of the engagement because ultimately, the aim is for short-term project outcomes to affect long-term social change.

Perhaps the most difficult challenge of all is to reconcile different attitudes towards experimentation. From a design education perspective in particular, service learning with its rigid emphasis on measurable, beneficial outcomes for all stakeholders, does not allow for nurturing an experimental attitude, which is considered vital in most design curricula. The highly experimental and therefore somewhat unpredictable nature of design practice on an educational level may therefore be at odds with service learning methodology, which measures the success of the project along different criteria.

Despite some of these challenges, considering that '[e]ngagement between higher education and other societal sectors is a key theme in higher education discourse in South Africa, as it is in other countries' (O'Brien 2009:29), it is unlikely that design educators will be met with resistance for looking towards service learning to inform the implementation of more formalised human-centered design projects in their curricula. Ultimately, the aim is for the scholarship of engagement to 'direct the work of the academy toward more humane ends' (Cox 2006:123–124) and for 'humane life' to be the maximum aspiration of design practice as well as any other intellectual effort (Frascara 2002:39).

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A NARRATION OF A PHYSICAL SCIENCE TEACHER'S EXPERIENCE OF IMPLEMENTING A NEW CURRICULUM

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ABSTRACT

This article narrates the lived experiences of a Physical Science teacher named Thobani (pseudonym) in implementing a new curriculum in South Africa. Drawing on the work of Husserl and Heidegger, the article describes the objects of direct experience in Thobani's consciousness about his life as a learner and teacher as revealed during an in-depth semi-structured interview conducted from two perspectives. The genealogical part of the interview chronicled how his knowledge of Physical Science had unfolded in his life as a learner and subsequently as a teacher; the portraiture perspective recounted the often traumatic events of his personal life and the circumstances that had informed his decision to become a teacher. Theoretically, the findings reveal how an incompetent Physical Science teacher had hampered his understanding of the fundamentals of the subject, and how the lack of support from the Department of Education and his head of department had retarded the implementation process. The insights gleaned from this phenomenological investigation into

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the thought processes of a teacher introduced to a new curriculum could have potentially transformative effects for policy-makers, curriculum planners and teacher educators at a time when South African teachers are yet again faced with the implementation of a new curriculum.

Keywords: genealogical perspective, portraiture perspective, phenomenological interview, implementation process, transformative effects, implementation of a new curriculum

INTRODUCTION

The phenomenological investigation recounted in this paper, which forms part of a broader study, focuses on the *lived experiences* of a black Physical Science teacher who teaches in a so-called informal settlement in the Western Cape Province of South Africa. For the most part, people in informal settlements live in self-constructed makeshift shelters known as *shacks*. These dwellings are built in such close proximity to one another that they form severely congested settlements often associated with serious health and social problems. The establishment of informal settlements was the result of the racist *1913 Land Act*, which relegated black South Africans to so-called 'native reserves'; the notorious *Group Areas Act* of 1966, which forced South Africans to live in designated areas based on racial classification; and rapid urbanisation as large numbers of people migrated to the cities in search of better economic opportunities. The learners whom Thobani teaches Physical Science live in such an informal settlement township community (see Figure 1).

Figure 1: The community in which Thobani teaches

In South Africa, a large number of studies focus on the implementation of a new science curriculum (see, for example, Jansen 1999; Rogan & Grayson 2003; and Aldous 2004). Rogan and Grayson (2003) have attempted to develop a theoretical

model for curriculum implementation in developing countries based on the following aspects to minimise the waste of resources and demoralising experiences of teachers: a profile of implementation, the capacity to innovate, and support structures. Rogan (2004) examined the challenges that a new science curriculum might pose for science teachers, how well they cope with the implementation process, and concluded that, without continuous support and professional development, the process is most likely to fail. In a similar study, Kriek and Basson (2008) found that, although teachers were positive about the new curriculum, they had concerns about the lack of resources and their ability to teach the curriculum content. This is congruent with the views of Brodie, Lelliot and Davis (2002) who argue that teacher qualifications, specialised subject knowledge, access to resources and support structures in schools are determining factors in how teachers respond to a new curriculum. Aldous's (2004) study looked at the factors that influence teachers' perceptions but it does not delve deep enough into the mind-sets of teachers to explain their thinking or the rationalisation undergirding their perceptions when confronted with curriculum change.

These studies are of great value because they provide answers to specific questions of curriculum implementation. Researching teachers' lived experiences of the implementation of a new curriculum could add to this growing body of work and provide answers to the question why teachers do what they do. In the last two decades, both internationally and in South Africa, there has been a significant upsurge in researching the lived experiences of science teachers phenomenologically (for example, see Hammer 1995; Domert, Airy, Linder & Kung 2007; Clarke and Linder 2006; Koopman 2013). For example, Clarke and Linder's (2006) study reports on the lived experiences of a black female teacher who teaches in an informal settlement in a large, overcrowded and under-resourced school, and her struggle to implement the outcomes-based curriculum. Although these studies reflect a broad phenomenological approach, they do not follow through with a detailed phenomenological analysis of the data. Therefore, the research on which this article is based aimed to use not only a phenomenological data-collection process, but Husserlian phenomenology to represent the findings from a genealogical angle, and Heideggerian phenomenology to represent them from a portraiture angle. The next section of the article discusses the curriculum that Thobani had to implement.

THE SHIFT TO THE FURTHER EDUCATION AND TRAINING (FET) NATIONAL CURRICULUM STATEMENT (NCS)

In March 1997, under the rubric of Curriculum 2005 (C2005), indicating the final year of implementation in all school grades, the South African Department of Education (DoE 1997) launched its first post-apartheid curriculum. It was envisaged that this

new curriculum would replace content-based education (CBE) with outcomes-based education (OBE), and teacher-centred pedagogies with learner-centred pedagogies. Furthermore, OBE was intended to redress the legacy of apartheid by promoting the development of skills throughout the school-leaving population so as to prepare South Africa's workforce for participation in an increasingly competitive global economy.

Since the gradual phasing in of the new curriculum, it has undergone extensive revision, following a period of vociferous debate and fierce contestation as to the merits of OBE (see, for example, Jansen & Christie 1999). There were also other concerns such as the difficulties of implementing the new curriculum in resource-poor contexts. For example, Chisholm,Volmink, Ndhlovu *et al*. (2000), the authors of the *Report of the Review Committee on Curriculum 2005*, observed that historically disadvantaged schools lacked the essential resources – reference and textbooks, stationery, photocopying facilities and other technologies of teaching – needed to implement Curriculum 2005 effectively. This finding is corroborated by empirical studies conducted by Jansen (1999) and Le Grange and Reddy (2000). Based on its members' visits to schools, the review committee made several recommendations in its review of published literature on Curriculum 2005, its review of submissions made by organisations and individuals, and of further investigations. The outcome of the review process was the development of a *Revised National Curriculum Statement (RNCS) for General Education and Training* (GET) (DoE 2002). The RNCS was implemented in schools in the year 2002, and in 2006 a new *National Curriculum Statement for Further Education and Training* (DoE 2006) was phased in. General Education and Training begins with a reception year and ends with Grade 9, and Further Education and Training focuses on Grades 10 to 12.

One of the major changes that took place with the introduction of the NCS for Physical Science was a shift in the subject content prescribed. For the first time, topics such as two-dimensional motion and two-dimensional momentum were included in the Mechanics section. Furthermore, other new materials in the Physics section included lasers, the Doppler Effect, two-dimensional and three-dimensional waves, electrodynamics, electronics, the mechanical properties of light, and electromagnetic radiation. In the Chemistry section, there were few changes to the previous curriculum, but the topics were more detailed and extensively elaborated upon. The NCS aims to produce a learner who can think logically, analytically, holistically, and factually (DoE 2006, 2008). Furthermore, teachers are expected to be designers of learning programmes and materials, researchers and subject specialists (see DoE 2003).

At the time of the research reported on in this article, the NCS was the only legal curriculum document for teachers. Thobani and all the other Physical Science teachers were expected to fulfil the requirements of the NCS. In the NCS policy for Physical Science, each learning outcome (LO) was accompanied by assessment standards (ASs), which describe the ways in which learners should attain these

outcomes. According to the NCS policy document (DoE 2003), ASs are vehicles of knowledge, skills and values through which the learning outcomes are addressed. Table 1 below represents the three LOs and selected ASs to shed light on how Physical Science was structured in the NCS curriculum. This table will be used as frame of reference to describe Thobani's understanding and interpretation of the NCS in the findings and discussion section.

Table 1: Assessment standards for Physical Science for the respective learning outcomes in the FET phase

	Learning Outcome 1: Scientific inquiry and problem-solving (LO 1)	**Learning Outcome 2:** Construction of scientific knowledge (LO 2)	**Learning Outcome 3:** The nature of science and its relationship to technology, society and the environment (LO 3)
Assessment standards (AS)	Planning and conducting an investigation	Recalling and stating concepts	Integrating science with technology and Mathematics
	Accurate and reliable collection of data	Explaining interrelationships between facts and concepts	Impact of science on ethical and moral arguments
	Interpreting data and seeking patterns and trends	Applying scientific knowledge	Impact of science on the environment and social development

(Constructed from DoE Policy Document, 2003)

The LOs for Grades 10 to 12 are the same but the ASs differ across grades, serving to indicate the level at which the LOs must be achieved in each grade. For example, in Grades 10 to 11 (for LO1), a learner is expected to conduct a scientific investigation and collect data for interpretation. In Grade 12, the learner must design and conduct an experiment to collect data from which to draw inferences, and interpret the data to verify or falsify a particular hypothesis. The attainment of these skills (LO1) is evident when a learner uses scientific reasoning to explain the verification or falsification of his or her hypothesis. Learning outcome 2 focuses on the construction of scientific knowledge, whereas a Grade 10 learner is only expected to state the basic prescribed scientific knowledge (DoE 2003). In Grades 11 to 12, learners must define and discuss the basic prescribed scientific knowledge. Each of the concepts

builds upon the previous one, from one grade to the next, which is consistent with the goal of conceptual progression. Bennet (2002:83) points out that conceptual progression is desirable in a curriculum 'as it represents elements of curriculum implementation and delivery that are crucial in synchronising policy, teaching, assessment and learning'. Thus, as learners progress through the FET phase, their knowledge of scientific concepts is strengthened. The role of the NCS teacher is illustrated by way of an example below.

When teaching Boyle's Law, the teacher must not merely guide the learners to collect data to verify textbook information as in the former apartheid curriculum. Instead, the teacher now has to develop the learners' insight into the objectives and rationale behind these experiments by guiding them to understand what led Boyle to arrive at these laws. It follows that the teacher needs to be familiar with the work of Torricelli, his experimental evidence for atmospheric pressure, and his design of the barometer from which Boyle derived his theories. Furthermore, it is expected of Thobani and his colleagues to encourage their learners to develop practical skills in the Science classroom by allowing them to design their own experiments and collect similar data that will confirm the inverse proportionality relationship between volume and pressure if the temperature remains constant. The learners are then expected to link Boyle's law to real life applications such as in the tyre industry where tyres with stronger casings reduce roads accidents. In addition, the teacher must promote higher order cognitive skills in the learners in order for them to understand that an increase in temperature results in an increase in pressure; therefore, a stronger tyre casing would reduce the number of road accidents caused by tyre bursts.

The NCS in the FET band is based on three LOs: skill, knowledge, and application. Each outcome has three assessment standards, except for LO 1, which has four (for full details on the NCS for Physical Science, see Nakedi, Taylor, Mundalamo, Rollnick & Mokeletche 2012). The goals of the NCS not only require teachers to use innovative teaching strategies but also to expand their knowledge and perceptions about how they think learners learn. Next, the epistemic and ontological nature of the study will be discussed in order to shed light on Thobani's lived world.

PHENOMENOLOGISTS AS WORKERS OF EXPERIENCE

According to Husserl (1975:5), cognition begins and ends with experience. Gadamer (1975:34) argues that experience has a condensing and intensifying meaning. He maintains that the totality of experience is found in the significant whole. This significant whole refers not only to a person's presence but to his or her complete presence. Husserl (1975:xiv) notes that this whole or unity of an object is something that is given among various appearances and not something separate and alongside it. It is considered a structural nexus that is contextually connected to reflect upon so as to give it a significant quality of meaning. Therefore, according to Husserl,

phenomenology is a form of inquiry that describes the lived experiences of others and informs us about the participant's perception of a physical object. These perceptions provide phenomenological researchers with the necessary intellectual tools to understand human behaviour and actions and to do something about the latter when necessary.

It is widely acknowledged in the philosophical literature that lived experience is best captured using a phenomenological framework. The phenomenological school is divided into two groups whose philosophical orientations derive from the work of the German philosophers Husserl (1859–1938) and Heidegger (1889–1976), respectively. Both groups of scholars concentrate their research activities on the idea of lived experience. Although both groups are located within the phenomenological tradition of researching lived experience, there are marked differences between them. Husserl's (1975) pursuit of truth about human existence focuses on the theoretical and philosophical aspects of people's experience, with the emphasis on *bracketing* and *essences*. Husserl (1975) tirelessly pointed out that, in essence, phenomenology is a pure science of consciousness, or a science of pure phenomena that are absolute and unique. By contrast, Heidegger (1967) focuses more on the ontological dimension and contextualisation of experience. The difference between the approaches of the mentioned scholars will become evident later in the article when, in Husserlian terms, the experiences of Thobani are narrated through use of his own words without any interpretation and then followed by a Heideggerian approach whereby Thobani's experiences are interpreted by the authors based on contextual factors. Both traditions use lived experience to elucidate and validate the manner in which people experience particular phenomena through observation and interaction, which leads them to indubitable meanings of truth about individuals. Both these traditions informed this study.

Husserl (1975) argues that lived experience ('*Erlebnis*') is to be understood as first-person data, also referred to as *eidetic data* (representing the ideas of the individual). This means that first-person data are prior to any reflection given experientially to someone. Husserl (1975:xix) explains the first-person data as follows: 'We must not make assertions about that which we do not see ourselves.' He points out that such first-person data are synonymous with the meaning of the German word, '*Sachen*', which in context does not refer to physical objects but to subconsciously held ideas. These subconsciously held ideas have their roots in experience, which, in our lives, refers to those matters that we value most. According to Husserl (1975:xix), the only way to access these subconsciously held ideas or structures of knowledge is through a consciousness unburdened by preconceived ideas or notions derived from the individual's personal experience or perceptions. According to Koesterbam (in Husserl 1975:xxii), this approach generates pure presentations or uninterrupted sense data derived from experience. Husserl firmly believes that an individual's consciousness is reflected in his or her presence in

the world, which represents his or her intentionality – that is, the directedness of his or her consciousness towards the object of thought. Based on this premise, the implementation of the NCS becomes, not a description of how the teacher attempts to implement the curriculum, but how the process of implementation unfolds in his or her consciousness. Brown (1992:49) sums up the latter when he writes:

> We want to understand man (sic) from his world, that is, from the meaningful ground structure of that totality of situations, events, cultural values, to which he orients himself, about which he has consciousness, and to which his actions, thoughts and feelings are related.

The above quotation expresses the main aim of the research reported to in this article, which was to delve into Thobani's consciousness to gather as much rich descriptive data as possible to capture his thoughts. In the next section, the attention shifts to the methodological orientations of the study.

THE RESEARCH APPROACH

This research on which this article is based was situated within a phenomenological methodological framework. Such a framework is specific because it illuminates the research subject's contextualised experiences – in this instance, the mental and emotional turbulence he experienced in response to the challenge of introducing a new Physical Science syllabus and to bring about renewal within his constrained teaching environment in an impoverished community. This study goes beyond the physical experiences of external events and aims to focus on the inner landscape of why he embraces or resists elements of curriculum change.

The essential interest is in exploring the objects of experience in Thobani's consciousness in order to gain deeper insight into the life world of a Physical Science teacher as revealed through his personal accounts. Husserl (1970) stresses the importance of discovering truth by understanding the human lived experience and exploring it systematically through rigorous inquiry or research. Van Manen (1984:38) writes:

> As we research the possible meaning structures of our lived experiences, we come to a fuller grasp of what it means to be in the world as a man, a woman, a child, taking into account the socio-cultural and the historical traditions which have given meaning to our ways of being in the world.

In phenomenology, interviews and field notes are regarded as trustworthy and reliable forms of data construction. Given the heavy workloads and administrative responsibilities of teachers, a semi-structured, in-depth one-on-one interview – rather than an alternative form of data construction such as a descriptive essay – was used.

The interview

The interview questions were aligned with the main aim of the research study, which was to delve into Thobani's consciousness to gather as much rich descriptive data as possible about his thoughts and feelings concerning the implementation of the NCS, and were all framed around his experiences in this regard. The in-depth interview focused attention on issues such as his feelings, beliefs, and perceptions as regards the challenges associated with the NCS. The interview commenced with knowledge questions about his experiences as a learner, specifically with reference to the school he had attended and the Physical Science teacher he had had as a learner in Grade 12. This was followed with questions about how he had experienced the introduction of the NCS, the training he had received prior to the implementation, how he felt, and what he thought about the NCS. Husserl's (1975:xix) principles of the phenomenological *epoché*[1] and his dictum about *the things themselves*[2] were adhered to during the data-gathering process as explained in the following paragraph.

During the interview, the researchers paid close attention to the verbal and non-verbal behaviour of the research subject by drawing on the resources of speech act theory, discourse analysis and communication science. Here the focus was on the length of the pauses during and between questions, the interviewee's posture and gestures during the interview, and word choices. During this phase of the recorded interview, notes were made as comprehensively as possible without any bias or judgemental evaluation. The notes that were made included the non-verbal cues, silences, word choices, and the repetition of certain words during the responses. The researchers also compiled a list of significant words used by the interviewee. For example, high frequency responses such 'yo' and 'phew' and so forth were given attention to as the interviewee tried to give emotional expression in some instances. These notes were carefully taken so that the researchers could correlate them with specific questions and responses constructed from the data (Miles and Huberman 1984).

DATA EXPLICITATION

Data explicitation is divided into two sections, namely findings and discussion. Under *findings,* we provide a descriptive narrative using mostly Thobani's direct words, comments and expressions as is customary in a phenomenological study. In the *discussion* section, we present an interpretive narrative in order to give meaning to or elucidate his direct words and to separate the essential aspects from

1 *Epoché* refers to the role of the researcher allowing the data to flow freely from the research participant while bracketing out his or her (researcher) own personal beliefs, feelings, perceptions and views so as not to contaminate the data.

2 The things themselves are the result of unveiling the subjective knowing or representations of the respondent as divulged in the course of the interview.

the peripheral. Thobani's transcript was analysed by grouping together related items and responses in an attempt to arrive at an understanding of the language he used as based on his *choice* of words. At this stage, the researchers tried, as Husserl (1975) suggests, placing themselves in Thobani's position in an attempt to understand what he meant and intended to say during the interview. His responses were transformed into 'psychological language[3]', that is, interpreted and rendered psychologically, with an emphasis on how he experienced the NCS in his consciousness. We found these transformations necessary because such psychological renderings provide a deeper insight into his responses to the events that took place in his life as a child and later as a teacher.

FINDINGS

During the data explicitation process we had to enter a totally pre-suppositionless space by suspending all possible interpretations and meaning. It required from us to read the transcript with openness and we had to enter Thobani's world in order to extract meaning from what he was saying. It must be stated that at times this was difficult because each individual (e.g. Thobani) has his/her own unique way of experiencing temporality, spatiality and materiality in this world (Hycner 1985:29). Furthermore, to understand others in relation to their own inner world is even more complex, but we connected our own experiences as ex-learners and ex-teachers of Physical Science to give meaning to Thobani's lived world. In presenting the findings, we have grouped the items reflecting similar responses together and identified the following themes:

- Thobani's views on the shift from C2005 to the NCS;
- Thobani's classroom experience and understanding (interpretation) of the NCS;
- Thobani's responses to the training offered by the WCED in preparation for the implementation of the NCS.

Before we present the findings of Thobani's responses to the above themes, we wish to provide a short biography of his life as a child and learner of Physical Science. His biography was compiled by meticulously scrutinising each word, phrase, sentence and paragraph in the interview transcripts in order to distil the essence of his childhood experiences. The first part of the interview allowed us entry into his consciousness of how he experienced the world as a child in the Physical Science classroom and how he ended up in the teaching profession. These experiences provided tangible structures to reconstruct his history and subsequently his biography.

3 The dynamics of how a person's historical, social and political experiences are expressed in his consciousness.

Genealogical angle: Thobani's biography

At the time of the interview, Thobani was 38 years old, had been teaching Physical Science at school for 13 years, held a three-year Technikon (now called University of Technology) teaching diploma, and was attempting to complete his fourth year to upgrade his qualification to a bachelor's degree. He was born and raised in an informal settlement in the Western Cape Province. Thobani describes the school he attended as a learner as a bare concrete building on a piece of open land, which he characterised as 'a resource-poor environment'. In addition, he characterises his experience of the subject Physical Science at school as a horrible and challenging ordeal. He states: 'We never understood our teacher .... I think we taught ourselves the Grade 12 syllabus.' He sardonically remarks that, as far as the subject content was concerned, the situation in the Physical Science classroom would have been better if the teacher had always been absent from class as even the practical work was non-existent.

Thobani believes that his teacher had neither any passion for the subject nor any interest in the learners. In consequence, the learners' self-esteem plummeted and they lacked confidence in responding to questions. He laments: 'We only skimmed the surface of what had to be learned for the exam, all on our own. When I chose the subject in Grade 10, I had high hopes of becoming an engineer.' However, this hope slowly faded as the result of having to cope with Physical Science as 'taught' by a teacher whom he describes as 'horrible' and 'knowing less' than the learners. In an attempt to seek help, Thobani and his fellow learners went to the principal's office to ask for a substitute, but without success. In response to a question whether the teacher was qualified to teach Physical Science, Thobani states: 'I don't know – we went to the office to find out if we can't get a substitute, but we never got a positive response. I can't even remember this teacher's name.'

In consequence of his unfavourable experience with Physical Science at school and poor matriculation results in the subject, Thobani could not gain entry to a university engineering programme. He blames his Grade 12 teacher for his misfortune, which left him with no other choice but to opt for a teaching career instead. After entering the teaching profession, Thobani hoped to make a difference to the way Physical Science was being taught in schools and set himself the goal of achieving a 100% pass rate. The following section presents a transcript of Thobani's responses in relation to the specific themes deduced from the interview transcript as a whole.

Portraiture angle: Thobani's views on the shift from C2005 to the NCS

In this section, Thobani describes how he experienced the shift from C2005 to the NCS. He explains what it was like in the early days of the implementation process

and describes his struggle to overcome the many hindrances to his implementation of the NCS. Thobani explains:

> I entered the teaching profession as a Physical Science teacher in 1998. I started during a time when there was a lot of confusion. When I started teaching, it was the introduction of OBE. Many of us were confused but I was in a better position because I was fresh coming out of school [university].

When asked about the confusing period and why he thought he was in a better position, he replied:

> Most of the teachers, they did not know what to do, how to teach and the content – phew! They struggled [smiling]. I think they did not have better training but I learned a lot about the new curriculum at school [university]. I was better prepared than they because at least this new curriculum I was ready for it.

Thobani further describes how he struggled with his older colleagues who found it difficult to accept the new policy changes prescribed by the NCS, and how their negative mind-set regarding the NCS affected him. He said:

> You see, the people like my HOD [Head of Department], he's coming from the old way of teaching. The traditional, the old way, which was in the apartheid era. So we were always at loggerheads as to how much we must teach and how much mustn't we teach the learners.

When asked how he felt about the new curriculum changes (referring to the shift from C2005 to the NCS), he explained:

> I was very happy because my learners they benefited. They were now better prepared for university. I did not do this new content [when he was a learner] that was now added to the curriculum but they did it, so that made me very happy. I use it to help them, my students. I always tell them it is a good thing this new shift to NCS.

At this point in the interview it was evident that Thobani favoured the new curriculum but that he was troubled by the opposition from his HOD and older colleagues. As he was searching through his memory and reflecting on his past experiences, he appeared to be reliving the accumulated effects of his experiences as a learner and the objections that he faced from his teaching colleagues many years later. The researcher (first author) noticed the seriousness and anger with which he spoke about how he felt at the time. The inner turmoil that he was experiencing was also evident from his facial expressions and gestures. While he was reflecting and speaking, his arms were tightly folded across his stomach as if in an attempt to contain himself and not show too much emotion. His non-verbal gestures, the long pauses between responses, and his choice of words appeared to be an attempt to find the appropriate words to describe his emotions. It represented a symbolic sense of his need to protect himself as well as an attempt on his part to express his agitation politely in the company of his older interlocutors. It can be assumed that he was well aware of the

fact that his interlocutors did not support the curriculum change. Haney, Czerniak and Lumpe (1996) note that when more experienced teachers are favourably disposed towards a curriculum change, it also inspires novice teachers to respond positively to the proposed policy changes in education.

Thobani's classroom experience and interpretation of the NCS

Asked how he felt about the new NCS curriculum and whether he had implemented it in his classroom, Thobani had the following to say:

> Phew! One has no choice but to apply the NCS because, you see, OBE goes along with lots of things. There are many things that one needs to *assess* – even the seating of the learners. You can't allow learners to be sitting alone or on their own. Now, teaching OBE, one has to teach with context in mind. I am there – I am comfortable with teaching with a context. I have always done that.

The image Thobani portrays about the NCS in the above quotation suggests that it requires new ideas and more effort for the assessment of tests and assignments, classroom management (seating arrangements), the application of knowledge (context), and preparation. His statements 'one has no choice' and 'there are many things one has to assess' subconsciously reflect the magnitude of the task of implementing the NCS. When he was asked how often he did practical work (see Table1.1: LO 1: Practical investigation and problem-solving), he pointed out that time did not allow him to do as much practical work as he would have liked to do. He also complained about the lack of resources that hindered his ability to do practical work. He commented: 'I do at least one practical per term (every 4 months) because there is no equipment.' It should be borne in mind that the NCS requires teachers to use LO 1 of which ASs 1.1, 1.3 should form the basis of the lessons they teach. When asked whether he understood the curriculum and what was demanded of him to be an effective implementer, he said:

> After 13 years of teaching, I must by now know and understand the curriculum. No, those concepts we have grasp them. They were a problem when the new syllabus was being introduced ... we had to implement them but now after about 13 years of teaching I think I understand them.

When asked about how much time in his lessons he devoted to LO 3, specifically ASs 3.1 and 3.2, he pointed out that his focus was on teaching the content (LO 2). He said: 'I hardly have time to complete the content [LO 2: AS 2.1: Recalling and stating concepts], so I do that [LO 3] when I have time.' On the subject of assessment, he asserted that he assessed his learners regularly through activities such as workbook exercises, asking questions, tests, examinations, and allowing the learners to work in groups (LO 2: ASs 2.1 and 2.2). He explained: 'All those tools I'm using them but, when it comes to assessment. I assess every day.' He reiterated that he did not

experience any problems teaching the content. When asked if he understood the content, he replied:

> It takes a lot of my own time at home. I spent a lot of time on my own studying to understand the curriculum. Even the topics I made sure I understand. You know, what helped me would be the exemplars that were provided by the WCED [Western Cape Education Department]. I was never taught those topics at school, not even at *university*. I was never taught but most of the things that I am teaching currently I had to read them on my own to understand them.

The following citation describes what Thobani considered to be the most challenging part of implementing the NCS:

> My biggest challenge was, first of all, I did not know how to prepare my lessons with the different outcomes in mind. During that time, I only went to class not knowing while teaching whether I was meeting the demand of those critical and developmental outcomes but, after some time, *I learned* what was expected of me and did so.

When asked who had helped him to understand these outcomes, he stated that most of the work he had to learn on his own and added: 'I am a lifelong learner and am slowly becoming a specialist.'

Portraiture angle: Thobani's views on the training offered by the Department of Education prior to the implementation of the NCS

The following quotation describes Thobani's view on the training he received:

> This training it was too short. Yo, yo, yo! I expected much more from these training sessions. It was a big joke and a real waste of my time. They could not fit into these sessions all the materials one needed to know … yo![4]

When asked whether or not the training was helpful, he had the following to say:

> I would say, if I can rate them [the workshops], they would be 20% helpful. The other 80% was more confusing. You know why I am saying so: it's because the WCED they took some of us [teachers] and made us curriculum advisors. Those curriculum advisors were the ones that were also confused. Those guys they were given the opportunity to come back to us. One could sense they were not confident – they did not know what they were saying in those workshops.

When asked how he felt about and *who* had arranged the workshops, and *how* and *when* it had been done, he replied:

> I still remember, we'll stay after school when one is tired. We'll stay for two to four hours or on Saturdays two to four hours. That is the maximum time we spent on those workshops.

4 'Yo' is an expression of amazement in the black community in South Africa.

> Some of the workshops were also offered during the June holidays for a period of one week by the curriculum advisors.

Thobani felt that the training he had received raised more questions than it answered, which is why he constantly referred to the training sessions or workshops as confusing. He had hoped that the training offered by the WCED would allay all his fears, anxieties and insecurities and would adequately prepare him for the effective implementation of the NCS. Instead he was left disappointed as he had to learn most of what he needed to know on his own. He pointed out in an earlier excerpt that the workshops were too short to fit in all the materials to be learned, and in the above quotation he highlights the fact that the training was offered during school holidays, weekends, and after school when he needed to rest.

DISCUSSION

The 'horrible Physical Science teacher'

To understand Thobani's descriptive experiences more clearly, we firstly availed ourselves of the resources of Heideggerian phenomenology to write an interpretive narrative based on his responses. Heideggerian phenomenology allowed the researchers to give meaning to Thobani's experiences by providing an interpretive narrative based on the researcher's interaction with the interviewee. It allowed the researchers to connect the context within which the interviewee was teaching, the mood that existed during the interview, as well as the researchers' expert opinion on how they thought the interviewee experienced the phenomena. In this research project, it allowed the researchers to construct Thobani's phenomenological attitude towards Physical Science, which started at school when he was a learner. Secondly, we strove to present his views regarding the shift from C2005 to the NCS. Thirdly, the approach allowed us to discuss the perception of the influence and role his HOD and older colleagues played in the implementation, and, in conclusion, the poor training provided by the department of education.

Firstly, constructing an interpretive narrative from Thobani's biography was a complex task. The interview as a whole provided meaning and insight into specific events and how these events directed the course of his life. From this we could separate minor issues from major ones and deduce how the major events impacted on his being and becoming. Our personal experiences both as learners and teachers of Physical Science (first and second author) and the major events that happened in Thobani's life allowed us entry into his consciousness to construct his biography. Furthermore, our use of Heideggerian phenomenology in this section was intended to assist us in achieving a deeper insight into the objects of experience in his consciousness and did not in any way imply an intention on our part to critique his descriptions and other responses. Rather, it was our objective to reveal how the

complex workings of his conscious as well as his subconscious mind influenced his understanding of Physical Science as a school subject.

What stands out in Thobani's biography was the negative influence that his teacher had on him as a learner and the environment in which he received his teaching. Throughout the interview he continually pointed out what a 'horrible Physical Science teacher' he had had. This experience had created the subconscious perception that Physical Science was a difficult subject. This is evident from his statement, 'we did not understand our teacher and went to the principal's office to ask for a substitute', and from the fact that he lamented the poor examination results that prevented him from studying the subject of his dreams: engineering.

Many studies have shown that poor teaching leads to a poor understanding of science (for example, see MacDonald & Rogan 1988; Ogunniyi 1996). Olitsky (2006:209) argues that this problem is not confined to a lack of resources, but is directly related to a teacher's inability to guide and nurture a learner to become a member of the scientific community. Olitsky (2006:209) further argues that the learning of science is more than just a cognitive activity in that entails the development of a social identity associated with scientific practice and discourse that should start at school level. To acquire this kind of knowledge base in science, the learner needs to develop a sense of somehow belonging to the world of science, which could emerge from a strong relationship with his or her teacher.

In Thobani's case, the lack of both a role model and a positive exposure to the teaching of Physical Science fostered a deep-seated resentment towards the teaching of the subject he loved and a psychologically ambivalent attitude towards science. The fact that Thobani's school teacher followed the doctrine of fundamental pedagogics, Clark and Linder (2006) argue, could have major implications for the way he (Thobani) views the subject. In his subconscious mind, science had become associated with an objective, distant and meaningless subject aggravated by his teacher's incompetence and narrow ways of looking at the world. Thobani's story begs the question to what extent his understanding of science would have been different if he had had a competent and passionate teacher with a sound understanding of science, and what effect that would have had on his understanding of Physical Science. Basson and Kriek's (2012) study on Physical Science teaching found that, at the core of effective science teaching, is the need for teachers to possess specialised knowledge and skills, which, Olitsky (2006) argues, should start at school level.

Thobani's challenge of dealing with his HOD and older colleagues

Mellville, Hardy and Bartley (2011:2276) assert that formidable challenges await teachers who are looking to contest the hegemony of traditional teaching strategies without sustained support to overcome such challenges. Bourdieu (1977) points

out that social worlds, such as the science department in Thobani's school, are comprised of different social spaces or 'fields' within which individuals engage in contests. These contests occur between individuals whose dispositions or 'habitus' – the way they behave and feel – makes them more likely or able to engage in the roles and responsibilities assigned to them in schools or other related fields. These social spaces are represented subconsciously to orient a person's awareness and actions. For this reason, individuals perceive the same opportunity differently because of their different dispositions. This could explain the responses of Thobani's colleagues, who may have developed or adopted a 'habitus' that defined the relationship between learners, the learning culture and its associated change differently from his. The upshot of this situation is usually 'a space of conflict' and competition: the older teachers dominate and the new ones struggle to have their voices heard.

Bantwini (2010) argues that, at the heart of successful curriculum implementation, is continuous professional development. At Thobani's school, professional development was non-existent and, instead of encouraging Thobani, who was fresh from university, his HOD and senior colleagues were opposed to his decision to implement the NCS and put many obstacles in his way. To aggravate matters, the workshops and training offered to him by the Department of Education as a form of professional development he found at best 'confusing' and 'a waste of time'. He pointed out that it was through self-study and sacrifice that he came to understand the curriculum and the new content associated with it. He mainly used the assessment tools provided by the department (such as specimen questions and answers, old question papers and examination guidelines) to plan and deliver the content to his learners. That he paid relatively little attention to LO 1 (Ass 1.1, 1.2, 1.3 and 1.4) and LO 3 (Ass 3.1, 3.2 and 3.4) and had to learn the curriculum on his own suggests that he moulded the curriculum to fit his context and understanding. Waugh and Punch (1987) contend that, although teachers take ownership of curriculum change, the implemented curriculum is not always the enacted curriculum. According to Cuban (1998), this happens because teachers will adapt and modify the anticipated outcomes to suit their purpose. Therefore, the possibility exists that there might be a disjuncture between the teachers' conceptions and beliefs and those of the prescribed or intended curriculum. This raises the question of how Thobani perceived the NCS, based on his recollections as captured in the interview responses.

Heidegger and Thobani's epistemic nature

Thobani's perceptions or consciousness of the NCS might best be explained using Heidegger's (1967) concepts of '*hammering'* and *'the coping being'*. According to Heidegger (1967), *dasein* (being in the situation) always involves a type of mood such as anxiety or a feeling of being threatened as an emotional manifestation of the nature of the being. Heidegger argues that mood is always present in any situation

and that, when people enter a situation, they move in behind its mood. Heidegger uses the word *hammering* to explain what happens in the mind of a carpenter as he or she knocks the nails into a piece of wood while building a cupboard. Hammering comprises two processes, namely ready-to-handle and unready-to-handle situations (Heidegger 1967).

In the ready-to-handle situation (present at hand), the carpenter is not in a state of awareness as the process of using a hammer is transparent, self-evident and requires no thought. All that is important at that moment is the act of using the hammer to knock nails into wood or some other object. Heidegger describes the carpenter as being cognitively asleep or unaware of the situation or surroundings. This example of *hammering* depicts how, not only craftspersons, but also teachers go about their work unreflectively, that is, without questioning the status quo or giving any thought to the process. Like carpenters, teachers only work towards achieving their goal, which is to finish the project they are working on and to move on. The aforementioned reveals that teachers might have a particular understanding of the curriculum that they continue to follow/implement. Whether their understanding is authentic or unauthentic, their actions represent their psychological condition. Heidegger's main thesis is that one's psychological condition or state of mind is grounded primarily in 'what has always been' (Heidegger 1967:341). The latter becomes a mode of projectedness within which a person's mind becomes caged. However, the situation and the mood change into a state of heightened awareness on the part of the craftsperson when the use of the hammer becomes problematic or too difficult for the task at hand. Now the craftsperson is forced make adjustments to the way the tool is being used by either modifying, repairing or replacing it. In this unready-to-handle situation, the coping part of the process represents the heightened state of cognitive awareness that forces the carpenter to observe the situation more closely and reflect on it in an attempt to ameliorate the situation. In the process, the carpenter's regular life world is filled with uncertainty, confusion or disorder as he or she now has to think about what has been happening. Heidegger believes that we only become conscious when things go wrong. Furthermore, he argues that this new state of mind (heightened awareness) has its origin in 'the temporality of concern' (1967:400). Factually, this temporality of concern becomes necessary to approximate new goals, which subsequently requires a new way of 'seeing' or looking at the world (or some concept), giving birth to new ideas or understanding. Similarly, teachers are forced out of their comfort zone when the prevailing policies, procedures or curricula become obsolete, or when they are suddenly challenged or replaced.

In Thobani's case, he instinctively and intuitively responded to the challenge of finding a new phenomenological coping mechanism when the tools of his trade became ineffective due to the introduction of a new curriculum for Physical Science. Forced to adapt, Thobani now had to reflect deeply on how to replace the

old, unreflective ways of doing things with a fundamentally new approach. This involved constant reflection and revision as he attempted to address the problem areas of the curriculum. In the process, he managed to dismiss negative thoughts and ideas in order to accept the challenge of curriculum change, while at the same time adopting a positive mind-set and attitude. This mind-set allowed him to see the NCS, not as something forced upon him, but as an opportunity for professional and inner growth. Accepting the challenge and cultivating a positive mind-set, despite the many depressing obstacles put in his way, assisted him in acting out his convictions in such a way that he became tolerant, flexible and susceptible to change. In essence, what Thobani shows us is that there is no mystery to change. Essentially, it is about accepting new ideas and making a cognitive leap to address new challenges.

CONCLUSION

This article presents a phenomenological recount of a Physical Science teacher's lived experiences while implementing the NCS. It provides both a descriptive narrative (using Husserlian phenomenology) and an interpretive narrative (using Heideggerian phenomenology) to report the findings. The article focuses on Thobani's experiences, the act of being per se, and the process of being in the midst of the curriculum delivery process. We discover Thobani's fundamental relation to the curriculum, his peers, and colleagues. The findings indicate that, from the outset, Thobani wanted to become an active implementer of the NCS despite struggling to understand the curriculum. His desire to implement the NCS is revealed by his responses to his peers. His account of being at loggerheads with his peers and his HOD points to his efforts to implement the curriculum. From a Heideggerian perspective, Thobani's existential experiences and the development of his phenomenological attitude might have emerged from various metaphysical and ethical experiences during childhood, namely, his struggle as a learner of Physical Science.

The most striking finding about Thobani's childhood experiences is how an incompetent Grade 12 Physical Science teacher was responsible for his ending up in the teaching profession. Not only did this experience leave him with an inadequate understanding of Physical Science but it made the process of implementing the NCS syllabus very difficult as he struggled to make sense of the content he was required to teach. Another significant finding is that the poor support and encouragement he received from his HOD and the departmental officials made it extremely difficult for him to implement a challenging new syllabus in the absence of the necessary institutional and collegial support. However, despite the undermining influence of the negative responses and repeated ridicule of some of his colleagues, Thobani still managed to hold onto his belief that the NCS curriculum prepares learners for a better future career in science, which motivated him to implement it. The latter is substantiated by the following excerpt: 'They were now better prepared for

university.' Thobani's philosophy is not idealistic because, in his own consciousness, he sees himself as an active implementer of the NCS, despite the challenges of poor support structures at school, the department's lack of good teacher training workshops in both content and curriculum studies, and the absence of continuous professional development.

The data from the phenomenological interview generated a rich description of the formidable challenges teachers face when confronted with a radical curriculum change. The data also provided a clear picture of the life world of a black Physical Science teacher in an informal settlement. The insights gained from this study go beyond the factual theories and rhetoric, and therefore assist curriculum planners and advisors to understand that successful curriculum implementation hinges on teachers. According to Clarke and Linder (2006), without considerable teacher support and development, curriculum initiatives will continue to fail. Therefore, this study provides compelling evidence of the crucial role that teachers play in determining what goes on in the science classroom and the long-term consequences it has for the learner.

This article highlights an important issue for the field of curriculum studies in South Africa, which raises a concern about the latest version of the NCS, the *Curriculum and Assessment Policy Statement (CAPS)*. This document is a highly prescriptive curriculum framework that dictates *when*, *what* and for *how long* topics should be taught and learned. Over the past few decades, curriculum discourses in South Africa have privileged the policy-maker's world (see Le Grange 2007) to such an extent that only one view of curriculum has been legitimated, namely curriculum-as-planned. Thobani's narrative, as reported in this article, highlights the importance of another view of curriculum: curriculum-as-lived – a view that recognises the lived or living experiences of teachers. Acknowledging curriculum-as-lived does not mean dismissing curriculum-as-planned, but brings to the fore a tensioned space between the two views of curriculum that teachers (as illustrated in Thobani's narrative) negotiate daily, a space that has not been researched or theorised sufficiently in South Africa. We aver that greater recognition of this tensioned space could be pivotal in efforts to transform education in South Africa. Aoki (1999:181) cogently explicates this tensioned space as follows:

> It is in this space of between that our teachers, sensitive to both curriculum-as-planned and curriculum-as-lived, dwell, likely finding it a tensioned space of ambiguity, ambivalence, and uncertainty but simultaneously a vibrant site. It looks like a simple oppositional binary space, but it is not. It is as space of doubling, where we slip into the language of "both this and that, but neither this nor that". Our teachers slip into the language of "both plannable and unplannable, but neither strictly plannable nor strictly unplannable." Confusing? Yes, Confusingly complex? Yes. But nevertheless a site that beckons pedagogic struggle, for such as human site promises generative possibilities and hope. It is, indeed, a site of becoming, where newness can come into being.

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SOCIAL JUSTICE AND HUMAN RIGHTS IN EDUCATION POLICY DISCOURSE: ASSESSING NELSON MANDELA'S LEGACY

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ABSTRACT

Twenty years after South Africa's democratisation, Nelson Mandela's passing has prompted scholars to examine his legacy in various domains. Here we take a look at his legacy in education discourse. Tracing Mandela's thoughts and pronouncements on education we find two major emphases: a view of education as a practical means to economic development, and education as a means to social justice, human rights, and democracy. Assessing the legacy of these twin emphases, we conducted qualitative and quantitative content analysis of turning point documents in education policy and annual reports from the respective South African ministries of education over the last two decades. Our analysis reveals that although a focus on education policy for economic development has consistently remained strong, Mandela's view of education serving to foster social justice, inter-racial equality, human rights, and a deepening of democracy has faded from official educational policy discourse.

Keywords: Discourse; education; South Africa; Nelson Mandela; human rights; social justice; democracy

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Nelson Mandela, the late father of modern South Africa, has been widely praised for his pursuit of social justice, democracy, equality, and the fulfilment of human rights for all South Africans, but he also has his critics. As scholars are now reassessing his legacy in full in everyday thought and practice, we examine here his impact on education, a sector pivotal to national development and the Millennium Development Goals. As Mandela famously remarked in a 2003 speech at the University of the Witwatersrand, 'education is the most powerful weapon you can use to change the world'. While such optimistic sentiments provide hope to those seeking to build a better future, the stark realities of the present call for a re-examination of Mandela's legacy in the way the government of the Republic of South Africa has approached the education sector. Education is widely seen as essential to advancing development, democracy, and human rights throughout Africa, but twenty years after the end of *apartheid*, South Africa is still one of the most unequal countries in the world. Historically, its education sector has been used to 'discriminate against people on the grounds of colour alone and against the poor, weak, and the oppressed, instead of being used to throw open the doors of opportunity' (Hartshorne 1999, 2). When Nelson Mandela came to power in 1994, newly democratic South Africa sought to reverse this trend, but the education system still faces many of the same challenges: declines in student enrolment, a large shortage of trained teachers (Van De Berg 2007), racial disparities in examination scores (Fleisch 2008), and low quality mathematics and science education (World Economic Forum 2012, 325). Though hailed as a 'rainbow nation' with the second largest economy on the continent in 2014, it has been feared that South Africa's post-*apartheid* education system has lost focus, no longer adequately responding to social and economic inequality (Peet 2002; Tikly 2003; Christie 2010).

Addressing this putative transformation, we assess the degree to which social justice, democratisation, and human rights have been pushed aside in public education discourse by analysing annual reports and landmark documents of the Republic of South Africa's national Department of Education. Beginning with a discussion of Nelson Mandela's views on the purpose of education and the historical context in South Africa that has shaped education policy-making over the past two decades, we then examine shifts in official education discourse via quantitative content analysis (QCA). As discussed below, we find education has consistently been framed as critically important for economic development, but emphasis on the role of education in strengthening social justice, human rights, and democracy has declined notably in the twenty-first century.

MANDELA'S PERSPECTIVE ON EDUCATION

The method we apply to derive Mandela's general views on education stems from Fairclough's (1995, 2) 'three-dimensional approach' to critical discourse analysis,

which examines the content of spoken and written texts, the historical context in which they are situated, and the production, distribution, and consumption of those texts. We rely on discourse analysis of his public speeches and utterances – focusing on those which his own autobiographical works have identified as salient. As a major public figure, his writings and speeches are voluminous. Thus we selected those public statements that seem to us as representative of his general disposition towards education. Our aim was to identify major themes and areas of emphasis that Mandela expressed regarding education that have broad implications for the general direction of education policy, as opposed to a full exploration of all the various nuances in his educational thought and practice and personal experiences.[1]

As Fairclough (1995, 9) emphasises, 'textual analysis should be combined with analysis of practices of production and consumption'. Thus, we have concentrated on statements of Mandela that have been reproduced in biographical compilations designed to be consumed by the general public as distillations of his thought on various issues. We also situate his assertions within 'particular historical conditions' (ibid, 19) while acknowledging that discourses attributed to Mandela may have been part of a broader intertextual milieu in which 'texts are constituted from other already produced texts' (ibid) whereby often 'the speaker "forgets" that he or she is just the function of a discursive and ideological formation, and thus comes to misrecognize herself as the author of her own discourse' (Eagleton 2007, 196).[2] We also aimed to situate Mandela's views on education within the context of the larger twentieth-century South African social movement struggling for freedom and democracy. As opposed to advocating an individual-centred view of history, we see Mandela as part of a broader social movement which heavily influenced his own discourse. We thus impart social meaning to Mandela's discourse on education by recognising that it depended 'on the concrete context of utterance' (Eagleton 2007, 194).

The context in which Mandela's earliest views on education developed was under the unequal and racially-based system of *apartheid.* Prior to democratisation in 1994, South Africa was ruled for nearly five decades by the Afrikaner National Party whose racist *apartheid* policy segmented South Africa into inequitable 'African', 'coloured', 'Indian' and 'European' areas. Overtly institutionalising a 'divide and conquer' mentality, the prevailing hierarchy propelled white dominance over non-whites (Anderson 2002). Systematic denial of rights to movement, free speech, political organisation, and citizenship (Evans 1997; Seidman 1999; Seekings & Nattrass 2005) entrenched, normalised, and legitimised an oppressive relationship between the white minority and African majority (Abdi 2002). Under this system, first formalised in the 1953 Bantu Education Act, segregation and racial paternalism characterised education. Propagating the idea that the 'Bantu' (Black African) mind was different from supposedly superior white minds, the Act justified separate schools and a distinct curriculum segmented along racial lines (Seidman 1999). Public spending per child by the *apartheid* state was as much as eight times higher

for white education than for black education (Weber 2002a), and education for blacks was intentionally limited to inhibit their politicisation (Brewer 1986). Ultimately, the normative objective was to teach blacks 'to know their place as suppliers of cheap labour' (Weber 2002b, 280).

Confronting the dominant racialising discourse of the *apartheid* era, it is clear from Nelson Mandela's earliest speeches and writings, that he strongly opposed educational segregation on racial grounds. Rather, he viewed education as playing a crucial role in imparting character and underpinning democracy. In 1948, he was a co-author of the African National Congress (ANC) Youth League Basic Policy Document stressing the importance of education in giving pupils 'a high sense of moral and ethical values' and preparing them 'for a full and responsible citizenship in a democratic society' (Mandela 1990, 23). Under Mandela's urging, at the 1949 ANC National Conference, the party's 'Programme of Action' stressed the importance of education for the economic development of black Africans through the

> Establishment of national centres of education for the purpose of training and educating African youth and provision of large-scale scholarships tenable in various overseas countries … raising the standard of Africans in the commercial, industrial and other enterprises and workers in the workers' organisations by means of providing a common educational forum wherein intellectuals, peasants and workers participate for the common good. (Mandela 1991, 29)

As these passages illustrate, Mandela held that the function of education is to serve the well-being of the nation and peoples from all racial and class backgrounds, and he pragmatically saw two primary channels by which education would promote these goals: a) economic advance through imparting training and skills; and b) the fostering of social justice, human rights, and democracy through diverse forms of educational delivery and a progressive curriculum shaping values and character.

Mandela further elaborated on these points to the ANC (Transvaal) Congress in 1953 in reaction to the Bantu Education Act of the same year. He squarely rejected the *apartheid* ideology of racial hierarchy and stratification:

> You must defend the right of African parents to decide the kind of education that shall be given to their children. Teach the children that Africans are not one iota inferior to Europeans. Establish your own community schools where the right kind of education will be given to our children. If it becomes dangerous or impossible to have these alternative schools, then again you must make every home, every shack or rickety structure a centre of learning for our children. Never surrender to the inhuman and barbaric theories of Verwoerd. (Mandela 1991, 29)

Similarly, in 1957, when the *apartheid* government put forth the Separate Universities Education Bill, Mandela saw it as an attack on the well-being of the entire nation and non-Europeans in particular:

> The type of universities the bill envisages will be nothing more than tribal colleges, controlled by party politicians and based upon the doctrine of the perpetual supremacy of the whites over the blacks. Such colleges would be used by the government to enforce its political ideology at a university level … Not free inquiry but indoctrination is their purpose, and the education they will give will not be directed towards the unleashing of the creative potentialities of the people but towards preparing them for perpetual mental and spiritual servitude to the whites … For centuries, universities have served as centres for the dissemination of learning and knowledge to all students irrespective of their colour or creed. In multiracial societies they serve as centres for the development of the cultural and spiritual aspects of the life of the people. Once the bill is passed, our universities can no longer serve as centres for the development of the cultural and spiritual aspects of the entire nation. (Mandela 1990, 65–67)

Looking back at his personal story, Mandela had been impressed by the impact and agency of power by educated black Africans, even as a young boy at a primary school in Mqhekezweni witnessing the impact of missionary education in creating a new level of African elite (Meredith 2010, 9). After completing his primary and secondary education, Mandela was sent to the only university in the country accepting non-white students (African, coloured and Indian), Fort Hare University near Alice, Eastern Cape (Mandela 1994, 62). He studied for a Bachelor of Arts degree, taking courses in English, anthropology, politics, native administration and Roman Dutch law (Meredith 2010, 18). Mandela would not complete his bachelor degree at Fort Hare, being involved in a judicial conflict at the university regarding the election process of the Student Representative Council. However, after having moved to Johannesburg from Alice, Mandela resumed his tertiary education through a University of South Africa correspondence course and passed his exams in 1934 (Sampson 2011, 34).

With his BA degree completed, Mandela began his law studies at the University of the Witwatersrand as the only black African student (Mandela 1994, 127). He then joined the African National Congress (Mandela 1994, 136). Ultimately, Mandela's politics occupied his time to the point that he failed the final year of his law programme three times, and was denied the degree in December 1949 (Sampson 2011, 35). However, he did eventually go on to pass his qualification exams to practice law in 1953.

Nelson Mandela would not resume his education until his imprisonment as a political prisoner in 1962. Over the next three decades, from 1962 to 1990, Mandela did not make any major new pronouncements regarding education, but took time to further the education of fellow prisoners, as well as his own education. Under his guidance, Robben Island became a sort of informal 'university', as prisoners began to learn from each other, teaching topics as basic as literacy and numeracy to the political education of the resistance movement (Buntman 2003, 64). More formal, academic education was also encouraged by fellow prisoners, and facilitated through correspondence courses at institutions like the University of South Africa

(Bady 2014, 108). As a result, Robben Island transformed the lives of many, with liberating ideologies, skills, and degrees.

Like his fellow prisoners, Mandela similarly recommenced his correspondence courses, this time for a Bachelor of Laws degree (Mandela 1994, 463). When transferred from Pretoria to the prison on Robben Island in 1964, Mandela began teaching himself Afrikaans and other subjects, as well as working on his law degree at night. This was a crucial period not only for his own personal learning, but also in terms of contributing to the notion of Robben Island as a university—a collective praxis – and engaging in 'critical reflection' involving 'the deliberate uncovering and challenging of assumptions concerning power and the perpetuation of hegemony' (Brookfield 2008, 96).

Mandela once again spoke about the importance of education immediately after his release from prison by President F.W. de Klerk in 1990. In campaign speeches in the early 1990s, Mandela reiterated that education should serve racial harmony, democracy, and the well-being of the entire nation and he advocated integration of the country's segregated and unequal education systems. For example, in a 1993 speech commemorating the 17th anniversary of the 1976 Soweto Uprising he proclaimed 'education is very crucial for your future as it will enable you to better serve your communities and our country during the difficult period of reconstruction' (Mandela 2003, 241). A year later, Mandela was elected president and by 1996, South Africa's new Constitution included unprecedented support for human rights, political enfranchisement, civil liberties, commitment to national unity, and prohibitions against discrimination according to any identity (Berger 2003). Within this vein, the Constitution also guaranteed a positive right to education in Chapter 2, Section 29(1), stating 'everyone has the right, a) to a basic education, including adult basic education; and b) to further education, which the state, through reasonable measures, must make progressively available and accessible'.

As president, Mandela tried to balance the goals of redressing inequities and improving social welfare while pursuing cooperation and peace (Weber 2002b). Therefore, despite the magnitude of educational deprivation in the country among non-whites, radical restructuring was eschewed in favour of moderate reforms (Soudien 2007). Emphasis on gradual change while retaining harmony and pursuing economic development was evident in Mandela's 1997 speech at the Education Africa Presidential and Premier Education Awards:

> The power of education extends beyond the development of skills we need for economic success. It can contribute to nation-building and reconciliation. Our previous system emphasized the physical and other differences of South Africans with devastating effects. We are steadily but surely introducing education that enables our children to exploit their similarities and common goals, while appreciating the strength in their diversity … Let us join hands, as government, business, NGOs and communities, let us work together to educate our nation! (Mandela 2003, 252)

Likewise, in one of Mandela's last major pronouncements on education before stepping down as president, he reiterated his long-standing emphases of education upholding both the economy and democracy. These remarks made in 1998 at the opening of the Dalindyebo Senior Secondary School in Qunu highlight Mandela's approach to maintaining diversity in schooling both in types of providers and sources of educational financing:

> We can only make a better life for all South Africans if our young people get the skills and the training that we need to make our economy grow and make our democracy work. That is why our new education policy makes general education compulsory for all children … If our education system is to produce the capable, skilled and empowered people who can turn South Africa into the just and prosperous nation of our dreams, we must overcome the years of neglect which left most of our children without proper facilities for their education … Partnership between government, the private sector and communities is critical in the development of our country. No one sector on its own, least of all government can succeed in ensuring that we do improve the quality of life of our people. BP South Africa - and the local BP dealers in Umtata who have also contributed - have set a shining example of such partnership … You should also know that BP is not alone in our private sector, in joining hands with government and communities. Across our land there are clinics and schools which communities now have thanks to such projects. This is part of the investment back into our communities, especially those which are poor, which is needed to eradicate the legacy of *apartheid* and build the future of our country. (Mandela 2003, 255–256)

ASSESSING MANDELA'S LEGACY IN EDUCATION DISCOURSE

Our assessment of the Mandela legacy in education discourse concentrates on the extent to which official education discourse still centres upon major ideas associated with Mandela. Mandela's eagerness to support education for poor and disadvantaged children is evident in the fact that while president, 'he donated one-third of his salary to those children through the Nelson Mandela Children's Fund' (McKell 2015) which may be well-remembered and cherished, but our focus here is on whether his views of the role of education in society continue to remain at the forefront of discussions over education policy. From the above passages covering the period from Mandela's early political activism to the end of his presidential term, we have identified two prominent strands in Mandela's education thought. The first relates to *social justice* with emphasis on the positive contributions of education to advancing racial harmony, democracy, redressing injustice, and upholding human rights. The second strand involves a pragmatic focus on *economic benefits* made possible through education both at the individual level, whereby skills and training enhance employment opportunities, and at the national level, as an educated population contributes to national prosperity.

We now examine to what extent official South African education discourse has maintained these twin emphases over the past two decades. Our focus here is on broader shifts in public education discourse rather than on specific education policies. We believe that discourse is an important object of investigation in itself because it plays a significant role in shaping the very terms and referents that policy-makers resort to when making and re-shaping policies (Foucault 1972; Boden & Nedeva 2010; Shahjahan 2011). Discourses, like ideologies, are powerful because they de-contest concepts by defining terms in a certain way to the exclusion of other possible meanings. In this sense, they structure 'which conceptual combinations are available to be applied to the understanding and shaping of the political world' (Freeden 1996, 551). Moreover, participants in a discourse may deliberately deploy concepts in an effort to shape the thoughts and actions of a broad audience of intended consumers while many of these concepts themselves are actually inherited unconsciously from a specific historical and social milieu (Freeden 2003, 11). Discourses and the ideological strands embedded within a discourse impact public policy because they can a) change how people perceive an issue and the language used to describe it, b) frame agendas for action, and c) alter how groups perceive their interests (Jolly, Emmerij & Weiss 2009, 42).

In our view, discourse is both an agent and a structure in constant flux. It is shaped by broader political, economic, and social contexts while simultaneously shaping them. Whereas some theorists like Foucault (1972) see reality as constituted by discourse, we take an intermediate position that discourse significantly shapes but does not in itself constitute reality, as some (but not all) interests appear to truly exist prior to discursive formations. As Eagleton (2007, 214) remarks, 'why, in any case, should someone become a socialist, feminist or anti-racist, if these political interests are in no sense a response to the way society is? … Are we being asked to believe that the reason some people vote Conservative is not because they are afraid a Labour government might nationalise their property, but that their regard for their property is *created* by the act of voting Conservative?'.

Since discourses cannot be fully separated from social infrastructures and institutions (Eagleton 2007, 199), there will always be significant ideological effects present within a discourse in the explicit and implicit messages of a text. As Fairclough (1995, 5) points out, **'**what is absent from a text is often just as significant', therefore it is worthwhile to pursue a comparative form of textual analysis 'which allows for a systematic focus upon absences'. As Foucault (1972, 25) notes, 'the manifest discourse, therefore, is really no more than the repressive presence of what it does not say'. As the meaning of a text always varies 'from one communicative situation to the next' (Eagleton 2007, 194), textual analysis should also include 'analysis of the *texture* of texts, their form and organisation, and not just commentaries on the "content" of texts which ignore texture' (Fairclough 1995, 4).

Our assessment of Mandela's legacy in official education policy discourse therefore employs content analysis of South African Department of Education

documents over the period of 1990 to 2012. Leveraging the advantages of a mixed methods research design we combine two approaches (Cresswell 2009). The first method, qualitative discourse analysis, identifies dominant narrative themes in particular texts and changing textual emphases and justifications over time. As Alexander George (1959, 23) points out:

> In order to make valid inference of intended meaning in each specific instance of communication, the investigator also takes into account the situational and behavioural contexts of the communications … to determine which of the possible meanings of the words in question the speaker intends to convey in the instance at hand and the precise shading of his intended meaning.

We then apply a second method, quantitative content analysis (QCA). This allows for the classification and measurement of content, particularly keywords indicative of and derived from a certain ideology or perspective, in a precise and numerical form (Kaplan & Goldsen 1949). This enables us to examine the relative frequency of words, concepts, and topics as an indication of the degree to which they reflect issues of greater or lesser emphasis in a text (Starosta 1984). Several strengths of this procedure are reduced interpretative burden in coding and a high degree of transparency, reproducibility, and reliability in inter-coder and intra-coder agreement (Weber 1990).

Methodologically, the integration of these two forms of content analysis permits a systematic evaluation of a document's ideational content as has been applied elsewhere to study the education and development policy discourse of organisations like the World Bank (Joshi & Smith 2012; Joshi & O'Dell 2013). Scholars have also applied content analysis to studies of South African education. For example, Weber (2002a) conducted a qualitative review of education department documents concluding that the South African Schools Act (SASA) of 1996 was the beginning of a transition towards decentralisation, privatisation, and other manifestations of neo-liberalism in the education sector. Tikly (2011, 88) similarly applied content analysis to the 2009 Educational Roadmap: Policy Brief #9, finding evidence of 'a further shift in South African education policy towards the take up of human capital themes including more recent trends linking the quality of education with economic growth'.

Our aim here is to build off these previous studies to assess broader discursive shifts over time within South African ministries of education by analysing the annual reports of those education departments tasked with administering basic (primary and secondary level) education to the majority of the population. We chose annual reports as they are released almost every year. This permits us to capture the timing of discursive changes not possible when examining only a single document or a more limited time-period. These reports are also publicly available summary statements serving as useful indications of what the education ministry prioritises and wants to communicate to the public. Because annual reports follow roughly the

same format from year to year, changes in emphasis and rhetoric become readily apparent. Annual reports also serve as a particular semiotic form or *genre* of text that is homogeneous in nature. As Fairclough (1995, 8) notes: 'A relatively homogeneous text is relatively consistent semantically and formally – a consistent construction of relations between text producer and audience through the text for instance may be partly realized through consistencies of modality'.

We covered seven annual reports issued in three eras of contemporary South African history: late *apartheid,* liberation, and post-liberation. We examined the 1990 annual report from the Department of Education and Training (1991) issued while F.W. de Klerk was still president; the first two annual reports, 1994/95 and 1996, issued by the Department of Education (DoE 1995a; 1996) under President Nelson Mandela; one report each from the beginning and end of President Thabo Mbeki's term, 2001/02 and 2007/08 (DoE 2002; 2008a); the first report at the start of Jacob Zuma's presidency, 2008/09 (DoE 2009), as well as the more recently issued 2011/2012 report from the Department of Basic Education (2012). Additionally, we analysed the rhetoric and central themes of four important landmark policy documents in South Africa impacting education over this period: the Reconstruction and Development Programme (RDP) (RSA 1994); the South African Schools Act (SASA) (DoE 1996); the Growth, Employment and Redistribution (GEAR) policy (RSA 1996); and the National Qualifications Framework (NQF) Act (DoE 2008b). Each of these documents reflects major pronouncements or policy shifts impacting educational governance that have been crucial in setting the tone for the government's overall national education policy framework.

QUALITATIVE ANALYSIS

Our qualitative discourse analysis begins with the late *apartheid* era 1990 annual report issued by the Department of Education and Training (DET) several years prior to Mandela's election to the presidency. Official educational thought and practice at the time emphasised segregation and was opposed to equalising educational resources and opportunities to all sections of the population. Although the DET (1991, xxvi) was 'responsible for the provision of education to Black people', its report blamed unsatisfactory educational delivery not on the department or the government, but on [black] Africans themselves, stating for example, 'it is all the more tragic that the Department had to spend so much precious time and energy attempting to reduce unrest, and to disciplining pupils and staff' (DET 1991, 6). Likewise, student unrest, dating back to the Soweto Uprisings of 1976, was not portrayed as reflecting genuine demands by black students for an adequate education. Rather, black students were depicted as troublesome pawns and 'victims of adults' power struggles and political aspirations … pupils and teachers who behave illegally will be dealt with firmly' (DET 1991, 7). In the same vein, the report dismissed the idea that useful

recommendations for improving the situation had been put forth by the community, blaming black society for producing no 'meaningful proposals' (DET 1991, 8).

The 1990 report also rejected the idea of universal education for the sake of efficiency, stating that students 'who do not really stand a chance of being successfully educated in certain standards are overcrowding classrooms' (DET 1991, 12). The DET (1991, 10) also claimed it was 'incapable at this stage of justifying greater government spending on education, [so] the existing resources must simply be better utilized'. Rather than guaranteeing children an education, the report shifts this duty elsewhere: 'It is in principle a parental responsibility to provide children with an education' (DET 1991, 18). Likewise, the task of improving educational quality, particularly in maths and physical sciences, was assigned to the private sector, releasing the state from the 'burden' of teaching hard sciences to black students.

As *apartheid* gave way to democracy, however, a monumental shift in education discourse becomes highly visible. The first major policy document of Mandela's ANC government, the 1994 Reconstruction and Development Programme (RDP), devoted an entire chapter titled 'Developing Our Human Resources' to schooling; it condemned the 'fragmentation along racial and ethnic lines, and [saturation] of racist and sexist ideology and educational doctrines of *apartheid*' whereby 'the majority of the population was neglected, distorted and suppressed' (RSA 1994, sec. 3.1.1). The document strongly criticises the fact that 'vast disparities exist between black and white provision, and large numbers of people – in particular, adults (and more especially women), out-of-school youth, and children of pre-school age – have little or no access to education and training' (RSA 1994, sec. 3.1.1).

The RDP also mentions the newly 'democratic government' as a positive influence and proposes a progressive focus within education to advance socio-economic development and equitable change;

> The RDP integrates growth, development, reconstruction and redistribution into a unified Programme. The key to this link is an infrastructural programme that will provide access to modern and effective services like electricity, water, telecommunications, transport, health, *education and training for all our people*. This programme will both meet basic needs and *open up previously suppressed economic and human potential* in urban and rural areas. (RSA 1994, 6, italics added)

Overall, the discourse of the RDP repeatedly invokes images of progress, redress, and the rights of South African learners with considerable emphasis on self-development, 'alongside ensuring that basic needs are met, the society is democratised and the economy grows' (RSA 1994, sec 3.2.1). The document also treats education as a 'public good', beneficial to both the individual and the community, available to all, driven by a strong state mechanism, and equitable according to need (Ball & Youdell 2007). The document suggests the new ANC government planned to pursue strong investment by the state in public education and improving social opportunities

through equal access to quality education, features common to both developmental liberal democracies and social democracies (Joshi & Navlakha 2010; Joshi 2013).

The first annual report of the newly renamed and unified Department of Education (DoE) (1994/95) under President Mandela mirrors this discourse. The first lines of its introduction, which 'happily consigns to the demolition heap the bitter legacy of *apartheid* education' (DoE 1995a, 10), call for education to foster a unified nation and a democratic government with as many invested stakeholders feeling heard as possible to maintain stability and legitimacy. The intention was to reverse *apartheid's* legacy and to 'bring redress, establish quality, open the doors of opportunity, enable a true culture of learning and teaching to take root, strive for ever-higher levels of performance and achieve all this cost-effectively and within sustainable budgetary limits' (DoE 1995a, 9). While there was a clear sense of the difficult tasks awaiting the department, the new goal for education policy was lofty: to 'be just and equitable; be open and accessible; redress past inequalities; improve quality of delivery; encourage independent and critical thought; and celebrate the diversity of cultures, languages and religious traditions' (DoE 1995a, 19).

The report also expresses the need to greatly expand the department's reach; 'transformation of the education and training system involves moving from the provision of education for an elite to education for all, *ensuring that all people* – young and old, men and women, urban and rural dwellers – *have access to education and training on a lifelong basis*' (DoE 1995a, 10, italics added). The report's discourse also closely resembles what Rioux and Pinto (2010) identify as a human-rights based approach to education including explicit attempts to integrate language alluding to cultural concerns, youth interests, and those marginalised by race, gender, ability, or age. Reflecting Mandela's long-standing vision of education fostering a unified nation, education was depicted as a crucial means for 'the creation of a common citizenship and nationhood, so leading to the eradication of divisions based on race, ethnicity, creed, colour and gender' and 'building a peaceful, prosperous and democratic South Africa' (DoE 1995a, 10).

The 1996 annual report issued the following year retains many of these same emphases while acknowledging the difficulties of establishing a fully centralised education department, bringing together previously disparate departments cohesively and incorporating as many stakeholders as possible. The Minister of Education, S.M.E. Bengu, directly stated the department's intentions:

> I wish to assure all South Africans that the new education system is being professionally planned and carried out, *democratically governed*, and effectively managed; that the structures and strategies developed will be such as to enhance quality; and that the *resources will be equitably distributed over the population as a whole.* (DoE 1997, 18, italics added)

The report also defends the 1996 South African Schools Act (SASA), discussed below, which aimed to increase institutional access to education as compatible with a human rights-based approach to education. In discussing programmes and curriculum in its

section on 'Further Education and Training' (referring to secondary and transitional education), the primary focus is to 'prepare learners for the workplace, not only in the traditional formal sector, but also to develop entrepreneurial skills among learners' (DoE 1997, 22). Here, emphasis on entry and competitiveness in the market reflects economic motives for expanding education, one that Mandela had likewise championed back in the 1940s and 1950s. Overall the report reflects Mandela's twin emphases on education for social justice and economic development. On the one hand, it stresses progressive redress of *apartheid*, human rights, the creation of stable governance, and the rule of law. On the other hand, it frames education as crucial for enriching the national economy.

We also examined two landmark educational documents issued that year. The first, the South African Schools Act (SASA) of 1996 was one of the most comprehensive reforms in the early years of ANC rule. The SASA, which 'intended to democratize education and school practice' (Duma 2009, 135), gave a significant amount of autonomy and power to local school governance, particularly parent-participant groups. Though currently educational decentralisation is frequently associated with neo-liberalism, Mandela's government was arguably guided by the idea that decentralisation would facilitate educational democratisation. As mentioned earlier, Mandela (1991, 29) had always felt strongly that African parents should be able 'to decide the kind of education that shall be given to their children'. Though the SASA has met considerable criticism by proponents of centralisation, it has also been considered the 'government's most specific plan to date for equitable funding of public schools' (Stenvoll-Wells & Sayed 2012, 100).

A second document, the Growth, Employment and Redistribution (GEAR) policy of 1996, however, diverges from the previously discussed documents. GEAR displays more of a neo-liberal discourse, addressing government policies in all sectors including education as a 'key determinant of long-run economic performance' (RSA 1996, 15). In particular, GEAR called for mechanisms such as decentralisation, expanded qualifications testing, increased private sector involvement, and programmes to 'strengthen the relationship between educational institutions and industry' (RSA 1996, 13). Whereas the early education discourse of Mandela and his ANC government stood on two legs, one representing social justice and human rights, and the other representing economic development, GEAR focused almost exclusively on the latter, foreshadowing the imminent decline of the former.

We then turn to the 2001/02 DoE annual report, the first one issued under President Thabo Mbeki, Mandela's appointed successor. Consistent with a human rights-based approach to education, a large section of the report highlights equity for the most marginalised and redressing of past injustices through the expansion of adult literacy programmes. Education is treated here as a multiplier of other human rights; as access to education for adults is guaranteed, other rights and liberties are better understood, demanded, and exercised. The report also acknowledges the country's

HIV/Aids epidemic and the DoE's responsibility to respond to it. As in the Mandela era reports, there is much emphasis on the South African government creating a 'nation' and the idea that 'education is not only pivotal to economic prosperity but is an important driver to achieve the priorities of government' (DoE 2002, 8). The report also discusses the need for infrastructure, especially buildings, water, and sanitation in rural areas. However, most references to infrastructure are within the context of school safety, along with brief mentions of the serious issues of sexual and drug abuse. Overall there is admittedly less focus on human rights than in the Mandela era reports, as the most prominent theme in the report is nation-building and national cohesion.

Several years later, in the last DoE (2008a) annual report issued during the Mbeki presidency, we found a further decline in human rights-oriented discourse. While the department's primary mandate was still defined by the constitutional right to education and various commitments to education in international protocols, there was a strong emphasis on the need for quality service within educational delivery and support from the private sector and international development agencies as partners, something not mentioned in previous reports we analysed. In the report's 'Message from the Minister', there is a continued sense of education's role in nation-building and the department's aim of 'focusing on promoting civil participation and responsibility amongst young people, evoking national pride and unity, as well as promoting social cohesion and nation-building' (DoE 2008a, 10). Other priorities included increasing the number of 'no-fee' public schools as well as expanding nutrition programmes and improving teaching and learning within disadvantaged communities, particularly rural ones. A need to spend more money on the teaching of mathematics and sciences was also identified to 'respond to the socio-economic needs of this country' (DoE 2008a, 13). Although not as strong as in the immediate post-liberation period, we do see a continuation in this report of the education for social justice theme evoked by Mandela and attempts to directly link this discourse with policy reforms.

We also studied the discourse of the National Qualifications Framework (NQF) Act, a landmark education document issued in 2008. The NQF was an updated version of the 1995 Qualifications Authority Act, a comprehensive outcomes-based educational structure which aimed to enhance learning achievement, expand mobility within education, and improve the quality of education to 'accelerate the redress of past unfair discrimination in education, training and employment opportunities; and thereby contribute to the full personal development of each learner and the social and economic development of the nation at large' (DoE 1995b, 2). The NQF maintained the tradition of Mandela's education discourse concerning empowerment, democratisation and human rights. For example, the notion of a democratic model of education was salient in the Act; it emphasised the inclusion of various educational constituencies such as teachers, professors, adult learners, special needs students,

and groups previously unrepresented in *apartheid* educational governance (De Clerc 2008). The NQF also reiterated the objective of education to support 'the full personal development of each learner and the social and economic development of the nation at large' (DoE 2008a, 6).

At the same time, the NQF increasingly reflected economic motivations behind education as its outcomes-based education policies emphasised competitive testing and preparing students for the workplace; 'learners … are more inclined to improve their skills and knowledge, as such improvements increase their employment opportunities … [and] enhance the functional and intellectual capability of the nation, thereby increasing our chances for success in the global community' (DoE 2008a, 13). The NQF also foreshadowed the DoE's restructuring the following year into two separate ministries, a Department of Basic Education (DBE) and a Department of Higher Education and Training (DHET). The 2008 NQF conveys the sense that the government placed a greater priority on economic goals than fostering a human rights-oriented approach to education, and several authors have suggested that the overt presence of market concerns in the report were consonant with an increasing move towards neo-liberalism, including the importation of techniques and recommendations from the corporate sector to drive South African education (Verger, Novelli & Altinyelken 2012).

We then examined two reports issued under President Jacob Zuma amidst increasing discussion of South Africa's potential to become a democratic 'developmental state' as a strategy to achieve both the Millennium Development Goals and sustained rapid economic growth (Joshi 2011; 2012). The 2008/09 report jointly issued by DBE and DHET iterated the importance of establishing the rule of law and government legitimacy through legislative mandates and creating 'a framework for transformation in education and training' (DoE 2009, 15). The report advocates substantial financial investments into education, 'so as to expand skills and capacity in order to support economic growth and global competitiveness … [and to] educate and train professionals who would be able to respond to the socio-economic needs of the country' (DoE 2009, 11). The section containing a message from the two education ministers discusses the need to deal with unsafe environments in schools, illiteracy, infrastructure, and remedial adult education. A large portion of the ministers' message focuses on the economic benefits of education, but there is also a discussion of the relationship between the department and UNESCO and how better to integrate their ideals and practices.

Lastly, the 2011/2012 DBE annual report contains a similar discourse. The report emphasises values of excellence, teamwork, learning, innovation, and assessment, while conveying a defensive tone regarding the lack of infrastructure and recent book delivery disasters (DBE 2012, 23). Interestingly, there is also an awkward defence, reminiscent of the 1990 DET report, of half a million students being out of school, with blame placed largely on the age and ability of students. Regarding different

partners within educational work, the business sector is thanked as a collaborator to the state's work and a historic partnership between the department and organised labour groups to increase the number of stakeholders committed to the quality of basic education is briefly mentioned. The report also expresses qualified pride in certain achievements, such as the lack of organised labour demonstrations, strikes, and accusations of corruption during that fiscal year.

Furthermore, the report mentions the goal of gender equity and, to a lesser extent, socioeconomic status as a determinate of quality and achievement in schooling. However, there is little discussion of racial aspects of educational progress. Instead there is an admittance of the severe quality gap between wealthy regions and former Bantu homelands in rural areas historically dependent on 'subsistence agriculture, animal husbandry and remittances from absent migrant workers in towns or on mines. Such districts probably constitute the majority of education districts in South Africa' (DBE 2012, 35). Lastly, the 2011/12 report does occasionally contain progressive and human rights-oriented rhetoric in line with Mandela's emphasis on education for social justice, but the justification for education is predominately framed in economic terms with an increasing focus on the private sector and standardised testing.

QUANTITATIVE ANALYSIS

To quantitatively assess the Mandela legacy in official education discourse, we tabulated keyword counts from the above-mentioned education reports. Starting with the social justice frame, we identified relevant keywords and counted their frequency as a percentage of all words in each document. As shown in Figure 1 below, during the first half of Mandela's presidency between 1994 and 1996, social justice-oriented language based on the idea of pursuing 'equality' and atoning for 'unequal' conditions and 'inequality' featured prominently in official education discourse. Such words were heavily emphasised in the RDP, SASA, and 1994–95 annual report (AR). However, their usage declined significantly during the 2000s and only slightly increased after Jacob Zuma took office. The word 'democracy' follows a similar trend, experiencing a major decline after having been mentioned repeatedly in the RDP and 1994–95 annual report as shown in Figure 2. This pattern is basically the same for the terms 'empower' and 'redress', which along with mention of '*apartheid*' were major components of official education discourse in the first half of Mandela's presidency (between 1994 and 1996) but which have since dropped off precipitously, though 'redress' reappears as an important concept in the 2008 NQF (See Figure 3). In summary, the framing of education within a social justice discourse is not nearly as strong today as when Mandela first became president.

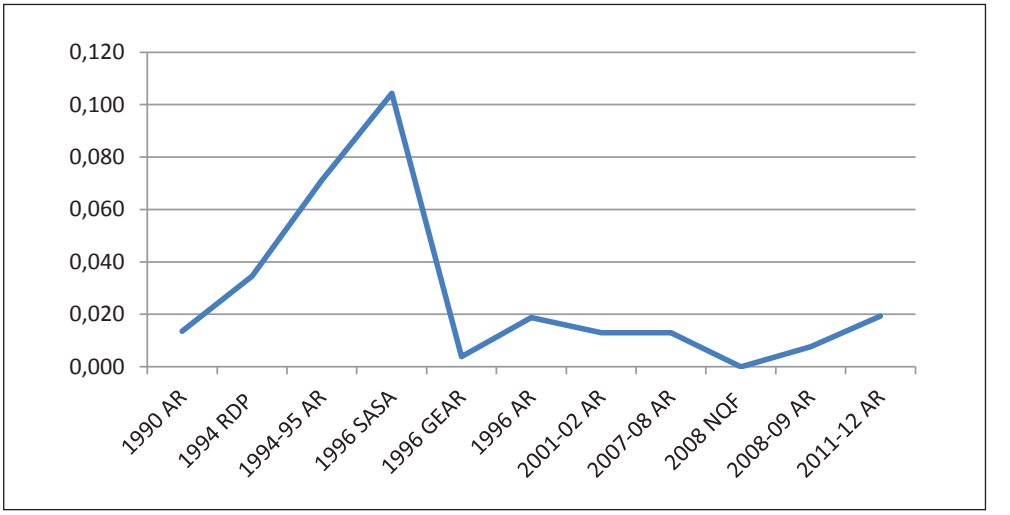

Figure 1: Frequency of the word 'equal' in education reports

**The figure represents the frequency of the term 'equal' including words such as 'unequal' and 'inequality' as a percentage of all words in these documents.*

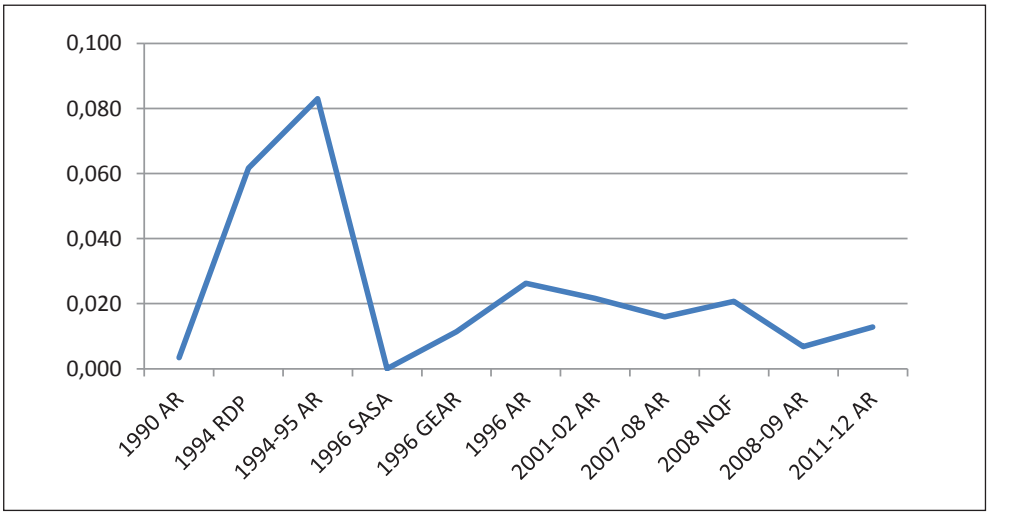

Figure 2: Frequency of the word 'democracy' in education reports

**The figure represents the frequency of the term 'democracy' including words that begin with 'democra' as a percentage of all words in these documents.*

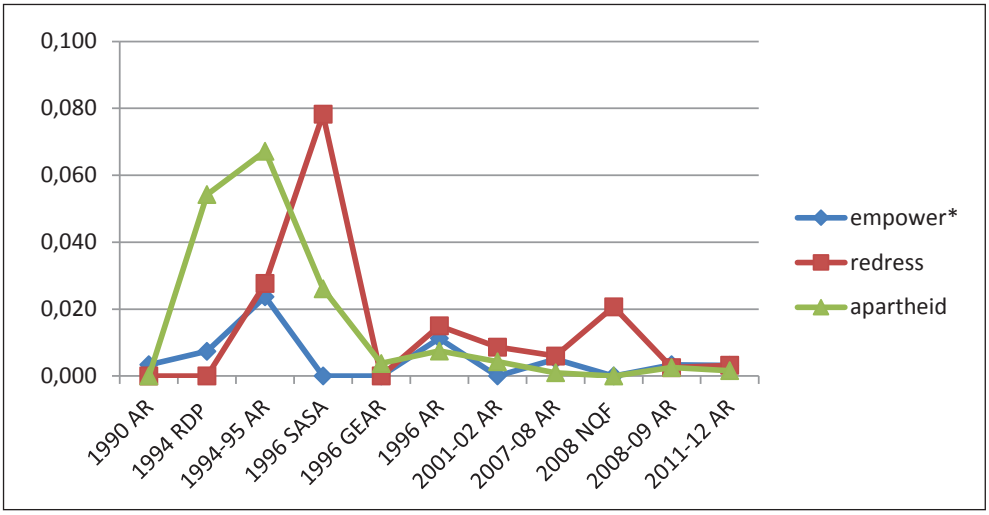

Figure 3: Frequency of the words 'empower', 'redress' and '*apartheid*' in education reports

**The figure represents the frequency of the terms 'redress', 'apartheid', and 'empower' including words such as 'empowering' and 'empowerment' as a percentage of all words in these documents.*

Turning to Mandela's second strand of emphasis concerning the economic benefits of education, we see much greater continuity over time as the reports consistently advocate education as a means to economic development. Relative to social justice themes, this framing has increased over time and we see an increasing use of words like 'capital' and 'assess' in education reports, suggesting a focus on building human capital through the school system and paying more attention to assessing progress in this regard through student and school evaluations. This is clearly evident in Figure 4. Whereas neither 'capital' nor 'assess' feature in the 1994 RDP, the frequency of these two words has increased significantly over time in annual reports and they appeared three times as often in the 2011–12 DBE report as in the 1994–95 DoE report.

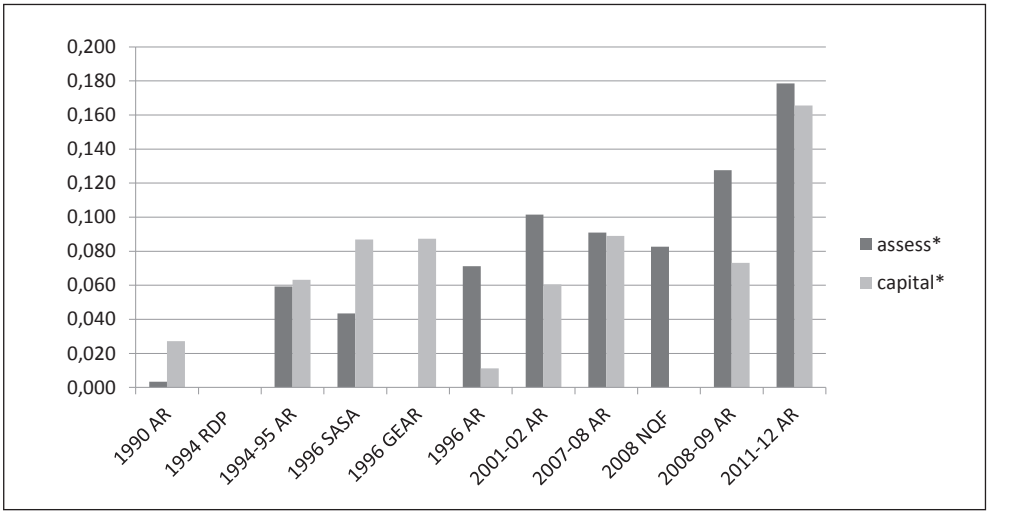

Figure 4: Frequency of the words 'assess' and 'capital' in education reports

**The figure represents the frequency of words containing 'assess' and 'capital' as a percentage of all words in these documents.*

Lastly, we examined a set of 'neo-liberal' keywords as some scholars have argued that Mandela planted the seeds for neo-liberalism in the mid-1990s by permitting fee-paying schools. For example, Weber (2002b) noted that South Africa experienced a considerable 'shift to the right' shortly after democratisation as reflected in the prominence of neo-liberal economic policies. While this may be true to some degree in terms of policy, we actually did not find many neo-liberal terms frequently appearing in the documents we analysed. While mentions of certain social justice-oriented words like 'redress', 'equality', and 'empower' have declined in education reports over the past two decades, many words heavily associated with neo-liberal discourse in countries like the USA and the UK such as 'choice', 'market', 'individual', 'decentralise', and 'freedom' (Beder 2009), have been relatively absent from the ministry's education discourse. These five words rarely appeared in the reports we examined with the lone exception of the 1996 GEAR where the word 'market' appears frequently (see Figure 5). Likewise, as shown in Figure 6, while relative emphasis on the public sector has declined vis-à-vis the private sector in South Africa, since the democratic transition the word 'public' has continued to appear more often than 'private'.

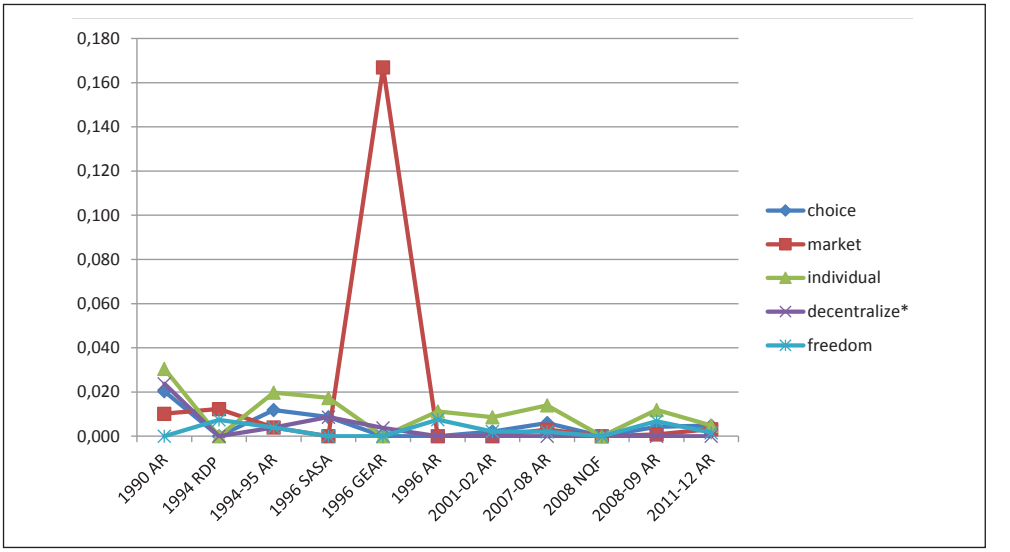

Figure 5: Frequency of neo-liberal keywords in education reports

**The figure represents the frequency of these terms as a percentage of all words in these documents. 'Decentralise' includes words starting with 'decentralis'.*

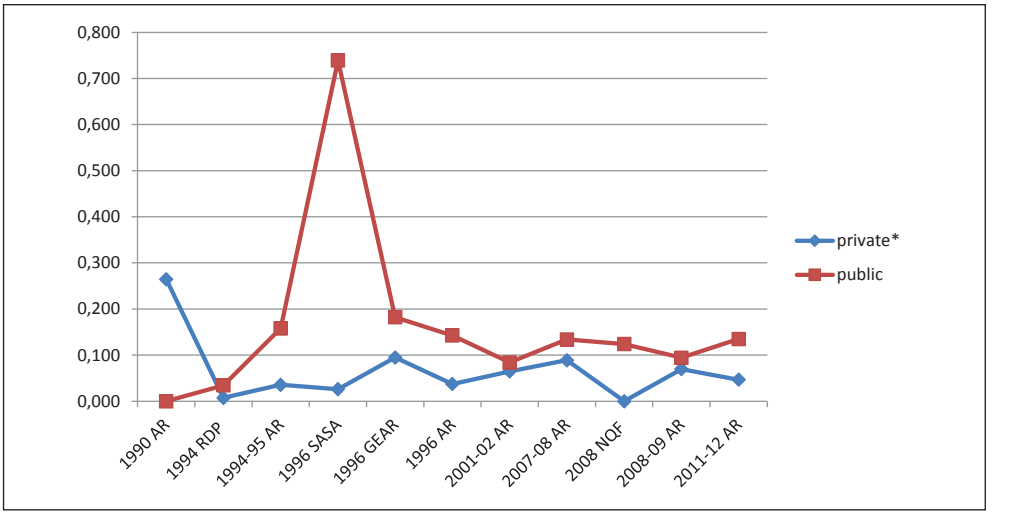

Figure 6: Frequency of the words 'public' and 'private' in education reports

**The figure represents the frequency of these terms as a percentage of all words in these documents. 'Private' includes words starting with the base 'privat'.*

CONCLUSION

As our qualitative and quantitative content analysis has revealed, after *apartheid* we saw a transformation in education ministry discourse towards increasing utilisation of a *social justice* framing with emphasis on empowerment, redressing injustices from *apartheid*, fostering democracy, and upholding human rights. While the 1990 *apartheid* era report advocated a (racially) stratified approach to education, our analysis of the 1994/95 and 1996 reports while Mandela was president as well as the RDP and SASA confirm that public education discourse in the early post-*apartheid* period was framed under human rights rhetoric (Sayed & Ahmed 2011). In that era, the annual reports' discourse mirrored what Enslin and Pendlebury (2000, 433) found to be a 'strong emphasis on rights in post-*apartheid* education' embodying the principles of non-repression, non-discrimination, and 'outcomes-based education' (Fataar 2006). In particular, curriculum reform, rights discourse, rights consciousness, and democracy were promoted in education based on the idea that

> A strong human rights culture should form the basis of South African society in general and the educational environment in particular. Thus these outcomes seek to develop an understanding of the principles of a respect for human rights and their relevance to life. They aim to develop in learners the values, consciousness and competencies that are required for effective participation as responsible citizens of a democratic society. (Enslin & Pendlebury 2000, 437)

After Mandela left office, with the rise of ANC hegemony in the 2000s, we observed that education discourse shifted more towards *economic* imperatives and justifications. Foreshadowed by the 1996 GEAR, an education discourse motivated by potential economic benefits coincided with declining social justice rhetoric. More recently, however, as is evident in the 2008 NQF and annual reports since then, we see a slight return to social justice framing with emphasis on redress in official education discourse.

While the longer-term impacts of Mandela's thoughts on educational discourse are still uncertain, in terms of educational outcomes it is obvious that there are still serious gaps between formerly black and formerly white schools in terms of service delivery and quality, along with a persistence of informal racial and class divisions amongst schools as was the case under *apartheid*. For example, Fiske and Ladd (2004, 81) have argued that educational reforms have 'greatly exacerbated differences in the quality of education available to middle class students compared to that available to the majority of poor Blacks'. Nicholas Spaull has come to a similar conclusion:

> South Africa is still a tale of two schools: One which is functional, wealthy, and able to educate students; with the other being poor, dysfunctional, and unable to equip students with the necessary numeracy and literacy skills they should be acquiring in primary school … Without acknowledging and understanding the existing inequalities in South African primary

> education, particularly the extent and nature of those inequalities, the current patterns of poverty and privilege will remain unabated. (Spaull 2013, 444)

While assigning responsibility for current educational deficits is complex, Spreen and Vally (2006, 361) see many educational inequalities, especially along racial lines, as a legacy of *apartheid* within the current social environment, but post-liberation ANC governments have also tended to privilege economic objectives over substantial redress and we found evidence of this in discourse as well. Arguably, much of the party's social justice and human rights rhetoric and sentiment have been limited by budget constraints and pressure to avoid radical change in exchange for stability.

As a proponent of peace and stability after becoming president, Mandela thought it would be pragmatic not to alienate white elites so as to avoid capital flight. Yet, one of the most divisive issues today in South African education remains the continuation of school fees. As significant costs to students and their families, they undermine the ideal of free universal primary education enshrined in the Universal Declaration of Human Rights. As president, Mandela permitted the retention of fee-paying schools, presumably with the aim of not antagonising privileged groups, but in effect this policy has perpetuated class-based and race-based segregation within the education system. As a result, Dieltiens et al. (2004, 6) have argued, 'in schooling, the hidden hand of the market has become the veiled regulator of policy. The strain on the education budget and the continued reliance on user fees has seen a yawning gap between rich and poor schools, a policy working for those who can pay for it'.

As of early 2014, however, the current ANC government has sought to reduce the widespread practice of school fees while slightly reviving some of the social justice discourse prominent at the time of democratisation. Expanding no-fee schools to cover the poorest students can be seen as a positive step, but the fact that the government did not take more serious measures to completely eliminate both legal and illegal school fees has been seen by some as signalling a *de facto* endorsement of practices that widely discriminate against 'price-sensitive groups (e.g. females and the poor)' and which is 'contrary to the rights-based assertions in the constitution and SASA regarding education provisions for all' (Nordstrum 2012, 71, 83). Inattention to guaranteeing all children a quality education in practice has also led the non-profit organisation Equal Education to sue the government in 2012, demanding the DBE and its Minister of Basic Education Angie Motshekga establish minimum norms and standards for school infrastructure. This occurred despite the government's legal obligation to establish minimum norms as outlined in section 5a(1) of the South African Schools Act. While this case indicates that there is space for democratic engagement of civil society with the government of South Africa and the courts have indeed decided in favour of Equal Education requiring the state to establish and maintain compliance with minimum norms and standards (RSA 2013), one might have thought that education would have been a higher priority for the government in the first place.

In conclusion, through systematic analysis of public education documents we have made an assessment of the Mandela legacy in official education policy discourse. We found Mandela supported formal and informal education both as a means to economic development and as a means to cultivate human rights, democracy, and social justice more broadly. While these twin emphases were both strong during his presidency in the mid-1990s, an economy-oriented discourse in the education sector is much more prominent today than an emphasis on social justice, human rights, and democracy. The social justice and human rights discourse we associate with Mandela during the struggle for freedom and democracy has at this moment gone into decline. Not only has effective ideological de-contestation in favour of social justice not yet occurred, but the recession of social movement pressure has seemingly offered more space for economistic discourses to fill the void. Yet, Nelson Mandela was a leader who saw education as both intrinsically and instrumentally valuable for democracy, nation building, human rights, and solidarity, and not only as a tool for building human capital. A return to such balanced wisdom might indeed be fruitful for the future of South Africa and the rest of the continent. As Mckell reminds us,

> symbols of honour bestowed on Mandela are important reflections of our respect and admiration for this great man and what he has achieved. But what is more important is how we in our society reflect his vision in our personal, professional, and public lives; how we commit to building an inclusive society free from all forms of discrimination. That is the true legacy of Nelson Mandela. (McKell 2015)

ENDNOTES

1. Our approach is influenced by Fairclough (1995, 7) for whom 'discourse analysis is analysis of how texts work within sociocultural practice. Such analysis requires attention to textual form, structure and organisation at all levels; phonological, grammatical, lexical (vocabulary) and higher levels of textual organisation in terms of exchange systems (the distribution of speaking turns), structures of argumentation, and generic (activity type) structures'.
2. Though it is beyond the scope of this study, one might further hypothesise that Mandela's words exemplify changing discourses around education and non-racialism within the African National Congress as a whole.

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ASSESSING VERBAL FUNCTIONING IN SOUTH AFRICAN SCHOOL BEGINNERS FROM DIVERSE SOCIOECONOMIC BACKGROUNDS: A COMPARISON BETWEEN VERBAL WORKING MEMORY AND VOCABULARY MEASURES

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ABSTRACT

This study investigated whether measures of verbal working memory are less sensitive to children's socioeconomic background than traditional vocabulary measures. Participants were 120 school beginners, divided into high and low socioeconomic groups. The groups contained equal numbers of English first-language and second-language speakers. All were being educated in English. The results suggest that socioeconomic status accounts for considerable variance in vocabulary measures, while it explains only very small amounts of variance in working memory measures. In addition, the high socioeconomic

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group performed significantly better on the two vocabulary tests relative to the low socioeconomic group, while there were no significant differences between the groups on all but one of the four working memory tests. Working memory assessments appear to be less influenced by environmental factors and may constitute fairer forms of evaluation for children from differing socioeconomic backgrounds. As such, working memory measures may be a valuable supplement to psychoeducational assessment batteries.

Keywords: psychoeducational assessment, socioeconomic status, vocabulary, working memory

INTRODUCTION AND BACKGROUND

One of the greatest challenges in psychoeducational assessment is the fair testing of children from diverse backgrounds. Unequal opportunities to acquire knowledge will often manifest as lowered performance in such testing situations, which may not reflect the child's actual learning ability. The greatest source of such unequal opportunities arises from differences in socioeconomic status (SES) (Brooks-Gunn and Duncan 1997; Gottfried, Gottfried, Bathurst, Geurin and Parramore 2003). The challenge of how to provide fair assessment opportunities for socioeconomically diverse children is not confined to developing countries, but has become a universal concern as a result of globalisation and the rapid movement of previously disadvantaged individuals to urban, Western environments.

In South Africa, where this study was conducted, there is a stark discrepancy between wealthy and poor, as evidenced by one of the highest Gini coefficients in the world (63.1, where 0 represents perfect equality and 100 implies perfect inequality) (The Human Development Report 2013). South African children from low SES circumstances typically attend government-funded schools infamous for inadequate curricular activities, teachers' unprofessionalism and absenteeism (Fleisch 2008). On the other hand, children from high SES circumstances generally attend 'former model C' schools (which were reserved for white pupils under apartheid) or privately funded schools, and are likely to have access to stimulating home and school environments. The issue of educational systems, which differ vastly in quality (where access to quality is determined by SES), is further complicated in South Africa by language issues. Across all types of educational systems, the majority of South African children are educated in English, although this is the home language of a minority (9.6%) (Roodt 2011). In addition, the majority of professionals accessed by schoolchildren (speech therapists, occupational therapists, psychologists) speak English only and are reliant on tests that are generally only available in English (Laher and Cockcroft 2013).

The first year of formal schooling is often the first time that educational difficulties become apparent and the majority of psychoeducational assessments are conducted at this point (Nores and Barnett 2010). These assessments are of critical importance for the child's scholastic career and will determine the necessity for, as well as the type of, intervention that the child should receive. Therefore, it is vital that such assessments are a fair representation of the child's basic learning abilities.

Comprehensive psychoeducational batteries aim to evaluate development and functioning over a broad range of domains, including verbal ability, and thus most such batteries include measures of receptive and/or expressive vocabulary (Flanagan, Ortiz and Alfonso 2013). Vocabulary tests reflect the results of long-term learning and verbal exposure (often referred to as crystallised ability, Gc) in the child's social environment and are closely linked to SES (Dang, Braeken, Ferrer and Liu 2012; Hoff and Tian 2005). Some of the possible reasons for this relationship include the quality and frequency of caregiver conversations with children, caregiver attitudes towards education and the educational value of conversing and reading with children, the availability of material resources, and differences in schooling (Adams, 1990; Bradley and Corwin 2002; Hoff 2003; Noble, Wolmetz, Ochs, Farah and McCandliss 2006). When vocabulary tests are used with school beginners from poorer and non-Western environments whose backgrounds may have limited their exposure to words and concepts, it is often difficult to distinguish typical from atypical language development (Campbell, Dollaghan, Needleman and Janosky 1997). In the search for alternative, fairer ways of evaluating language functioning, the essential proposition of the current study is that verbal working memory tests may be less sensitive to SES influences than traditional vocabulary tests, and may prove to be a useful supplement to such measures.

Working memory is a key cognitive mechanism underlying children's learning; it enables the storage and processing of information, the inhibition of irrelevant information and the performance of sequences of mental actions necessary for the achievement of goals (Baddeley 2000; St Clair Thompson, Stevens, Hunt and Bolder 2010). In addition, working memory enables visual and verbal information to be instantly accessible for problem-solving, and is closely related to fluid cognition (Gf) (that is, processing, rather than knowledge-based cognition) (Horn and Cattell 1982; Hornung, Brunner, Reuter and Martin 2011; Unsworth, Redick, Heitz, Broadway and Engel 2009).

The construct of working memory has been heavily influenced by the work of Baddeley and Hitch (1974), and the model developed subsequently by Baddeley (1986; 2000). According to this model, working memory comprises a set of inter-related mechanisms, of which two are specialised, domain specific short-term stores (verbal and visuo-spatial) and two are domain general mechanisms (namely, the central executive and episodic buffer). The specialised short-term stores are the phonological loop, which briefly retains verbal material, and the visuospatial

sketchpad, which temporarily stores circumscribed amounts of visual and spatial information. The functioning of the phonological loop and visuospatial sketchpad is overseen by the central executive, which allocates attentional resources to each. The episodic buffer integrates information from the two short-term stores and long-term memory into unified, meaningful episodes (Baddeley 1986; 2000).

Working memory tests typically evaluate the passive, short-term storage aspects of the verbally based phonological loop and/or the visuo-spatial sketchpad (often referred to as 'simple' verbal or visuo-spatial working memory), as well as the active, planning central executive component (frequently referred to as 'complex' verbal or visuo-spatial working memory). Although simple and complex working memories are argued to be theoretically distinct, no single task is an absolutely pure measure of either construct, but would tap simple storage and complex cognitive control to different degrees. Complex tasks primarily reflect cognitive control with fewer storage demands, while simple working memory measures are most reliant on storage and less dependent on cognitive control processes (Unsworth and Engle 2006). In the current study, verbal measures of simple (phonological loop) and complex (central executive) working memory were used.

The focus was on phonological loop tasks as this component of simple working memory has been shown to be related to vocabulary ability and new word learning. The phonological loop comprises a phonological store, which briefly retains information in a phonological code, and a rehearsal process, which refreshes and maintains representations in the phonological store. These components have been shown to be in place in children as young as 4 years (Alloway, Gathercole, Willis and Adams 2004). Drawing on these components, the phonological loop provides immediate storage of new phonological forms of words, which form the basis for learning and storing phonological structures in one's home language and in also additional languages. Thus, the capacity of the phonological loop gives an indication of the child's word learning ability (Baddely, Gathercole and Papagno 1998; Gathercole 2006; Engel de Abreu, Gathercole and Martin 2011).

Individuals with disorders of language learning, such as Specific Language Impairment, typically have both phonological loop and central executive deficits (Archibald and Gathercole 2006; 2007). The central executive plays a more general role in early learning compared with the phonological loop, as it has been shown to support the development of skills involved in reading (Gathercole, Alloway, Willis and Adams 2006; Swanson and Beebe-Frankenberger 2004), numeracy and mathematics (Geary, Hoard, Byrd-Craven and DeSoto 2004; Swanson and Sachse-Lee 2001) and language comprehension (Cain, Oakhill and Bryant 2004). According to Engle (2010), it is the cognitive control mechanisms of the central executive that link working memory to higher order cognitive tasks such as language comprehension and reading.

Since working memory enables the active maintenance and processing of information, the procedures and stimuli used to test this ability are designed to be equally unfamiliar to all testees and are based on material that is either not explicitly taught, or is very well learned, such as digits and letters. Consequently, such tests are unlikely to bestow significant advantages or disadvantages to children with differing prior knowledge and experience resulting from their SES circumstances. For this reason, working memory assessments are proposed to be far less dependent on environmental factors, such as parental education, quality of education and cognitive stimulation than vocabulary tests, which rely on acquired learning (Engel, Santos and Gathercole 2008; Rinderman, Flores-Mendoza and Mansur-Alves 2010). Thus, it is possible that working memory measures may be relatively pure measures of children's learning capacity and may constitute fairer assessments for children from differing SES backgrounds than tests that are heavily reliant on past learning, such as vocabulary tests.

Empirical findings on the relationship between working memory and SES are equivocal, however. Some researchers have found that working memory performance is uninfluenced by SES (Engel *et al*. 2008; Messer, Leseman, Boom and Mayo 2010), while others report differential working memory functioning dependant on SES (Noble, McCandliss and Farah 2007; Noble, Norman and Farah 2005). For example, low SES Brazilian children performed comparably to high SES Brazilian children on working memory tests, but significantly poorer on vocabulary measures, when tested in their home language (Engle *et al*. 2008). Similarly, in Holland, immigrant children from low SES circumstances performed analogously to higher SES, native Dutch speakers on working memory measures, when tested in their home language (Messer *et al*. 2010).

Possible reasons for the equivocal findings regarding SES and working memory include differences in working memory measures and sample ages. For example, the study by Noble *et al*. (2007) only utilised simple short-term working memory measures. Such measures do not tap any processing of information, and may have stronger connections with acquired knowledge structures, making them more likely to be influenced by SES background (Alloway, Gathercole and Pickering 2006). In addition, the chronic stress hypothesis proposes that lengthy exposure to poverty can produce chronic stress, which has a negative effect on working memory functioning, which becomes evident later, in adulthood (Evans and Schamberg 2009). This may account for the differences in findings between child and adult samples.

Given these discrepancies in findings concerning the relationship between working memory and SES, as well as the importance of accurate assessments of school beginners' verbal abilities, this study explored these issues in a sample of South African children. It was hypothesised in the current study that the influence of SES on verbal working memory tests would be significantly less than such influence on tests of receptive and expressive vocabulary.

METHODS

Participants

There were 120 Grade 1 children (62 boys; 58 girls; Mean age: 6.73 years, SD: .63). In South Africa, formal schooling starts when a child enters Grade 1 in January of the year in which the child turns 7. Of the participants, 59 came from high SES backgrounds and 61 from low SES circumstances. They were assigned to an SES group based on their results on a SES questionnaire completed by the primary caregiver. All the children in the low SES group attended state-funded schools in a working class area. The high SES children attended state-funded and private schools in an affluent area. Within the high SES group, 29 spoke English at home (EL1), while 30 spoke an African language at home and English was their second language (EL2). Within the low SES group, 37 were EL1 and 24 were EL2. All were being educated at English-medium schools and could communicate easily in English. Children with known learning, emotional, neurological, speech, hearing or motor difficulties were assessed if they wished to participate, but their results were excluded from the study.

Measures

All the tests described below are standardised measures, but none have been normed on South African children. This matter is discussed under the Procedure section in the context of the ethical use of psychometric tests.

Intellectual ability

The Ravens Coloured Progressive Matrices (RCPM) (Raven, Court & Raven 1998) was used to assess nonverbal intelligence in order to determine whether the two groups were equivalent in this regard, and to statistically control for this ability if the groups were not equivalent. For the test, the child completes a geometric figure by choosing a missing piece from six options. There are 36 items in total, in three sets of 12, which increase in difficulty. Each correct response receives a score of one.

Vocabulary tests

The British Picture Vocabulary Scale (second edition) (BPVS-II) (Dunn, Dunn, Whetton and Burley 1997) is a standardised measure of receptive vocabulary containing line drawings of easily recognisable activities and objects. The child chooses from four pictures that matches a spoken word. There are 60 items and the

maximum score is the number of objects named correctly, with one score allocated per correct response.

The Boston Naming Test (BNT) (Kaplan, Goodglass and Weintraub 1983) is a standardised test of expressive vocabulary comprising 60 line drawings of common objects, which progress in difficulty. The child names each one. One point is assigned per correct response.

Verbal working memory

Verbal subtests from the computerised Automated Working Memory Assessment (AWMA) (Alloway, Gathercole and Pickering 2006) were used to measure this ability. The Digit Recall and Nonword Recall subtests assess simple (short-term), verbal working memory. For Digit Recall, the child immediately repeats a sequence of spoken digits in the order presented. There are six trials, each beginning with one digit and increasing to a nine digit sequence. Nonword Recall consists of 40 verbally presented nonwords (words which do not exist in English but which follow English orthographic rules), ranging between 2 to 5 syllables. The child immediately repeats the nonword.

The Counting Recall and Backward Digit Recall subtests evaluate complex (processing) working memory. For Counting Recall, the child counts and remembers the number of circles in a picture comprised of triangles and circles. At the end of each trial, the child recalls the number of circles in each picture, in the correct order. Backward Digit Recall consists of verbally presented sequences of digits. The child immediately repeats the sequence in reverse order.

On each AWMA subtest, a correct response is assigned one point.

Socioeconomic status (SES)

Socioeconomic status is typically indexed by parental education, occupation and income (Entwisle and Astone 1994; Tomul and Savasci 2012). Due to difficulties asking about income, SES was calculated from three indices: a Living Standards Measure (LSM), the highest occupational status and the highest educational level of the parents/step-parents or guardians, as filled in on a ten minute questionnaire completed by the child's main caregiver. The LSM collected information regarding the number of people living in the house, the number of rooms, the area of residence and the number and type of appliances in the home. This allowed for an LSM score to be calculated. Parental occupation was defined as the highest occupational score of any parent, step-parent or guardian in the home on the following classification: 0. Unemployed; 1. Unskilled; 2. Partly skilled; 3. Skilled (non-manual and manual); 4. Professional. Parental education was defined as the highest level of education of any parent, step-parent or guardian in the home on the following classification: 1. No schooling, 2. Less than primary school completed, 3. Primary school completed,

4. Secondary school not completed, 5. Secondary school completed, and 6. Tertiary education.

The high and low SES groups differed significantly on all SES measures, with caregivers from the high SES group possessing significantly higher levels of education (t=21.59; p=.0001; *d*=3.96), professional status (t=25.56; p=.0001; *d*=4.65) and LSM (t=15.28; p=.0001; *d*=2.79). All caregivers in the high SES group had completed secondary school, and half (52%) had tertiary education and professional occupations. None of the caregivers from the low SES group had tertiary education, most were employed in partly skilled and unskilled jobs (95%), 5% were unemployed, few (6.5%) had completed secondary education and most had some primary education (83%).

Procedure

Each child was assessed individually, in a quiet area of the school, in a 45–60 minute session. Tests were administered in English and the order was kept constant to ensure a standardised procedure. Data was collected at midyear, within one month, for both groups. Children were assessed by two trained Psychology Masters students, under the supervision of the first author, who is a registered practitioner. The Master's students scored the vocabulary and RCPM measures, which were rescored by the first author in order to establish inter-rater reliability. There was perfect inter-rater agreement between the scoring. The working memory measures (AWMA) were administered and scored by computer, thus ensuring completely uniform scoring across administrations. Consent was obtained from the child's primary caregiver/ guardian and assent from each child.

Ethical issues concerning informed consent and assent, anonymity, confidentiality, opportunities to withdraw and feedback following the *Children's Act (No. 38 of 2005)* (APA 2002; HPCSA 2011) were appropriately addressed. Some consideration of the fair and ethical use of measures that have not been standardised or normed on South African children (as is the case with all of the measures used in this study) is warranted. The purpose of this investigation was exploratory research, rather than diagnostic. Consequently, participants were not compared with the foreign norms, which would lead to erroneous assumptions regarding performance that is typical or atypical. Instead, groups were compared with one another, allowing for fairer comparisons to be made with children from similar backgrounds. Although approximately half of the participants did not have English as their home language, they were all being educated at English-medium schools, could communicate easily in English and were able to follow the test administration without difficulty.

RESULTS

Descriptive statistics for all variables are shown in Table 1. The skewness and kurtosis values for the measures met the criteria for normality, and the assumption of equal variances was met.

Raw test scores are typically used in statistical analyses because they tend to reflect greater variance among individuals as compared with standard scores. On the other hand, standard scores are used in diagnostic situations, in order to meaningfully interpret psychometric test results when comparing individuals with a normative group (Carroll and Carroll 2002). In order to ensure that the use of raw scores in the analyses did not affect the validity of the results, all analyses were conducted twice – once using raw scores and once with standard scores. The results of these analyses did not differ significantly, and so only the analyses conducted with raw scores are reported.

Multivariate analyses of covariances (MANCOVAs) were conducted on the vocabulary and working memory measures in order to compare the SES groups. Since significant differences emerged between the groups on IQ and age (See Table 1), these variables were included as covariates in the MANCOVAs. In order to correct for the effect of multiple tests on the likelihood of a type 1 error, $p < .02$ was used for the vocabulary measures and $p < .01$ for the working memory measures, with Bonferroni corrections for two and four tests, respectively. The univariate F tests revealed significantly higher performance by the high SES group on both receptive and expressive vocabulary tests (BPVS and BNT), with large effect sizes (Cohen's *d*). For the working memory tests, one significant difference emerged between the SES groups. This was on the Nonword Recall subtest, a measure of simple verbal span, and was in favour of the high SES group. The effect size (Cohen's *d*) was moderate (Cohen 1992). No significant differences were found between the SES groups on the other test of simple verbal span (Digit Recall) or on the two complex verbal span tests (Counting Recall and Backwards Digit Recall).

Next, the extent to which SES and home language predict performance on the vocabulary and working memory tests was explored. Linear regression analyses were performed on each dependent variable. Model statistics are provided in Table 2.

Together, home language and SES accounted for considerable variance in the vocabulary measures (61% in BPVS and 57% in BNT), with SES contributing the majority (52% and 42%, respectively). Home language (EL1 or EL2) only explained 9% of the variance in receptive vocabulary and 15% in expressive vocabulary. Socioeconomic status accounted for much smaller amounts of the variance in the processing-dependent working memory tests relative to the storage dependent working memory tests (Processing-dependent: 15% in Nonword Recall, 13% in Digit Recall; Storage-dependent: 5% in Counting Recall, 7% in Backward Digit Recall). For the working memory tests, home language contributed 4% of the variance in Backward Digit Recall only.

Table 1: Descriptive statistics by SES group

	High SES (N= 59)			Low SES (N= 61)			Significance Tests		
	M	**SD**	**Range**	**M**	**SD**	**Range**	***F***	***p***	***d***
Age in years	6.86	.43	6-8	6.61	.76	6-8	5.17	.024	.40
BNT	26.75	11.08	9-45	12.54	4.39	6-25	53.13	0.0001	1.67
BPVS	66.56	16.19	33-94	38.92	10.30	18-64	85.65	0.0001	2.04
Ravens (IQ)	20.78	5.61	8-31	16.51	3.55	10-28	25.03	.00002	.91
Verbal Simple Span									
Nonword Recall	16.29	4.16	5-26	12.51	4.86	2-21	10.68	0.001	.84
Digit Recall	24.90	5.02	15-38	21.41	4.12	10-31	4.27	.041	.76
Verbal Complex Span									
Counting Recall	12.25	3.35	7-21	10.69	3.26	4-21	0.042	0.839	.47
Backwards Digit Recall	8.81	2.48	3-15	7.18	2.89	0-13	1.24	0.267	.53

Note. BNT= Boston Naming Test; BPVS=British Picture Vocabulary Scale; Ravens=Raven's Coloured Progressive Matrices

Table 2: Multiple regression analysis for variables predicting performance on vocabulary and working memory measures (N=120)

	Predictors	R	R^2	R^2 change	F	p
Vocabulary measures						
BPVS	Socioeconomic status	.72	.52	.520	125.35	.0001
	Home language	.78	.61	.095	91.611	.0001
Boston Naming Test	Socioeconomic status	.65	.42	.422	86.32	.0001
	Home language	.76	.57	.151	78.60	.0001
Working memory measures						
Nonword Recall	Socioeconomic status	.39	.15	.150	20.85	.0001
Digit Recall	Socioeconomic status	.36	.13	.121	17.37	.0001
Counting Recall	Socioeconomic status	.23	.05	.050	6.73	.01
Backwards Digit Recall	Socioeconomic status	.26	.07	.092	8.35	.005
	Home language	.32	.11	.040	6.88	.001

DISCUSSION

The results suggest that verbal working memory measures are considerably less influenced by SES background than traditional vocabulary tests. This supports previous suggestions that SES-related differences exert a major influence on children's vocabulary ability (Campbell *et al*. 1997; Engel *et al*. 2008). Of the working memory tests, those that tap complex verbal working memory involving the central executive appear to be the least influenced by the child's socioeconomic background. This finding confirms emerging evidence that working memory is relatively unaffected by environmental influences related to SES such as attendance at preschool, maternal level of education and income (Engel *et al*. 2008).

The least SES biased verbal working memory tests appear to be those that draw on complex processing, namely Counting Recall and Backwards Digit Recall. Such working memory tasks require the child to process and temporarily store information, and do not need to draw on long-term knowledge. Such ability seems to be resilient to SES disadvantage. The Digit Recall task, which draws on simple short-term storage, also appeared to be relatively impervious to the effects of SES. A further point worth noting is that all three of these working memory tasks require basic numeracy skills. In this respect, the children from high SES circumstances are likely to have been advantaged as they had all attended preschool, and consequently would have received some instruction in basic numeracy. Conversely, only 46% of those from low SES backgrounds had attended preschool. Despite this, performance on these three measures was comparable between the high and low SES samples. This finding suggests that performance on these working memory measures may be relatively uninfluenced by socioeconomic disadvantage. It is possible, however, that the young age of the sample may have influenced this result. Consequently, they may not yet have experienced a continuous effect of socioeconomic handicap, unlike the older samples in other studies that reported SES effects on working memory (Evans and Schamberg 2009; Farah *et al*. 2006).

One of the measures of short-term verbal working memory (Nonword Recall) was slightly affected by SES. This was unexpected as previous studies have found nonword repetition tests to be independent of environmental factors (Campbell *et al*. 1997; Engel *et al*. 2008). The anomalous finding may be a result of the inclusion of EL2 children in the high and low SES samples in the current study, as those instances where no SES differences were found in performance on nonword repetition tests, the tests were administered in the child's home language (Archibald and Gathercole 2006; Engel *et al*. 2008; Gathercole 2006). The finding of SES influences in Nonword Recall also feeds into debates concerning whether or not tests of nonword repetition reflect pure phonological loop capacity (Baddeley *et al*. 1998) and thus tap phonological storage in a completely knowledge-independent manner (Gathercole 2006), or whether these tests also tap into phonological representations that are stored in long-term memory (Morra and Camba 2009; Messer *et al*. 2010).

The results of the current study suggest the latter: those tasks that require long-term memory to support performance would be influenced by acquired knowledge (for which SES is a proxy). Thus, existent vocabulary knowledge stored in long-term memory would play a role in learning new words (or nonwords). Nonword Recall could be performed by drawing analogies with known words, thus accounting for the relatively higher influence of SES and the significantly better performance of the high SES group (which had significantly better vocabulary abilities) on this test. Future research should consider the development of equivalent nonwords in the home languages of the EL2 children, in order for more accurate comparisons to be drawn with previous research.

The results show that vocabulary ability, which is driven by educational opportunity, was clearly affected by SES, while three of the four working memory tests appear not to be affected by such influences. The inclusion and interpretation of such measures in a comprehensive assessment battery together with performance on vocabulary tests may provide a fairer and more realistic picture of a child's verbal learning ability. An added benefit to including measures of working memory in psychoeducational assessments is that they have been shown to be excellent predictors of children's numeracy and literacy abilities (Alloway *et al*. 2004; Savage, Cornish, Manly and Hollis 2006).

The findings from this study are limited by the relatively small sample sizes in each group, which may have affected statistical power. For example, the effect size on Digit Recall was moderate (d=.76), but did not meet the criterion ($p<.01$) for statistical significance. Possibly with a larger sample size, group differences may have emerged on this subtest. The nature of the sample imposed other methodological limitations. Assessments of children at this age need to be brief as they cannot concentrate for the same length of time as adults, and can easily lose motivation if tasks are too difficult or lengthy. For this reason, multiple tests of each construct were not included.

In conclusion, this study makes a contribution to existing research by investigating the effect of SES background on several cognitive skills (verbal working memory, receptive and expressive vocabulary). Socioeconomic status was found to contribute between 42% and 52% of the variance in the receptive and expressive vocabulary measures, respectively, supporting suggestions that differences in background and opportunity substantially influence a child's performance on standardised vocabulary tests (Campbell *et al*. 1997; Hoff and Tian 2005). In addition, SES background accounted for considerably more variance in performance on both the expressive and receptive vocabulary tests than home language. Working memory measures appear far less dependent on SES-related acquired knowledge and skills. Socioeconomic status accounted for between 13% and 15% of the variance in the simple, short-term ability tests, and between 5% and 7% of the variance in the complex working memory tests. This finding is useful, given attempts to find equitable cognitive assessments

for children from diverse home and language backgrounds. It is particularly valuable in countries such as South Africa where inequitable social conditions may have impacted on children's cognitive ability, giving unfair advantage to those who have been raised in situations of privilege, and serving to reinforce inequalities. Including measures of verbal working memory processing together with tests of vocabulary in psychoeducational batteries may be more feasible than other proposed solutions to addressing bias in tests, such as developing alternative norms for each of the eleven major language groups in South Africa or relying on subjective observations (Foxcroft 1997). In addition, early scholastic interventions could target the development of verbal working memory strategies as a means of developing language skills (Alloway, Bibile and Lau 2013).

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THE POSSIBLE INFLUENCE OF CURRICULUM STATEMENTS AND TEXTBOOKS ON MISCONCEPTIONS: THE CASE OF EVOLUTION

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ABSTRACT

Curriculum statements and textbooks are considered to be vital support tools for teachers, particularly during times of curriculum innovation. A recent change in South Africa was the controversial inclusion of evolution in the school curriculum, raising serious concerns amongst biology teachers regarding the adequacy of their content and pedagogical content knowledge for teaching the topic. Widespread 'misconceptions' about evolution make teaching this topic difficult for biology teachers worldwide. Identifying the sources of errors is an essential step needed before addressing them. This study explored curriculum support materials as a possible source of misconceptions, using content analysis of the South African school Natural Sciences curriculum statement and six Grade 7–9 Natural Sciences textbooks from two different publishers, and investigated 'curriculum slippages' between the 'formal' and 'perceived' curricula. The aim was to determine the nature and extent of unscientific ideas about evolution, and

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to see how authors dealt with potential misconceptions. Errors were found in the curriculum statement and in the textbooks, where they escalated in frequency. Latent problems associated with ambiguous wording of statements posed further problems. Although this paper uses evolution as an example, lessons learned about curriculum materials as a possible influence on misconceptions are applicable to other subjects.

Keywords: curriculum support materials, textbooks, misconceptions, curriculum slippages, evolution, natural selection

In times of curriculum innovation textbooks become important props for teachers, particularly if they are inadequately prepared to implement new curriculum content. However, an important assumption is that such support materials will be scientifically accurate. If they contain errors, teachers with poor content knowledge may not be in a position to recognise mistakes, which are thus likely to be transmitted to pupils. This paper focuses on an investigation of curriculum statements and textbooks as a possible source of misconceptions, as well as how the textbooks identified and addressed common misconceptions. We have used the umbrella term 'misconceptions' for this paper in the commonly understood everyday sense, referring to incorrect ideas, as this is how most teachers and the public are likely to understand the term. Because document analysis was used for this study it was not possible to discriminate between ideas which have been mentally constructed by the document authors (the correct technical meaning of 'misconceptions') and 'errors', which have been acquired from some outside source.

THE CONTEXT OF THE STUDY

The inclusion of evolution in the South African school curriculum

The radical revision of the South African school curriculum, progressively implemented by the newly elected government's education department between 1998 and 2008, was characterised by several changes, one of which was a modernising of the science curriculum in terms of content. The most dramatic change was the inclusion of evolution by natural selection. A widely held but somewhat inaccurate perception is that evolution was excluded from the school curriculum during the almost 50 years that the National Party governed the country (1948 to April 1994), because any knowledge considered at variance with the Christian National Education (CNE) policy, which underpinned previous school curricula, was omitted. However, tracking the history of evolution in South African schooling, Lever (2002:34) explains that CNE policy, which espoused the belief captured in a 1948 publication of CNE ideals that 'the spirit and direction of every subject taught must correspond to the Christian and National life- and world-view … and that in no subject may anti-Christian, unchristian or anti-national or un-national propaganda be conveyed', was

only officially implemented in 1967. Furthermore, Darwin was included in a brief history of leading biological figures in a 1947 syllabus used for some years under the National Party rule, and Lever (2002:36) suggests that the syllabus functioning in the 1950s (inherited by the National Party when they came into power in 1948) was more a case of 'non-Darwinism than anti-Darwinism'. Furthermore, Dada (2002), investigating changes in biology textbooks, found mixed results in books she reviewed from the 1980s (Nationalist era) and 1990s (African National Congress era, but prior to any curriculum changes). Three of four books reviewed referred to evolution, although one mistakenly claimed there was no evidence that major evolutionary changes happened by natural selection, and that 'whichever view one takes is largely a matter of faith' (Dada 2002:128). It thus appears that political influences on the inclusion of evolution in the school curriculum during the last five decades of the twentieth century are not clear cut, and the inclusion of evolution possibly depended on, among other factors, publishers' policies and the textbooks selected by schools.

Evolution-related topics were formally introduced into the South African school curriculum at the General Education and Training (GET) level (Grades R to 9) when the Revised National Curriculum Statement (RNCS) was introduced from Grade R in 2004. However, the term 'evolution' was not used in the Natural Sciences learning area, probably to avoid potential controversy. Nevertheless, the essential elements of evolution were included: adaptations, extinctions, natural selection, and fossils. In the History section of the Social Sciences learning area, the term 'evolution' was used, with the topic of human evolution being included in Grade 7, dealing with early hominid discoveries in south and east Africa, and 'becoming human in southern Africa' (Department of Education 2004). Concerns about including evolution in school curricula only started to emerge when evolution made its appearance at the Further Education and Training level (Grades 10 to 12) in 2008, in the externally examinable Grade 12 Life Sciences curriculum. This inclusion meant teachers could not omit the topic as some GET teachers had been doing. The Life Sciences curriculum has since undergone two revisions, the first of which (starting in 2009) saw evolution-related content spreading down from Grade 12 into the Grade 10 and Grade 11 curricula. The second revision (referred to as CAPS, the Curriculum and Assessment Policy Statement) was implemented in Grades 10 to 12 from 2012 to 2014. The new CAPS curriculum was also implemented at the GET level, starting with Grades 4 to 6 in 2013, with final implementation in Grades 7 to 9 in 2014. Although *natural selection* has inexplicably been removed from the GET Natural Sciences curriculum, *adaptations* (which occur by natural selection) remain.

The inclusion of evolution-related concepts in the draft Revised National Curriculum Statement 'provoked a storm of controversy' from conservative religious groups, departmental officials, teacher unionists, and academics (Chisholm 2002:53). Twenty-one per cent of the concerns identified by teachers in one study related to a potential religion-evolution conflict for religious parents and pupils, as well as

clashes with their own religious beliefs (Sanders and Ngxola 2009). However, not all religious groups were anti-evolution, and because learning about evolution was considered 'critical' (Chisholm 2002:51) the final RNCS retained the evolution-related topics.

Reasons for including evolution in biology curricula

From an educational point of view the omission of evolution from any curriculum dealing with biology is incomprehensible. The National Academy of Sciences (2008:ix) describes evolution as 'the cornerstone of modern sciences' and numerous scientists (for example, Futuyma 2009) consider the theory of evolution to be one of the most powerful ideas in the sciences. Firstly, evolution provides an explanatory framework for understanding many of the fundamental phenomena, principles and processes that explain the living world, many of which could not previously be explained. Lever (2002:40) thus describes evolution as 'the scaffolding of our current biological knowledge'. Indeed, an understanding of evolution is considered an important aspect of scientific literacy. Secondly, evolution is a unifying theme that links many disparate fields, both within biology (for example, genetics, anatomy, embryology and molecular biology) and in other sciences (such as geology, palaeontology and archaeology). These links allow for otherwise fragmented information to be collated to form a holistic overview or model of the living world (Nehm, Poole, Lyford, Hoskins, Carruth, Ewers and Colberg 2009). Thirdly, an understanding of the theory of evolution has resulted in many scientific and technological advances in areas such as medicine, agriculture and conservation (National Academy of Sciences 2008; Futuyma 2009), contributing to a better quality of life.

PROBLEMS MOTIVATING THE STUDY

Three problems motivated this study. The first is that the misconceptions about evolution prevalent among scholars internationally at all educational levels, both before officially being taught the topic and often afterwards (for example, Bishop and Anderson 1990; Moore *et al.* 2002) are also prevalent among South African pupils (Kagan and Sanders 2013; Lawrence 2015; Moore *et al*. 2002; Mpeta 2013; Schroder 2012; Yalvac 2011). Having misconceptions is, in itself, problematic, but a more serious consequence is that erroneous ideas interfere with the success of further learning (Freyberg and Osborne 1985) and tend to be difficult to teach away (Helldén and Solomon 2004). The existence of misconceptions has serious consequences when evolution is meant to provide an underlying framework for explaining basic processes and phenomena in the biological sciences.

The second problem motivating the study relates to questions about the preparedness of many South African teachers to teach evolution. There are four areas of concern: Firstly, teachers' inadequate content knowledge regarding evolution (Ngxola

and Sanders 2009; Pillay 2011), probably because many of them had not received appropriate evolution-related education or training prior to the implementation of the new curriculum (Abrie 2010; Pillay 2011; Stears 2006) and because 'training for both Curriculum 2005 and the National Curriculum Statement was shown to be too superficial and too generic' and 'decontextualized and unsupported', resulting in poor implementation of policies (Department of Basic Education 2009:55–56). Secondly, in addition to teachers lacking content knowledge, several studies have found that many South African teachers (Molefe 2013; Naudé 2013; Ngxola and Sanders 2009; Pillay 2011; Yalvac 2011) and student-teachers (Abrie 2010; Stears 2012) have misconceptions about evolution. Thirdly, many teachers (Naudé 2013; Pillay 2011; Sanders 2010; Sanders and Ngxola 2009; Yalvac 2011) and student-teachers (Abrie 2010) have voiced attitude-related concerns (their own, parents', or learners') about a potential religion/evolution controversy, some expressing an unwillingness to teach evolution. These attitudes are often fuelled by the common misconception that believing in God and accepting evolution are mutually exclusive (Stears 2012). Fourthly, evolution has been recognised as an abstract and difficult concept to teach (Bishop and Anderson 1990), and the pedagogical content knowledge of many South African teachers for teaching the topic, particularly how to manage the emotional arguments arising from strongly held religious beliefs, appears inadequate (Molefe 2013). It is important to know, for example, that introducing argumentation to teach the topic of evolution generates conflict for many religious students, and that students' concerns can be avoided or reduced using 'independence' or 'dialogue' strategies (Anderson 2007) when teaching the topic. Teachers' lack of confidence about teaching evolution has been exacerbated by the constant curriculum changes at the FET level, where the third version of the Life Sciences curriculum statement within six years was fully implemented by December 2014. A review by the Department of Basic Education (2009:48) found that 'there was a strong call from teachers for guidance regarding how to realize the content: that more explicit direction regarding how to teach a particular subject is given'.

If teachers are inadequately prepared, the role of curriculum support materials becomes critical (Ball and Cohen 1996; Hutchinson and Torres 1994; Ottevanger 2001). The availability of textbooks has proved repeatedly to be the major factor predicting learning success in developing countries, defining the scope and structuring of the content to be taught, providing guidance on pedagogy, and saving time in providing a record of correct information for students (Verspoor and Wu 1990). However, an assumption underpinning their use is that the content provided will be scientifically accurate. The third problem motivating the study involves the questionable quality of curriculum support materials (including curriculum statements and textbooks) provided for South African teachers. The curriculum review expressed two concerns regarding the *curriculum statements*. Firstly, specifying GET Natural Sciences content by phase rather than by grade caused

problems in textbooks, which are written for grades (Department of Basic Education 2009). Secondly, there are conceptual errors regarding evolution in the Revised National Curriculum Statement, as also pointed out by Dempster and Hugo (2006).

The review also emphasised the central role of textbooks to ensure content coverage, to help teachers with year and lesson planning, and to keep pace with the changing revisions to the curriculum statements. Two concerns were raised regarding *textbooks*: the need for constant production of new editions to keep up with the revisions to the curriculum documents (Department of Basic Education 2009) and the possibility that local textbooks contained errors. If, as seems likely because of their inadequate education and training about evolution, teachers are heavily reliant on textbooks, then having errors in the books is extremely problematic because mistakes are likely to be transmitted to pupils by any teachers unable to recognise errors. Having misconceptions themselves also means that teachers cannot act as filters for poor quality curriculum materials, a role Abimbola and Baba (1996) believe teachers should fulfil.

THE AIM OF THE STUDY

To address the problem of misconceptions it is first necessary to establish their source, so that the causes can be targeted. The aim of this study was to investigate Senior Phase (Grade 7 to 9) curriculum support materials (the curriculum statement and textbooks) for the Natural Sciences as a possible influence on unscientific ideas about evolution. Because of their role in supporting teachers, we went further than just investigating support materials as a potential source of misconceptions, and also looked at whether they supported teachers to identify and address misconceptions. As the CAPS revisions were not yet fully implemented, RNCS materials in use at the time of the study were investigated.

THE CONCEPTUAL FRAMEWORK FOR THE STUDY

Conceptual frameworks are important for improving the quality of research, helping researchers to design appropriate investigations and to interpret the data against a background of research-based and theoretical information usually derived from the relevant literature (Miles and Huberman 1994). The literature-based framework for this study comprised five main constructs (see Figure 1), which, although associated, could not easily be linked into a single coherent conceptual framework. Abd-El-Khalick and Akerson (2007) warn that the complexity of science education means that researchers will seldom find a single, ready-made existing conceptual framework to underpin their studies, and that frameworks often simply describe the constructs relevant to the research topic, and the relationships between them.

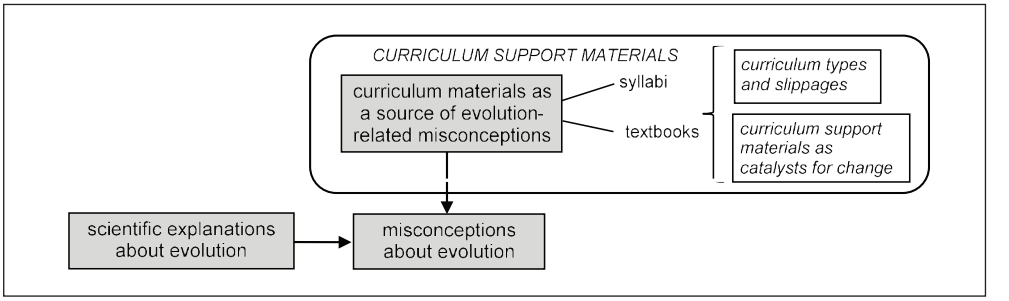

Figure 1: Conceptual framework for the study

Three *research-based* constructs (grey boxes in Figure 1) were considered. Firstly, a thorough review of the *scientific explanations for evolution by natural selection* was completed so that ideas in the curriculum materials not in line with scientific thinking could be recognised more easily. Futuyma (2009) provides a list of 16 points that summarise essential components of current evolutionary thinking (known as 'the evolutionary synthesis'). However, for a basic understanding of evolution by the process of natural selection, such as that required by members of the public or school-level pupils to understand evolution without misconceptions, the essence of the concept can be captured in just six points: 1) Individual organisms in a population (all individuals of a species living in a particular area) show physical and behavioural variations based on slight differences in their genetic make-up; 2) Some of the variations confer survival advantages to the individual in its particular niche; 3) Individuals with these traits will be reproductively more successful (more 'fit') than those without the traits; 4) Because of their reproductive success the favourable traits will be passed on to more offspring in the next generation than less favourable features; 5) The advantageous trait will therefore become more common in the population of organisms over time; and 6) After many generations the population will have changed notably, that is, will have evolved. Evolutionary changes in a population are often referred to as *adaptations*, but adaptations are no more than the consequences of evolutionary developments in populations over many generations, making the populations more suited to their environments.

Secondly, a review of *common misconceptions about evolution* was conducted to prime the researchers regarding what to look for. An extensive review of more than 50 papers shows that many of the misconceptions are common in countries across the world, and that they often persist across different educational levels. Many of the commonest misconceptions are encapsulated in the two alternative frameworks discussed later in the paper.

Thirdly, a broad review of *sources of misconceptions* was completed, eventually focusing on textbook problems specifically linked to evolution-related matters. This information formed the basis for the checklists developed to identify and capture the

manifest and latent errors in the books analysed. Textbooks have been shown to be a source of errors in biology (Cho *et al.* 1985) including evolution-related ones (for example, Jiménez Aleixandre 1994; Rees 2007; Stern 2004), although no systematic analysis of such errors has been done. Several problems have been identified. First, separation of related content in textbooks is likely to cause fragmented thinking and inhibit the construction of mental models necessary for understanding topics such as evolution (Nehm *et al*. 2009). Furthermore, inappropriate sequencing of such 'fragments' can cause additional problems (Nehm *et al*. 2009; Cho *et al*. 1985), as discussed later. Second, the use of certain 'risk-terms' may cause problems. These include i) avoidance of the possibly contentious but necessary term 'evolution' (Nehm, Rector and Ha 2010; Woodward and Elliott 1987), by using euphemisms such as 'develop' and 'become' (Thompson 2008); ii) the problem of paradoxical jargon – words with different everyday and scientific meanings depending on their context of use, for example, 'the *theory* of evolution', '*adaptation*', '*extinction*', and the use of 'force talk' terms such as 'selection *pressure*' (Nehm *et al*. 2010); and iii) the inappropriate use of 'Darwinism' or 'Darwin's theory' to refer to evolution, when in fact the modern evolutionary synthesis has moved far beyond the original understanding of Darwin (Braterman and Holbrook 2009; Futuyma 2009).

Two *theoretical* constructs (italicised text in unshaded boxes in Figure 1) associated with curriculum materials assisted in interpreting the findings. The first was a useful theory for understanding curriculum documents – the notion that a curriculum undergoes transformations from the time of conceptualisation to the time it is experienced in the classroom (Goodlad, Klein and Tye 1979). These transformations make it very difficult to define 'the' curriculum because various types of curricula emerge during the development and implementation process of any curriculum, as shown in Figure 2. The original domains (types) of curriculum identified by Goodlad *et al*. (1979) have been modified and sometimes renamed by other authors (for example, Van den Akker 2004).

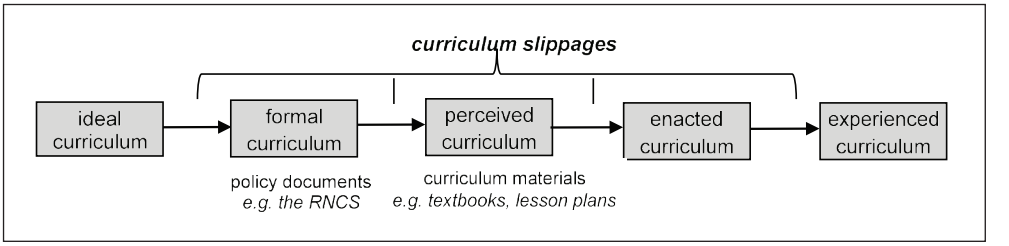

Figure 2: Summary of curriculum domains, and transformations and slippages occurring as a curriculum is implemented

The *ideal curriculum* is the initial curriculum envisaged by the planners and designers, often ideologically motivated, and not necessarily captured on paper.

Once documented, modified and approved by the education authorities a slightly transformed written version, constrained by the realities of the education system, it becomes the *formal curriculum* (policy documents such as syllabi and curriculum statements). These are dispersed to relevant stakeholders such as textbook publishers and teachers, who interpret the curriculum documents in their own unique ways, resulting in the *perceived curriculum* (or, indeed, curricula). These are used by publishers and teachers to produce curriculum materials and to plan lessons. Once these materials are used in the classroom, the *enacted curriculum* comes into effect, which in turn is transformed into the *experienced curriculum* based on what students perceive has happened in the lessons. Goodlad *et al*. (1979) point out that the diffusion of any curriculum is characterised by distortions, which they refer to as 'slippages' that arise during the implementation process. The formal curriculum (policy document) is rarely transmitted in its entirety to the perceived curriculum reflected in curriculum materials produced by publishers and teachers. Chisholm (2002:53) explains that curriculum policy documents do not provide details, and '[t]he curriculum must be fleshed out by textbooks and teachers'. What teachers do in the enacted curriculum is influenced by the curriculum support materials. Should there be errors in the policy documents and textbooks they are likely to be passed on to pupils, thereby compromising the quality of teaching and learning.

Curriculum materials can serve to support teachers by improving their content knowledge and methods of teaching (Ball and Cohen 1996). Hutchinson and Torres (1994) argue that curriculum changes increase time and energy demands on teachers, and that having suitable textbooks reduces such demands. The second theoretical construct used in the conceptual framework is the 'teacher support materials as catalyst' model for curriculum implementation (Ottevanger 2001). This model uses the analogy of an enzyme-catalysed chemical reaction to explain how curriculum support materials (such as textbooks) can facilitate the implementation of science curriculum reforms. Enzymes can act as catalysts during chemical reactions, lowering the activation energy and time required for the reaction to get going. In a similar way, appropriate curriculum support materials can catalyse the implementation of the curriculum change, reducing the amount of time and energy teachers must invest to bring about change in the classroom.

RESEARCH METHODS

Content analysis, 'a research method that uses a set of procedures to make valid inferences from text' (Weber 1990:9), was used to research the documents for this study. The procedures outlined by Krippendorf (2013) were followed: selecting a sample; identifying the unit of analysis; developing the coding categories before starting the analysis; coding; inter-coder reliability checking. The documents analysed were the Revised National Curriculum Statement Natural Sciences (Department of Education 2002) in use at the time of the study and six Senior Phase (Grade 7–9)

Natural Sciences textbooks from two publishers arbitrarily sampled from complete sets of textbooks donated for this research by five of the eight different South African publishers. A 'complete set' comprised a book for each of the Senior Phase grades (7, 8, and 9). Prerequisite knowledge necessary for understanding evolution but not directly evolution-based (for example, genetics, biodiversity, and classification) was excluded. The relevant chapters from the textbooks (that is, adaptations, fossils, natural selection, biogeography, phylogenetic trees, and evolutionary trends) were identified and photocopied so that mark-ups did not damage the actual books. Initial analysis of the Grade 7 textbook from Publisher A showed it did not deal with evolution-related content, so it was not analysed further.

All relevant information that could either positively or negatively influence erroneous ideas about evolution was then 'marked up' using a highlighter pen. The unit of analysis varied from words, to phrases, to whole sentences – each unit chosen on the basis of being a self-contained, coherent segment of information. Information marked included manifest errors (described by Fraenkel, Wallen, and Hyun (2012) as obvious and easily detectable mistakes not requiring inferences to be made) and latent problems (inferences requiring some interpretation of the text, thus having the potential to be misinterpreted so that misconceptions could form). Fragmentation and sequencing problems were signposted because they have the potential to inhibit the development of a coherent understanding of evolution (Nehm *et al*. 2009). In addition, positive factors such as misconceptions being identified and/or addressed, or links being made between fragmented sections, were also highlighted. Once the second author had done this, the first author, using a different colour highlighter, checked the mark-up, to delete inappropriate segments, confirm what had been appropriately marked, and add any missing segments. The few small discrepancies were discussed until both researchers reached agreement that all appropriate content (and only appropriate content) had been 'marked-up'.

The marked-up 'units' were then coded. Coding is often interpreted as allocation of abbreviated codes during the analysis process, but developing a coding system is more about developing a classification system for categories identified in the data. The coding system developed for the study used both deductive and inductive methods, starting with factors identified in the literature as having an impact on misconceptions (as discussed in the conceptual framework), but adding new factors and categories as they emerged during the analysis. As pointed out by Miles and Huberman (1994), developing the coding system is an iterative and on-going process because new categories keep emerging as more sections are analysed. Abbreviated codes were used as convenient shorthand to identify factors on the document copies, but are not used to report the results.

Gawande (2011) suggests that checklists can improve consistency (reliability). Two open-ended electronic checklists were developed to 'capture' and code the data, serving to reduce the data, and to improve reliability. Actual quotes from the documents were electronically captured and coded to serve as the basis for later

frequency counts, and as a source of evidence. The first checklist included columns for i) manifest errors; ii) latent problems; and iii) positive factors (such as identification of misconceptions, explanations of the correct science, or links between fragmented sections). The second checklist focused on fragmentation and sequencing issues. Inter-coder reliability was conducted by the two authors independently coding the chapters, and then meeting to make comparisons and discuss where discrepancies arose, ultimately reaching consensus on the data captured and the codes allocated. The few minor disagreements were settled after consultation with two senior university academics who teach evolution courses.

FINDINGS AND DISCUSSION

Fragmentation and sequencing problems

The 'ideal curriculum' for the teaching of evolution by natural selection across school grade levels is epitomised, for example, in the three relevant grade-related concept maps of the American Association for the Advancement of Science (2001). However, the reality of the demands of education systems places constraints on what can be taught in the time available, with existing resources, and within the structural framework of grade levels and topic areas, so the resulting 'formal curriculum' is often somewhat different. Competing interests of those drawing up the curriculum also impact on the resulting 'formal' curriculum. Table 1 summarises the evolution-related topics in the 'formal curriculum' in use at the time of the study, the RNCS Natural Sciences (Department of Education 2002). The document itself was fragmented, being divided into four content strands (the two with evolution-related content, shown in Table 1, being Life and Living, and Planet Earth and Beyond), each divided into three sub-strands (see Table 1 for the two evolution-related ones for each strand), guided by a 'unifying statement'. The RNCS used grade-associated 'phases' to specify approximately when content is to be taught.

Table 1: Summary of evolution-related content in the RNCS Natural Sciences (Department of Education, 2002)

Core knowledge and concepts in the *Life and Living* strand	
Interactions in Environments	**Biodiversity, Change and Continuity**
	Unifying statement: The huge diversity of forms of life can be understood in terms of a history of change in environments and in characteristics of plants and animals throughout the world over millions of years (p. 62)
INTERMEDIATE PHASE (Grades 4 – 6)	
	• Offspring look like parents, but show slight differences ('variation') (p. 63) • The SA fossil record stretches over millions of years. Some are similar to present day organisms, others very different. *(Links with fossils in Planet Earth and Beyond)* (p. 63)
SENIOR PHASE (Grades 7 – 9)	
• Characteristic behaviours in species arose over long periods (p. 64) • Organisms have adaptations to survive in their habitat (p. 64)	• Variation occurs in species (p. 64) • Variations such as height and skin colour in humans do not indicate innate abilities of groups (p. 64) • Natural selection kills individuals of a species lacking the characteristics which would have enabled them *to survive* and *reproduce* successfully. Individuals with suitable characteristics reproduce successfully. (p. 64) • Mass extinctions have occurred in the past *(Links with Planet Earth and Beyond)* (p. 65)
Core knowledge and concepts in the *Planet Earth and Beyond* strand	
Atmosphere and Weather	**The Changing Earth**
	Unifying statement: The earth is composed of materials which are continually being changed by forces on and under the surface (p. 69)
INTERMEDIATE PHASE	
	• Land forms change (can be very slow or fast). Formation of sedimentary rock. (p.69) • Fossils (remains of past life forms preserved in stone) show life in the past was different *(Links with Life and Living)* (p. 70)

SENIOR PHASE	
• Plants and animals are adapted to different climates. (*Links with Life & Living*) (p. 71)	• Large plates move very slowly. Deposition of sediments. (p. 71) • Many SA fossils differ from current organisms, and occur in areas where today's conditions would not suit them. This shows life and conditions on Earth have changed over time. *(Links with Life and Living)* (p. 72)

Underlined statements are scientifically incorrect (misconceptions)

The fragmentation of evolution-related topics between two knowledge strands, four sub-strands (and two of the associated unifying statements), and two phases spanning grades 4 to 9, is clearly visible in Table 1, which also shows the element of repetition. For example, the content on fossils was addressed in different phases and strands, perhaps with a 'spiral curriculum' in mind. Furthermore, not shown in Table 1 is that evolution-related topics on hominids appeared in the History strand of the Social Sciences curriculum statement. Whatever the reasons for this fragmentation, the likely consequence is the warning offered by Nehm *et al*. (2009) that the formation of a coherent mental model about evolutionary change is likely to be made extremely difficult. On the positive side, efforts were made to provide cross-referencing links between various sections of the curriculum statement (see italicised text in Table 1).

Analysis of the textbooks also revealed both fragmentation of evolution-related content, and sequencing problems, mirroring the RNCS layout. Discussions with publishers and textbook authors at workshops we ran to share our findings revealed that if publishers do not follow the layout and sequencing of the RNCS, their textbooks are not selected for the list of approved books. Grey (1999:4) claims 'without the official stamp of approval the textbook is as good as "banned"'. Publication pressures are also noted elsewhere in the world (Woodward and Elliott 1987). Fragmentation in the textbooks followed the fragmentation of the RNCS, with evolution-related content appearing in different chapters and grades. Nehm *et al*. (2009) point out that such fragmentation will not only inhibit holistic thinking about evolution, but that isolating such topics into specific 'evolution' chapters (as was found in our study) makes it very difficult for students to see evolution as a unifying theme that underpins all topics in biology. In terms of sequencing, pre-requisite knowledge essential for understanding a topic should be taught first. For example, natural selection should be taught before looking at the process of adaptation, which occurs by means of natural selection. Although the Natural Sciences RNCS did not spell out in which specific grade (in a phase) content should be taught, Publisher A addressed content on adaptations at Grade 8 level, and only included variation and natural selection (necessary to understand adaptation) later, in Grade 9. Cho *et al*. (1985) argue that both fragmentation of relevant aspects of a topic, and poor sequencing, are likely to result in misconceptions.

Manifest errors

Scientifically incorrect statements were found in every document analysed. Table 2 summarises the most frequently occurring errors, all of which are identified in studies of student's misconceptions worldwide. Two common unscientific 'alternative frameworks' (incorrect underlying beliefs that lead to a cluster of associated errors) dominate the list. The first is the 'evolution on demand' notion of adaptation (Tshuma and Sanders 2015). This seems to be driven by anthropomorphic and teleological thinking (the first endowing organisms with a human-like ability to reason and take action to avoid potential future negative consequences, and the second explaining phenomena by the function they serve, rather than their actual scientific cause). Four misconceptions associated with the 'evolution on demand' alternative framework were identified in the textbooks, although they did not occur in the RNCS: that adaptation is i) caused by changing environments and food sources (n=3), ii) that individuals evolve (n=9), iii) by purposely initiating and controlling the change (n=5), iv) in order to survive (n=5). Scientists (for example, Futuyma 2009) explain that natural selection is the process causing adaptations, increasing the frequency in a population (over many generations) of favourable alleles *already present* in individuals in the population. Changing conditions are not necessary for and do not initiate natural selection, but may provide circumstances that facilitate selection of pre-existing phenotypes (as correctly explained in the RNCS, see Table 1). Furthermore, individuals cannot foresee their possible future, or control and change their genotype, and hence phenotype (Gregory 2009). While GET-level pupils will not yet have dealt with genetics, the concepts here are well within their reach if teachers and textbooks refer simply to what they look like (rather than phenotypes) and how this is controlled by their genes (a notion familiar to most pupils of this age as a concept commonly encountered in the public domain).

The second alternative framework is associated with the misleading metaphor, 'survival of the fittest'. This leads to the unscientific notions that only the fittest a) survive (n=10), and b) reproduce (n=4), and that c) the 'less fit' do neither (n=5); and d) that favourable traits will be inherited by the offspring (n=6), until e) all individuals in the population eventually have the favourable trait (n=2). In fact even 'fit' organisms may die (from disease, predation etc.) and many less well-endowed individuals nevertheless survive and reproduce. Inheritance of alleles by all offspring depends on dominance and/or on homozygosity of the alleles, so specific traits are not always inherited by all offspring. Furthermore, less favourable alleles may remain in the population, although in reduced proportions. Other misconceptions were found, for example, the overgeneralised and hence incorrect claim that fossils are preserved in stone, thus ignoring fossils found in ice and amber, for example.

Table 2: Summary of RNCS and most frequent textbook misconceptions

	RNCS	Publisher		Textbook totals
		A	B	
Percentage of pages of the book series dealing with evolution-related matters		6.0	6.3	
Total number of different misconceptions	3	12	16	19*
Total number of occurrences	4	41	22	63
Evolution is caused by changing environments or food sources (i)		2	1	3
Individual organisms evolve (ii)		8	1	9
Evolution involves organisms changing themselves (iii)		5	0	5
Organisms change because they need to (in order to survive) (iv)		5	0	5
Individuals with favourable characteristics will survive (a)		6	4	10
Individuals with favourable characteristics will reproduce / others won't (b/c)	2	3	1	4
The less 'fit' die (c)	1	2	3	5
Favourable characteristics will be inherited by the offspring (d)		4	2	6
Eventually all organisms in a population will have the favourable traits (e)		2	0	2
Fossils are preserved in stone	1	2	2	4
Other misconceptions (less frequent)		2	8	10

**The misconceptions for each publisher were not necessarily different ones, so this is not the sum of A and B*

Each misconception identified in the RNCS (n=3) escalated in frequency of occurrence in the textbooks. The RNCS statement (p. 64, errors italicised by us), 'Natural selection *kills* those *individuals* of a species *which lack the characteristics that would have enabled them to survive and reproduce* successfully in their environment. Individuals which have characteristics suited to the environment *reproduce successfully* and some of their offspring carry the characteristics' translated into 19 errors in the textbooks. Interestingly, curriculum slippage is evident as the first of the two major alternative frameworks is not found in the RNCS document (representing the 'formal' curriculum), yet associated errors occur 22 times in the textbooks (representing the 'perceived' curriculum). Sometimes correct statements in the RNCS, for example, the correct RNCS statements 'natural selection *is accelerated* when the environment changes' (not caused by) and '*some of their offspring* carry the characteristics' (not all inherit) translate into errors in the textbooks (errors found 3 and 6 times, respectively).

A comparison of books from the two different publishers shows that Publisher B had only about half the frequency of misconceptions that A had. If reasons for this could be ascertained, it might suggest what steps could be taken to reduce the problem. Is it more knowledgeable authors? More effective editorial checking? Greater determination not to perpetuate errors identified in policy documents? Furthermore, if authors identified and addressed in their textbooks commonly occurring misconceptions, misconceptions commonly held by both teachers and pupils might be reduced, although true misconceptions are difficult to eradicate. The books of Publisher B point out and correct 14 common misconceptions, for example 'People said there are no fossil links between major groups of animals. But in fact there are. We have fossils in the Karoo that are halfway between two big groups ... mammal-like reptiles' (B:Gr7:29). This book also has an excellent section that uses a historical approach to tactfully address misconceptions commonly used by creationists to refute evolution, and focuses on whether there are any valid *scientific* objections. They systematically identify common misconceptions (note, not religious beliefs regarding a six-day creation story), for example, they talk about the common 'idea that evolution is ungodly – but it is not. Evolution contradicts the idea that species were made from dust. But it does not deny God' (B:Gr7:29). After looking at several misconceptions they ask, 'What is the only remaining objection to evolution? Scientific or religious? .... Which Christian denominations do you know that accept evolution (there are many)' (B:Gr7:29).

Latent errors

Many of the statements identified in the textbooks, while not scientifically incorrect, involved the problematic use of language in ways which implied or could lead to misconceptions, that is, what Fraenkel *et al*. (2012) call 'latent errors'. The commonest latent errors found are summarised in Table 3.

Three types of 'inadequate explanations' emerged. *Poorly worded explanations* were the most common problem (n=40). They are statements where the meaning is unclear, sometimes because of poor language usage. For example, "desert animals *have to use other ways of cooling* because they *cannot afford to lose water* in this way" (A:Gr8:82). The anthropomorphic and teleological wording (Sanders 2014) of this explanation could cause misconceptions i, ii and iii, and even iv (see Table 2). *Incomplete explanations* (n=16) were the next most frequent. They lack essential information needed for full understanding of the concept being explained, for example, "evolution is *change in a population* of plants or animals *over time*" (B:Gr7:29), without further elaboration. The 'change' referred to needs clarification regarding existing traits becoming more frequent (and how) if evolution by natural selection is to be understood without any misconceptions forming. Furthermore, the relative phrase 'over time' is too vague, as to fully understand evolution it needs to be clarified that evolution takes many generations to happen, and the reasons for

this need to be explained. Statements involving *misleading wording* (n=12) actually imply incorrect ideas likely to lead to misconceptions. For example, "describe how the gemsbok has adapted to survive desert conditions " (A:Gr8:83) sounds innocuous but overtly implies that individual organisms can adapt, do so purposefully, and that this is done in order to survive, inferring misconceptions ii, iii, and iv, respectively.

Table 3: Frequency of the commonest latent errors, by publisher and grade

Problem category		Publisher A		Publisher B			
		Grade		Grade			
		8	9	7	8	9	Totals
Inadequate explanations	Poorly explained	9	9	4	11	7	40
	Explanation incomplete	3	3	8	1	1	16
	Misleading wording	2	3	0	7	0	12
Problematic use of the risk-term 'adapt(ation)'		61	13	3	42	5	124
Problematic use of 'species' or 'organisms' evolving		1 / 0	5 / 1	0 / 1	4 / 1	0 / 0	10 / 3

In addition to inadequately worded statements, the inappropriate use of 'risk-terms' in the textbooks was problematic. Such terms are latent errors because although the terms themselves are not incorrect, inappropriately used they imply errors. The two problems (inadequate explanations, and the use of risk terms) were often interwoven. Table 3 summarises the frequencies for three risk-terms, the most serious problem being with the term 'adapt' or 'adaptation', which was inappropriately used 124 times, often implying individual organisms acted anthropomorphically, trying to adapt to changing environments or food sources in an effort to survive. For example, a definition of 'adapt' in one book uses the everyday meaning of the word, rather than the scientific meaning: "Adapt – To adjust to a set of conditions" (B:Gr8:51). The everyday meaning has anthropomorphic and teleological connotations, and is likely to lead to misconceptions ii and iii. The scientific meaning of 'adapt' emphasises that only populations not individuals adapt, that they do so by natural selection, and that this takes many successive generations to happen. Bardupukar (2008) uses the term 'evolutionary adaptations', which we believe would help people make the link between adaptations and evolution, which might reduce the numerous misconceptions associated with the term 'adapt'.

There were numerous problematic instances regarding the use of the risk-terms 'organisms' and 'species' when referring to evolution. Talking about *organisms* evolving (n=10) greatly increases the chances of causing the misconception that individuals adapt and evolve, for example 'adaptations of different *organisms*' (B:Gr8:74) rather than *populations of organisms*. Similarly, careless use of 'species'

evolving, when discussing a specific example (n=3) can lead to the misconception that whole species evolve, when in fact only populations in an area evolve, not the whole species worldwide. 'Many species may not have been able to adapt to the change in climate' (A:Gr9:111). However, a new species can evolve in a particular area, and later spread.

Other risk-terms were found, but less frequently: for example, the misleading term 'Cradle of Humankind' is easily misinterpreted if not explained. The name implies that humans/human ancestors first evolved there, which is not true. This problem was identified in only one book, where the potential risk was escalated into a manifest error by actually stating (not just implying) that the oldest human remains were found there. It also erroneously equated the Cradle with Sterkfontein Caves only, and not the whole surrounding area plus two other geographically distant sites. "The *Sterkfontein Caves* in Gauteng are called the *Cradle of Humankind because the oldest human remains have been excavated here*" (B:Gr9:39). Care needs to be taken that when potential risk-terms are used, they are not used in ways that promote misconceptions identified earlier in the paper.

CONCLUDING REMARKS

Our review of more than 50 empirical studies involving pupils, university students and teachers, shows that most misconceptions reported about evolution and natural selection occur in many countries across the world, and are held by a large number of students at secondary and tertiary level, and even by teachers. Few studies, however, have analysed textbooks as a potential source of such errors. It is interesting to note which of these common misconceptions were found in the textbooks, and which were absent. Some of the frequent misconceptions found in the literature may be absent in the textbooks because they are about evolution, and not about the mechanisms behind it, and because they are so obviously scientifically incorrect. For example, the unscientific notion that evolution says that humans evolved from monkeys or apes, identified in almost half of the studies reviewed, was held by more than a fifth of each sample in studies with samples of over 400 (BouJahoude *et al*. 2011 in Egypt and Lebanon, where 37% held this idea; Prinou *et al*. 2008 in Greece; and Yates and Marek 2014 in the USA). Yet this misconception did not appear in any of the textbooks we reviewed. Nor did the scientifically incorrect idea promulgated in the entertainment media that humans once hunted dinosaurs, which were long extinct when humans evolved. This was found in 21%, 35% and 13% of the samples in the three studies above. The errors we found in the textbooks were predominantly about the mechanism of evolution (natural selection) and almost all were associated with the two alternative frameworks 'evolution on demand' and 'survival of the fittest'. For example, the incorrect idea that individual organisms evolve was found in about a fifth of the studies reviewed, held by varying percentages of the samples. In two of the large studies it was held by 47% of the pupils (Prinou *et al*. 2008) and 77% of

the post-tuition sample (Yates and Marek 2014). People holding this misconception often also believe that the organisms change because they need to (for example, 60% in the Prinou *et al*. study and 36% in the Yates and Marek study), in order to survive changing environmental conditions (59% in the Prinou *et al*. study). Prinou *et al*. (2008) found a statistically significant correlation between the misconceptions that organisms adapt because they need to survive, and organisms adapting to their environments. The inference is that if one holds an alternative framework (a broad way of thinking about a topic), many of the individual misconceptions associated with that framework will also be present.

This study contributes to the literature because it systematically and comprehensively analyses a potential source of unscientific ideas about evolution – textbooks. It has also shown that many of these errors originate from scientifically incorrect statements in the official curriculum statement. Furthermore, the study has identified that latent errors (which are not errors per se, but are worded in such a way that they could cause errors) are a serious threat. We consider latent errors to be particularly problematic, because they are more frequent, and often appear to be correct yet are very likely to lead to misconceptions. Further research into how teachers and pupils actually interpret statements containing latent errors is needed to establish the extent of this potential threat. The occurrence of both manifest and latent errors in policy documents and textbooks diminishes their value as support documents for teachers whose content knowledge is weak.

The paper also revisits the idea of slippages between types of curricula. Textbooks are artefacts that contain a version of the perceived curriculum (as perceived by the textbook authors). Although errors were found in the textbooks even when not present in the curriculum statement (a good example of curriculum slippage), when there were errors in the curriculum statement they escalated in frequency in the textbooks. This poses serious problems for the teaching and learning of evolution when, as in South Africa, authors have to follow the curriculum statements or the textbooks do not appear on the 'approved list' from which government schools are supplied with their books. As pupils use the textbooks (as part of the enacted curriculum) any errors in the books are likely to be passed on to them. Furthermore, a gap in the support materials exists if misconceptions about evolution (identified in the research literature as a universal problem) are not actively dealt with by identifying (for teachers and pupils) common misconceptions and helping to correct them. Textbooks from Publisher B overtly pointed out misconceptions and offered explanations about why such claims were incorrect. The greater awareness of common misconceptions in the textbooks from Publisher B may also explain the much lower occurrence of misconceptions in the textbooks of these publishers.

It is important to note that document analysis cannot determine why erroneous statements occurred, for example, whether the textbook authors themselves supported such ideas or whether other pressures such as errors in the curriculum statements or in matriculation examination papers and memos (Reddy and Sanders

2014) influenced the claims made in the books. Nor can document analysis determine whether unscientific statements are true misconceptions (mentally constructed ideas) held by authors or just errors acquired from other sources. Further research would be needed to establish this, and is important in trying to find solutions to the problem of errors in textbooks.

Although the study was limited to South African curriculum materials it seems likely that similar problems could occur elsewhere, which suggests avenues for further research. The value of this study is in providing evidence and raising awareness of the problems of actual errors and latent errors in curriculum support materials. While this information is important for teachers, it is critical for developers of instructional support materials, who would need to take action to correct problems in the policy statements and to avoid the problems in future textbooks. Immense care needs to be taken when wording explanations, as it is so easy to inadvertently make the types of latent errors identified in this study. Our workshops with publishers and authors, as well as subject advisors and teachers, have served to publicise the problem among stakeholders, who have been deeply concerned about the findings. Many are already taking appropriate action to deal with the problem.

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THE INCORPORATION OF THE USA 'SCIENCE MADE SENSIBLE' PROGRAMME IN SOUTH AFRICAN PRIMARY SCHOOLS: A CROSS-CULTURAL APPROACH TO SCIENCE EDUCATION

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ABSTRACT

The Science Made Sensible (SMS) programme began as a partnership between the University of Miami (UM), Florida, USA, and some public schools in Miami. In this programme, postgraduate students from UM work with primary school science teachers to engage learners in science through the use of inquiry-based, hands-on activities. Due to the success of the SMS programme in Miami, it was extended internationally. The SMS team (two Miami Grade 6/7 science teachers and two UM postgraduate students), 195 learners, and five South African teachers at two primary schools in Pretoria, South Africa, participated in this study. A quantitative research design was employed, and learners, teachers and UM postgraduate students used questionnaires to evaluate the SMS programme. The results show that the SMS team was successful in reaching

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the SMS goals in these South African schools. More than 90% of the learners are of opinion that the SMS team from the USA made them more interested in the natural sciences and fostered an appreciation for the natural sciences. All the South African teachers plan to adopt and adapt some of the pedagogical strategies they learned from the SMS team. This article includes a discussion about the benefits of inquiry-based learning and the similarities and dissimilarities of USA and South Africa's teaching methods in the science classrooms.

Key words: Science Made Sensible, United States, South Africa, learners, teachers, postgraduate students, natural sciences, hands-on, inquiry-based learning

INTRODUCTION

Globally, educators are faced with the challenge of making science sensible. Perhaps Albert Einstein put it best when he stated 'the fundamental ideas of science are essentially simple and may, as a rule, be expressed in a language comprehensible to everyone' (Einstein & Infeld 1966:27). But this is seldom honoured. Scientific concepts sometimes are made much more complicated and confusing than necessary due to some educators not relating to their audience. For example, there is a tendency for some educators to fall back on excessive technical jargon. Learner[1] achievement and interest in science begin a steady decline during primary school when instruction is rote and poorly presented (Osborne *et al*. 2003). Research shows that there is a connection between having positive background experiences with science and the development of interest in science (Bulunuz & Jarrett 2010).

In 2007, Science Made Sensible (SMS), funded by the National Science Foundation (NSF), began as a partnership between the University of Miami (UM), Florida, USA and Miami-Dade County Public Schools[2]. The SMS programme pairs postgraduate students in the science, technology, engineering and mathematics (STEM) disciplines with local primary school science teachers. Each postgraduate works with his/her teacher partner for one continuous academic year in Grade 6, 7 or 8 science classrooms. They strive to make the science education experience interesting and exciting for primary school learners. Postgraduates and teachers work together to develop lesson plans, focusing on inquiry-based, hands-on activities that are connected to core concepts in the sciences. When possible, they integrate the disciplines of mathematics, biology, chemistry and physics in the lessons. By engaging learners in the practices of science, we can help them begin to understand what science is and how scientific knowledge develops and advances (National Research Council 2011).

Traditional instructional approaches have little impact on the development of learners' scientific reasoning abilities (Bao *et al*. 2009). In contrast, many researchers including Benford and Lawson (2001), Gerber, Cavallo and Marek (2001) and Zimmerman (2000) reported that inquiry instruction can promote scientific reasoning abilities. To develop a society of scientifically literate individuals, educators need

to foster an interest in and understanding of science at a young age. This requires the effective communication of scientific concepts through hands-on, inquiry-based class activities.

The SMS programme is based on a hands-on/minds-on learning model (Haury & Rillero 1994). Its basic premise is that when students are physically involved in science they are more likely to be mentally engaged. The theoretical framework of this study was drawn from three main areas of the literature: inquiry-based approach, hands-on activity, and minds-on learning.

The work of the theorists Piaget and Vygotsky was blended into the philosophy of learning known as constructivism (Cakir 2008), which was used to shape instructional materials. Constructivism implies that learners need opportunities to experience what they are to learn in a direct way and time to think and make sense of what they are learning (Tobin 1990). Loucks-Horsley *et al*. (1990:48) are of the opinion that 'exemplary science learning is promoted by both hands-on and minds-on instructional techniques – the foundations of constructivist learning'. Constructivism-based instructional materials are commonly classified under the name of 'inquiry-based' and include hands-on activities as a way to inspire and engage learners while concretizing science concepts (Minner, Levy & Century 2009). Hands-on learning activities are consistent with learner-centred strategies based on a constructivist learning-teaching approach (Taraban, Box, Myers, Pollard & Bowen 2007). Inquiry-based learning refers to the pedagogical approach that uses the general processes of scientific inquiry as its teaching and learning methodology (Ketpichainarong, Panijpan & Ruenwongsa 2010). Not only does it promote science content, but it also promotes learners' habits of mind, creative thinking, problem-solving ability, science process skills and understanding of the nature of science (Hofstein & Lunetta 2003; 2004). Kubicek (2005) emphasised that inquiry-based learning should include the basic abilities of conducting a scientific investigation as well as an understanding of how scientists do their work. But DeBore (2004) makes the important point that inquiry-based learning does not require learners to behave exactly as scientists do.

The SMS programme is designed to address the interrelated problems of scientists' failure to communicate sensibly, school teachers' lack of grounding in science, and the decline between Grades 4 and 8 in science and mathematics scores in the USA (Gonzales, Williams, Jocelyn, Roey, Kastberg & Brenwald 2008*)*. These problems are recognised, but they are often considered independent issues and addressed separately. With SMS we address these problems systematically.

SMS has three overarching goals: 1) improve the communication and teaching skills of postgraduate students, 2) enhance the professional development of primary school teachers, and 3) advance the scientific curiosity and learning of primary school learners. Each academic year, ten UM postgraduates and ten Miami-Dade County primary school science teachers are selected to participate in SMS. During

the summer before an academic year begins, these selected participants engage in a two-week summer institute at UM. Each day has a different topic, such as written and oral communication skills, cooperative learning, team building, metacognition, directed discussion and effective questioning, promoting and assessing critical thinking, problem-based and case-based learning, and formative and summative assessment. All the postgraduates and teachers work together to develop both skills and inquiry-based lesson plans that meet Next Generation Sunshine State Standards[3]. At the end of the institute each postgraduate is paired with one teacher with whom he/she collaborates during the summer academic year. The SMS teams incorporate the lesson plans they developed during the institute into the science curriculum.

Expertise in a specific field does not mean necessarily that one is good at helping others understand that field (National Research Council 2000). Universities train postgraduates how to do scientific research, but not how to communicate it. With SMS, we train postgraduates to be effective communicators by teaching them how to make science more sensible; we use primary schools as their training ground. The SMS programme helps them become abler science communicators that will benefit them wherever they find themselves professionally – in academia, public school teaching, government service, or non-government organisations. The postgraduates' presence in the primary school classroom benefits teachers who possess too little scientific knowledge and, as a result, are uncomfortable with inquiry-based activities. This, in turn, sparks learner excitement. The teachers and learners give the postgraduates a gift, too: mental clarity and oral simplicity.

This is now the 8th year of our SMS programme in Miami. Teacher (n=27), postgraduate (n=40), and learner (n=1 252) evaluations were conducted at the end of each year of the programme. In the evaluations, teachers emphasised that they related to the postgraduates as peers and not as teaching assistants. The teachers seem to take enormous pride in the fact that postgraduates were conducting cutting-edge research and that they shared their experiences with the learners. The teachers felt that: 1) the postgraduates brought an increased level of scientific expertise and flexibility into the classroom, 2) having a postgraduate in the classroom allowed for more one-on-one interaction with students, 3) working with a postgraduate allowed a deeper level of coverage of the concepts being taught, and 4) the postgraduates help students see science in practice. The teachers unanimously agreed that the postgraduates have had a significant impact on increasing learner performance. Eight-five per cent of teachers strongly agreed that, after the programme, they knew science well enough to replace lecture presentations with labs on almost any subject in the primary school curriculum. And at the end of each year's programme, all teachers strongly recommended that SMS be continued. Evaluation results revealed that over the course of the SMS programme the majority of the postgraduates agreed or strongly agreed that after participating in SMS they felt adequately prepared to explain their research and present basic ideas about their field of study to non-

scientists or the general public. Learners reported that having a postgraduate in the classroom helped them to understand science, and the majority said they would like a postgraduate to work in their future science classes.

Due to the success of our SMS programme in Miami, we were eager to extend it internationally. The goal of SMS in South Africa was to learn about South Africa's educational system, to develop inquiry-based natural sciences lesson plans in collaboration with South African primary school teachers that could be used in both Miami and South African classrooms, and to share pedagogical techniques used in the classroom. A detailed description of the SMS programme in South Africa can be found in Lelliott *et al*. (2012). We chose South Africa as our international destination for two reasons. First, UM already had existing research partnerships with South African universities and informal science institutions. Second, in both countries, there is an achievement gap, specifically a disparity in test scores and persistence rates (Clark 2014), between different 'ethnic' groups. According to the *2014 NSF Science and Engineering Indicators* report, white learners in Grades 4 and 8 in the USA performed approximately 12% higher on the National Assessment of Educational Progress exam than their black counterparts in mathematics and science. In comparison, data from the *National School Effectiveness Study* that randomly tracked a national cohort of leaners for three years, beginning in Grade 3 in 2007, shows that mean literacy scores for learners in former black African schools are less than half of those for learners in historically white schools (Taylor & Muller in Clark 2014).

The educational divide in both countries, coupled with language barriers (three languages in Miami and 11 languages in South Africa), inadequate teacher training, and lack of educational resources could eventually result in shortages of individuals in STEM fields in both the USA and South Africa. The SMS team is committed to ameliorating this situation, and we were delighted to be warmly accepted into the South African primary school system.

In August 2011, funded by the NSF, the SMS programme director, two SMS postgraduates, and two SMS primary school science teachers participated in SMS in South Africa. The team collaborated with Grade 6 and Grade 7 natural sciences teachers at two public primary schools in Pretoria, Gauteng Province. The teachers worked together to create and implement inquiry-based, hands-on lesson plans in the classroom. At the end of the programme, participating learners, postgraduates, and teachers were evaluated. The purpose of this study is to determine how successful the team was in reaching the SMS goals in South African schools. In addition to reporting, the learners', teachers' and postgraduate students' views regarding the SMS programme, similarities and differences between USA and South African teaching methods[5] in the classroom are discussed.

RESEARCH QUESTIONS

The following are the research questions that guided the data collection and research methods:

- Was the USA team successful in reaching the SMS goals in South African schools?
- What were the most successful, and least successful, elements of the programme as evaluated by the learners, teachers, and postgraduate students?
- What were the benefits of the SMS team's inquiry-based approaches in the natural sciences classrooms?
- What are the similarities and differences between USA and South Africa's teaching methods in the natural sciences classroom?
- What were the best practices for designing, planning, facilitating and delivering an inquiry-based learning task?

RESEARCH METHODOLOGY

Sample and participants

In this study the positivist research paradigm, a survey approach and a purposive sampling method were used. One-hundred and ninety-five learners at two primary public schools in Pretoria, Gauteng Province, South Africa participated in this study. For referencing purposes, the sample schools will be referred to as schools A and B. School A is an urban and former Model C school. The school is situated in a middle class area. The staff is predominantly white and only a few teachers are black or 'mixed-race'. More than 95% of the learners in this school are black (Sotho-speaking, Xhosa-speaking, Zulu-speaking). The class sizes are relatively small with no more than 30 learners in a class. The language of instruction is English. The parents are responsible for paying school fees. School B is a township[6] school. The residents in this densely populated township belong mainly to a low-income group. All the staff are black. One hundred per cent of the learners are black (Zulu-speaking). The class sizes are large with up to 40 learners in a class. The language of instruction is English, but there are problems in understanding the teachers. Computers in this school are antiquated. In the natural sciences classes, learners do not sit at desks, they stand all day long at tables. Parents do not contribute to school fees.

The participants of the USA SMS team consisted of two UM postgraduate students, two Miami primary school science teachers, and the programme director. Miami science teachers and postgraduate students were paired with Grade 6/7 natural sciences teachers of the two Pretoria schools. Grade 6/7 natural sciences classes were selected because the Miami teachers already have experience teaching Grade 6/7

classes in the USA. Five Pretoria Grade 6/7 natural sciences teachers were involved in the study: three teachers at School A and two teachers at School B. At school A, two teachers obtained a Higher Education Diploma (HED). Both have three years of teaching experience in the natural sciences. The third teacher with a Master of Education degree (M.Ed.) has 10 years teaching experience in the natural sciences. The three South African teachers at School A were joined by a postgraduate in her third year of a Ph.D programme in UM's biology department and a USA teacher with a Doctor of Education degree (D.Ed.) who had over 25 years of experience teaching 6th and 7th Grade natural sciences in Miami inner city schools. At school B, one of the South African teachers has an HED and 20 years experience in teaching Grade 7 natural sciences. The other teacher obtained a Baccalaureas Educationis (B.Ed.) and has 12 years of teaching experience in natural sciences. These teachers partnered with a postgraduate also in her third year of a P.hD,. programme in UM's biology department and a USA teacher with a baccalaureate degree after her first year of teaching Grade 7 natural science in Miami as part of the Teach for America Program. The USA SMS team designed and delivered various lesson plans in collaboration with the South African teachers and shared pedagogical techniques used in the natural sciences classrooms. The international team shared pedagogical techniques and created and implemented new lesson plans on 'heat transfer' at School A and 'temperature change' at School B. In August 2011, the SMS South African programme lasted, in total, eight continuous school days.

Data-gathering instruments

The learners', teachers' and postgraduate students' questionnaires (written in English) contained both open-ended and closed-ended questions. Ethical clearance was approved by the Faculty of Education Research Ethical Committee. The research met the ethical guidelines laid down by the university for human educational research, including voluntary participation, informed consent, confidentiality, anonymity, trust and safety in participation. The responses yielded demographic data as well as information on the learners', teachers' and postgraduate students' personal experiences of the SMS South African programme. Each of the learners', teachers' and postgraduate students' questionnaires included a Likert scale section. In each case the participants were required to tick one of five options on the scale to indicate to what extent they agreed or disagreed with each statement: (1 = strongly disagree, 2 = agree, 3 = neutral, 4 = agree, 5 = strongly agree).

Data collection strategies

Single questionnaires were completed voluntarily during routine classes at the end of the SMS South African programme. Participation was voluntary and participants did have a choice as to whether they wanted to submit the completed questionnaire or a

blank form. The learners', teachers' and postgraduate students' questionnaires took about 30 minutes each to complete.

Data analysis procedure

The responses to the open-ended questions were analysed both qualitatively and quantitatively. In the case of qualitative analysis, open-ended questions were analysed by means of open-coding (Strauss and Corbin 1990). The responses to the closed-ended questions were analysed using frequency counts. These Likert responses were reduced to two: agree ('strongly agree' and 'agree' combined) and disagree ('strongly disagree' and 'disagree' combined). Descriptive statistics (for example, frequencies) of the survey data were used to elaborate and enhance the discussion. Results are presented as percentages rounded to whole numbers. Mann-Whitney U tests were also used to compare the mean rank scores of the learners' responses to the different statements for each school.

Validity and reliability

The questionnaires' content validity was face-validated by two experts in the field of sciences, who are competent to judge whether the questionnaire reflects the content domain of the study. Based on the feedback of the pilot study and from the experts, the questionnaires were revised. Redundancies and ambiguities were removed to improve the clarity in the formulation of certain items in the questionnaires. The reliability of the learners' questionnaire was tested using Cronbach's alpha coefficient (Cohen, Manion & Morrison 2007). The reliability of the questionnaire was acceptable with a Cronbach's alpha coefficient of 0.72.

FINDINGS AND DISCUSSION

Biographical information

In total, 195 questionnaires were returned. Of these 71 (36%) at School A and 124 (64%) at School B (Table 1). The majority of learners (102; 52%) were in Grade 6 while 58 (30%) indicated that they were Grade 7 learners. Thirty-five (18%) learners did not indicate which grade they were in. The majority of learners (106; 54%) were female. Two female Miami teachers, two female UM postgraduate students, two male and three female South African teachers participated in this study. Both UM postgraduates students are pursuing Ph.D. degrees in biology at UM.

Table 1: Demographic traits of participants

Schools	Learners (n=195)	Grades*	Teachers (n=7)	Postgraduate students (n=2)
School A (n=71)	33 boys 38 girls	63 (Gr.6) 8 (Gr.7)	2 SA males 1 SA female 1 USA female	1 USA female
School B (n=124)	56 boys 68 girls	39 (Gr.6) 50 (Gr.7)	2 SA females 1 USA female	1 USA female

** 35 learners in School B did not indicate which Grade they were in*

Experiences of the participants

Learners

Learner responses to statements 1 to 4 were significant at the 0.05 probability level ($p < 0.05$) (Table 2). In other words, learner responses to these four statements differed significantly between the two schools. However, for both schools, the majority of the responses for each questionnaire statement were in the 'strongly agree' category (Table 2). Table 2 shows the breakdown of learners' responses to statements concerning incorporation aspects of the SMS programme in two South African primary schools. From the results, it appears that the learners generally are in favour of linking the SMS team in their educational environment. The majority of the learners were sure (either 'agree' or 'strongly agree') that having the SMS team from the USA in their classrooms helped them understand science (statement 1). School B had a higher percentage (99%) of positive responses than School A (90%). Many learners had the same opinion (either 'agree' or 'strongly agree') that the SMS team from the USA made them more interested in science (statement 2) for example. School B (100%) and School A (94%). The learners were optimistic (either 'agree' or 'strongly agree') in having the SMS team from the USA in their classes because this team helped them appreciate why science is important (statement 3). All the learners of School B agree (100%) with this statement, followed by School A (90%). The statement 'I would like a scientist to work in my future classes' elicited positive responses from 100% of the respondents in School B and 88% in School A.

Table 2: Responses of learners in two schools concerning the incorporation of the SMS programme in South African natural sciences classrooms

Statement	Responses (%)				
	Strongly agree	**Agree**	**Neutral**	**Disagree**	**Strongly disagree**
1. Having the SMS team (scientists and teacher) from the USA in the classroom helped me understand science	48 (A) 92 (B)	42 (A) 7 (B)	10 (A) 1 (B)	0 (A) 0 (B)	0 (A) 0 (B)
2. The SMS team (scientist and teacher) from the USA made me more interested in science	62 (A) 89 (B)	32 (A) 11 (B)	6 (A) 0 (B)	0 (A) 0 (B)	0 (A) 0 (B)
3. Having the SMS team (scientists and teacher) from the USA in my class helped me appreciate why science is important	55 (A) 92 (B)	35 (A) 8 (B)	10 (A) 0 (B)	0 (A) 0 (B)	0 (A) 0 (B)
4. I would like a scientist to work in my future science classes	68 (A) 94 (B)	20 (A) 6 (B)	10 (A) 0 (B)	3 (A) 0 (B)	0 (A) 0 (B)

A = School A; B = School B

Four thematic categories emerged from the open coding of the learners' responses to the question, 'What was the best part about having the SMS team from the USA in your classroom?' (Table 3). The main explanation for the learners' positive responses (42%) related to 'Doing hands-on activities/experiments'.

The following comments reflect some learners' positive reactions:

> I'd like to say to you that you made me love science. Now I want to be a scientist. I want to discover more about the world and be able to know all the answers (learner in School B).

> I liked the fact that the SMS team made science fun (learner in School A).

> We understand the work better and we just wanted to come back to the class (learner in School A).

> The best part that I enjoy is to learn that science is important (learner in School B).

Table 3: Learners' responses indicating the best part about having the SMS team in their classrooms

Categories elicited from learners' comments	Percentages (%)		x□ (%)
	School A	School B	
Doing hands-on activities/experiments	35	49	42
Learned how to apply or understand science	34	47	41
They made science fun	23	1	12
They made me appreciate science more	8	3	5

Teachers

The South African teachers agree (either 'agree' or 'strongly agree') that having Miami postgraduate students and teachers in their classes was a constructive experience. They contended that they gained knowledge of the educational system in the USA by interacting with the SMS team. Furthermore, they said that they will be able to incorporate some of the SMS activities into their classroom. Some teachers have adopted and adapted the pedagogical strategies (that is, cooperative learning, inquiry-based learning, assessment) they learned from the SMS team. On return trips to South Africa, the programme director has observed our South African teacher partners using the lesson plans first introduced to them through SMS. The teachers felt the learners benefited from the activities of the SMS team and they are of the opinion that the visit by the SMS team had a positive impact on their teaching.

The South African teachers made positive comments such as:

> They really made an impact on my many years of teaching experience.
>
> I noticed that they do a thorough plan and research of the activities and so I am encouraged to use the internet for more information when planning an activity.
>
> I will definitely use the SMS activities in my classes and will share the knowledge I gained with other teachers from neighbouring schools understand its importance, and I think they will value it more than before.
>
> They motivated the learners and some want to become scientists.
>
> I really needed to be empowered on scientific issues and I gain a lot.
>
> I have gained different ways of dealing with concepts that were difficult for me to tackle.

The Miami teachers were in agreement (either 'agree' or 'strongly agree') that their experiences teaching with South African teachers were positive. One teacher said: 'This experience has been life changing.' They have the same opinion that their many years of teaching experience gave them a greater appreciation for the common challenges in teaching in Pretoria schools. The Miami teachers agreed that their teaching experience in South Africa gave them new insight into how to make science more sensible in Miami. Furthermore, both teachers felt they benefited professionally from teaching in the South African science classrooms.

The following is a comparison of the Miami-Dade County Public School (MDCPS) and the South African public school system in Pretoria, from the viewpoint of the two Miami teachers. The Miami teachers observed numerous differences between the school systems that were enlightening and provided great learning opportunities for them as teachers. They were most impressed by the differences in the sense of community, curriculum and methodology between the MDCPS and the South African schools.

The Miami teachers agreed with the postgraduate students that the sense of community embodied in a school is one of the most valuable assets it can have. It is this feeling, shared by the learners, faculty and administration, that unites the stakeholders together to reach a similar goal of education. One Miami teacher stated: 'We were beyond impressed by the sense of community we witnessed in Pretoria.' The teachers work together, share resources and responsibilities, and the adults at that school function as a team. The learners respond very well to that environment, respecting and loving all the teachers at the schools. Learners at various Grade levels would accept praise, discipline, and instruction from all teachers and administrators in the school. That sense of community is much weaker in MDCPS. One teacher made the following comment: 'Many of our learners do not feel safe or invested at school, and it was a new experience witnessing a family-like environment at a public school.'

A second observed difference was the educational curriculum, or the documents that outline exactly what the students are to be taught. In MDCPS, the curricula are very structured and specific, and the expectations of what teachers are meant to teach are very clear. Those documents are made by the school board and distributed to all public schools in the USA. The curriculum in South Africa was vaguer. There were no precise instructions or expectations of how the learners were meant to express their knowledge. In the Miami teachers' opinion, the MDCPS curriculum is much more conducive to streamlined instruction and student mastery.

Lastly, the methodology between science instruction in Miami and South Africa is very different. The curriculum used to deliver instruction in South Africa relied heavily on memorisation. Teachers would lecture, learners would take notes, and then learners were expected to memorise and recall facts. In Miami the instruction is much more process-based. Miami teachers require learners to think analytically, and

the goal is for learners to understand systems of science. This helps them apply their knowledge in different situations. In South Africa the learners had some difficulty responding to open-ended prompts and applying the facts they learned in new situations.

Overall, both education systems have clear strengths and are quite different. The South African system has the strength of a strong school community, which is a safe and loving environment for the learners. The Miami system has strengths in the form of a detailed curriculum that facilitates interactive teaching. Miami's system also has the distinct advantage of implementing problem-based learning and teaching learners analytical skills.

Postgraduate students

The postgraduate students were in agreement (either 'agree' or 'strongly agree') that their collaboration with South African teachers was a fruitful learning experience. One postgraduate commented: 'Best experience I've had in academia. It opened my eyes to the rest of world, taught me invaluable lessons in science teaching, and broadened my research horizons.' Although they are not professional teachers, they agreed that their teaching experience gave them a greater appreciation for the common challenges in teaching in Pretoria and Miami schools. Another postgraduate explained: 'I learned how to use pictures and diagrams to communicate my ideas to students struggling with English.' The two postgraduate students felt that they benefited professionally from teaching in the South African natural sciences classrooms and that their teaching experience in South Africa gave them new insight into how to make science more sensible in Miami schools.

The following is a comparison of the MDCPS system and the South African public school system in Pretoria from the viewpoint of the two UM postgraduate students. These students contended that although South African and USA primary school science curricula focus on similar concepts, there are stark contrasts in the development and implementation of lesson plans and teaching methods. South African schools are characterised by more flexible teaching methods and a greater sense of community among teachers and learners. Whereas, in USA schools, teachers focus their efforts on preparing learners for a standardised test and must rely on school counsellors to be their learners' support system. For example, at school B in South Africa, a learner's only parent died and his teachers visited the learner's home. When they arrived, they found the learner living in a shack with a dirt floor, no bed, no running water, and a coal stove with no food. The teachers felt a sense of responsibility towards this learner and went around the community collecting pillows, blankets and food, and ensured the learner was able to continue attending school. In contrast, the USA school system delegates the responsibility of learners' welfare to school counsellors, Department of Children and Family Services, and teachers, often resulting in confusion as to whom is responsible for a learner. Inevitably, learners fall

through the cracks. For example, an SMS postgraduate student brought a learner to the guidance counsellor's office for bullying, and the counsellor openly hesitated to provide counselling for the learner because she was backlogged with so many other learners' issues.

The postgraduate students were of opinion that the absence of standardised testing in South Africa allows for greater flexibility in teaching while the standardised tests in USA schools produce a more guided and thorough education. Teachers in the USA receive weekly pacing guides and ample online resources, such as PowerPoints, discovery education videos, online lab simulations, and funding for laboratory equipment. Because the two South African schools lack such resources, they indicated that they felt limited in their ability to illustrate complex concepts. For example, attempting to explain seasonality and weather patterns with only a whiteboard and limited supplies was a challenge, especially when compared with the resources available in USA schools. One postgraduate student commented, 'With little resources available, my SMS teacher and I stepped out of our comfort zone and learned how to use simple everyday things to teach scientific ideas such as a water cycle (bowls, hot water, ceran-wrap).' Another example of a postgraduate student using low-cost materials to explain a science topic was the use of hard-boiled eggs to illustrate the layers of the earth and introduce the concept of plate tectonics. Although teaching for Florida's standardised test, called the Florida Comprehensive Assessment Test, initially appears to be constrictive, in reality it provides teachers with solid objectives that guide the learners' science education.

The postgraduate students also found that South African and USA schools teach similar curricula with varying degrees of flexibility and resources. South African schools supplement their lack of resources with their sense of community and emotional support of learners, whereas USA schools are able to teach well-developed lesson plans utilising their abundant resources.

SMS programme and the achievment gap in South Africa

Rogan and Aldous (2005) comment on how educational policies in South Africa completely changed after Nelson Mandela was elected president ending apartheid, and the newly adopted curriculum embraced learner-centred pedagogies. Dudu and Vhurumuku (2012) report on a case study that suggests that when teachers introduce practical investigations they vary in their effectiveness. Ramnarain (2011), in another case study, also found that the implementation of practical science investigations is more difficult in a township school previously designated for black learners than in a former Model C[4] school previously reserved for white learners due to resources, language and physical constraints within the classroom. He suggested that four factors affected the lower quality of science teaching in township schools, contributing to the education gap: physical resources, school management, background of students and community perception of the importance of education.

The USA SMS programme primarily addressed the physical resource issue by engaging students in low-tech hands-on activities. The SMS participants were responsible for determining which supplies would be needed for their planned activities, purchasing those supplies, writing lesson plans according to the Curriculum Assessment Policy Statements (CAPS), and creating worksheets. School B is poorly resourced and has very few supplies. Therefore, it was necessary to help this school with low-tech supplies such as batteries. Bush and Glover (2009) emphasised the critical role that school principals play in the management of teaching and learning. It is imperative that principals encourage their teachers to participate in professional development activities that will enhance learning at their schools. The SMS programme director reinforced the importance of student-centred learning by spending time with school principals at A and B. The principal at School A appeared to take a stronger leadership role in managing teachers and learning at the school than his counterpart at School B. The SMS team was not able to address student background, particularly their difficulties with language. The SMS team did have problems communicating in English with some students at School B and had to rely on teachers speaking to learners in Zulu. We were not able to address the issue of community ethos about the value of education. However, anecdotally, we found that the response rate of parents signing a release form giving permission to have their children participate in a questionnaire did not appear to be different between schools.

Best practices

As part of the SMS training programme in Miami, UM postgraduates and Miami primary school science teachers participate in a two-week summer institute at UM where they learn about communication skills in the classroom, problem-based learning, and how to develop and evaluate inquiry-based science lesson plans. Therefore, the USA SMS team participants had this set of pedagogical skills prior to participating in the SMS South African experience.

Before the USA SMS team travelled to South Africa, they initiated contact, via email, with the South African teachers with whom they would be partnering. Upon their arrival in South Africa, the USA SMS team met with the South African primary school science teachers at the University of Pretoria. They further discussed the goals of the programme and the science topics that were scheduled to be taught during the SMS team's time in the classroom, and they outlined the team's daily activities in the classroom. The SMS team is aware of the South Africa curriculum policy that science teachers are encouraged to source low-cost materials from the home, rather than purchase such materials. However, parents of students in School B still cannot afford even low-cost materials. The implementation of the lesson plans was led by the USA SMS teachers and postgraduates, with participation by the South African teachers. Following implementation of the lesson plans in the classroom, electronic copies of the lesson plans were provided to each of the South African

teachers, and the lessons have continued to be implemented. The lesson plans also were distributed to all participants of the SMS programme in Miami, where they also are being used in the classroom. The USA SMS teams were pre-adapted to deal with large class sizes because a typical class in Miami consists of 40 to 50 learners.

From our experience, it is clear that future participants would benefit from more preparation time. A one-week institute in South Africa, similar to the one conducted in Miami, would be most useful to enhance the SMS South African experience. The increased time to get to know one another, develop a partnership, and discuss personal teaching methods before entering the South African classrooms would allow all participants to contribute equally to the design and delivery of lesson plans. In the future, for additional formative assessment, we intend to administer pre-test and post-tests of learners to evaluate learning gains. For summative evaluation, we will track learners who experienced SMS with a teacher and compare their persistence rates in high school with learners of the same teacher who did not experience SMS.

We do not want to be presumptuous in assuming that pedagogical innovations employed in the USA will be equally effective in South Africa. Yet there seems to be an undeniable convergence internationally of having learners and students learn by doing. Ramnarian (2010), in contextualising curriculum reform in South Africa, points out the new emphasis on students undertaking scientific investigations replacing standard cookbook exercises. Thus, the challenge in both countries is to shift the paradigm from teacher-centred learning to learner-centred learning.

CONCLUDING REMARKS

We view the SMS programme in South Africa as a case study in the same vein as Bush *et al*. (2011), Ramnarain (2011), and Dudu and Vhurumuku (2012). We cannot generalise at this point until we increase sample sizes and track students who have participated in the programme through high school and beyond. Nevertheless, we are pleased with the preliminary success of our SMS programme in South Africa. The SMS model in two different educational contexts has its challenges. According to the teachers and postgraduate students there are major differences in the educational systems between the USA and South Africa. We tried to prepare the SMS team by having an orientation on such differences led by a South African educator. The short duration of the SMS programme in South Africa is another limitation. We extended the interaction through email correspondence between the USA and South African SMS participants to discuss units of instruction. There are elements that have been sustained, including group work and inquiry-based learning. For example, teachers still are using the 'water cycle' and 'layers of the earth' lesson plans (mentioned previously) developed through SMS.

In spite of the challenges, all the South African teachers strongly agreed that having the SMS team in their classrooms was a very encouraging experience, and they could introduce the SMS activities into their future science classrooms. As

for the SMS team, generally participants agreed that their teaching experience in South Africa was positive, and they left with a better appreciation for the common teaching challenges in the city centres of Pretoria and Miami. The Miami teachers and postgraduate students who worked with South African teachers on curricula for both countries all had a rare experience: that of pondering the cross-cultural appeal of science and the commonalities that make it teachable in radically different settings.

The learners of both schools were very satisfied concerning the incorporation of the SMS programme in South African natural sciences classrooms. Comparing the response frequencies to all the questionnaire's statements, the learners of School B were slightly more positive than School A. However, learner satisfaction may not be entirely due to the SMS pedagogy intervention. The presence of the USA SMS team created an excitement within the classroom. Learners were very inquisitive about what life is all about in the USA. Most learners in this inquiry-based learning programme have exhibited increased creativity, communication skills, critical thinking skills and decision making based on their hands-on science activity experiences. Moreover, it helped them develop a positive attitude towards science.

In South Africa, higher education is urging tertiary institutions not only to become socially responsive in regard to community development, but also to produce new knowledge and graduates who are responsive citizens. One method of achieving this is through school-university community service initiatives. It is recommended that the principles of the SMS programme be adopted by the higher education system and elaborated not only in more South African primary schools, but also in secondary schools. In this process communities are learning to work with universities and universities are also learning to work with communities.

Our future plans are for South African teachers to visit Miami primary schools to get first-hand experience of the USA SMS programme and to extend the SMS South African programme to six weeks.

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ENDNOTES

1 Learners: a term used in South Africa to indicate persons educated in schools.

2 Dade County Public Schools: the largest public school system in Florida, USA.
3 Next Generation Sunshine State Standards: competencies in science mandated by the state of Florida that students must learn.
4 Model C school: According to apartheid policy, a Model C school was designated for white learners.
5 Teaching methods: e.g. inductive or deductive teaching methods.
6 Township: township is generally associated with a peri-urban area (suburb).

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