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Editorial
Dolina Dowling

The White Paper for Post-School Education and Training (2013) stresses the importance of the need to have a seamless education system. Whilst this is explicitly referring to post-secondary education, the same principle is applicable for basic education. We want our children to have a wide variety of learning experiences within a holistic system that caters for their needs at each of the different stages in the system so that each person has the opportunity to maximise their potential. Unfortunately in South Africa we still fall short in this regard but this does not mean that we should not continue with our endeavours.

Furthermore, there needs to be well-defined pathways to ensure that those who wish to do so can access and be successful in higher education. It is the ‘duty of all institutions in the post-school system... to work together to ensure there are no dead ends for learners’ (ibid. 9.1). Articulation needs to be both vertical and horizontal. Students need to be able to move up the levels of the National Qualifications Framework as well as be able to move horizontally from vocational to academic streams or vice versa (ibid.).

However, there is more to the matter than the very important rights of South Africans to have a quality education within an integrated, articulated, coherent system. We need to consider national priorities. It is well documented that the growth and prosperity of a country depends to a large extent on having an educated citizenry. In this highly globalised world, a country cannot flourish unless it has the human capital not only to produce knowledge but also to find ever new alternatives to use existing knowledge; it needs scientists, technologists and innovators. A country also needs to have sufficient and appropriate human resources so that it can compete successfully in regional and global markets; it needs lawyers, engineers and high level managers. It also needs professionals who understand and can influence the global fluctuations in wealth and commodities; it needs economists, geologists and leaders. And, of course, a country needs highly skilled health professionals not only to contribute to global advances in medicine but also to meet the health needs of its population. Various policy documents, such as the National Development Plan 2030, the Industrial Policy Action Plan and the Human Resources Development Strategy for South Africa, speak to such requirements. To achieve these desiderata the country needs highly qualified educators at all levels in the system.

When a reductionist view of the various published white papers in education over the last 10 years is taken, it is clear that in essence this is the aim of the education agenda in South Africa. It is to do with social justice: equipping students with the skills and competencies to participate successfully in the economy so that they may lead fulfilled and prosperous lives; developing their critical thinking skills so that they may be engaged citizens who contribute to the social, cultural and political life of the country.
It is, as importantly, about the public good in which the country benefits and flourishes through having a well-educated populace who can compete favourably with their global counterparts in all areas of social and economic activity such as those mentioned above.

Each of the articles, in this edition of the journal, makes a contribution to the macro education agenda of the country and beyond. Whether the articles are focused on school or higher education, or whether they are concerned with in-service education for teachers they, like the white papers, can be reduced to a desire to improve the education experience for the individual whilst improving the system in all its complexity for the public good.

In the first article the authors consider the debates of teaching as being about mediation or facilitation. In their discussion they draw upon different theories regarding these concepts to show that there is no need for such a dichotomy; the two are not mutually exclusive. Whilst the authors were making particular reference to teaching and learning in the school classroom, the discussion is of relevance to practitioners of further and higher education institutions and provides a basis for reflection with regard to understanding different pedagogical approaches.

In the second article the authors draw upon the Foucauldian notion of a ‘panopticon’ in a discussion about teachers in some schools not being permitted to carry out their responsibilities as professionals. This leads to the proletarianisation of teaching. The use of the panopticon as a metaphor is both interesting and thought provoking with respect to school management and for teachers. The authors use a capabilities approach to suggest ways in which teachers’ sense of professionalism can be strengthened. This provides an opportunity to reflect on what we do, why we do, and how we do it. Again, this article is of interest to teaching practitioners and theorists at all levels of education.

In the third and fourth articles, the authors deal with in-service learning for teachers, and the challenges that they face in undertaking an academic albeit professional development programme. The first of these articles provides insight into the preparation of teachers for principalship in Mpumalanga province. The other paper addresses the challenges faced by in-service teachers with regard to academic literacy as a result of which some important recommendations are made.

The following two articles address matters which are of particular concern to higher education institutions. In the first, the benefits of peer-to-peer programming are amply demonstrated. This pedagogical approach is worthwhile considering not only for this discipline but for teaching at all levels. In the other, the authors investigate the use of software in the detection of plagiarism using three different methods. As a result of the study the authors devised guidelines for the effective use of detecting code plagiarism.

Much has been said about globalisation in this journal. In this seventh article the authors analyse the efficacy of an international business module in an MBA programme. The results point to the students developing a broader mind-set which increases the likelihood of business success in global markets.

Lastly, in Practitioners’ Corner the author provides a thoughtful analysis of the challenges encountered by head teachers, deputy heads, heads of departments, and senior teachers in supervisory positions and their perceptions of their roles. This research is carried out in day secondary schools located within a district in Zimbabwe. He identifies various problems which would be worthy of further research across the country. The paper concludes with a number of recommendations that the Department of Education may like to consider in order to strengthen the learning environment in schools.
There is an ongoing debate about whether teaching is better understood as ‘facilitation’ or ‘mediation’. The debate can be framed in relation to three different theoretical accounts of these concepts: (i) teaching as facilitation, as rooted in the genetic epistemology of Jean Piaget; (ii) teaching as mediation, as rooted in the cultural historical psychology of Lev Vygotsky; and (iii) teaching as the seamless incorporation of both facilitation and mediation in the deliberative practice of teachers. The first two frames, as formal theories of cognitive development and learning, suggest a clear analytic distinction between facilitation and mediation as teaching strategies. The last frame foregrounds the pragmatic sense that teachers have of facilitation and mediation as shifting moments in pedagogy. In debating the various framings, it becomes clear that both formal and pragmatic theories make sense of teachers’ classroom pedagogy.

**Keywords:** facilitation, mediation, Piaget, Vygotsky, teacher wisdom

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**ABSTRACT**

There is an ongoing debate about whether teaching is better understood as ‘facilitation’ or ‘mediation’. The debate can be framed in relation to three different theoretical accounts of these concepts: (i) teaching as facilitation, as rooted in the genetic epistemology of Jean Piaget; (ii) teaching as mediation, as rooted in the cultural historical psychology of Lev Vygotsky; and (iii) teaching as the seamless incorporation of both facilitation and mediation in the deliberative practice of teachers. The first two frames, as formal theories of cognitive development and learning, suggest a clear analytic distinction between facilitation and mediation as teaching strategies. The last frame foregrounds the pragmatic sense that teachers have of facilitation and mediation as shifting moments in pedagogy. In debating the various framings, it becomes clear that both formal and pragmatic theories make sense of teachers’ classroom pedagogy.

**Keywords:** facilitation, mediation, Piaget, Vygotsky, teacher wisdom

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**INTRODUCTION**

There is often a great deal of talk amongst teachers and lecturers about whether what we do is ‘facilitation’ or ‘mediation’. If we are facilitators in the classroom, then we need to concentrate on presenting learners with interesting prepared learning environments, evocative learning situations, and learning tasks that allow them to discover new knowledge for themselves. Our role during the learning process is that of a manager (albeit an enlightened, human, *laissez faire* manager) of the learning process. Leave learners to their own devices, we are told, and they will construct learning pathways for themselves. In the strangely similar claims of the two articulators of disembodied ‘learner-centeredness’, the behaviourist BF Skinner and the humanist, Carl Rogers, teaching is really not terribly important:

... teaching is a relatively unimportant and vastly overrated activity (Rogers, 1969: 103)

The requirements [of teaching] are not excessive, but they are probably incompatible with the current realities of the classroom. The teacher is out of date (Skinner, 1968: 21-22).

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Learning occurs regardless of the presence of a teacher, whose role is to facilitate an optimum environment for humanity (human beings or human behaviour) to flourish. At the same time, though, we are faced with rhetoric about how we should be guiding, or scaffolding, or negotiating, or regulating learning in our classrooms. We are told that we have a responsibility to act as critical mediators of knowledge, to get our ‘hands dirty with the messiness and unfinished business of pragmatic knowledge’ (Mason, 2000: 343), that is, to deliberately seek to mediate the practices of our culture, its knowledge, skills, values and attitudes, to our learners.

For a practising teacher, there has to be a bit of a tension here! In the thick of the Outcomes-based education (OBE) ‘paradigm shift’ in South Africa in the 1990s, Emilia Potenza appealed against the strong facilitation lobby: ‘To my mind, reducing the teacher to a facilitator greatly oversimplifies the complex roles that most teachers play every day – sometimes facilitating, sometimes mediating, and sometimes doing a bit of good old teaching’ (1998: 51). At roughly the same time, one of our government education departments appealed against the strong mediation lobby:

Teacher lectures, demonstrations, audio-visual presentations, and programmed interactions are some of the teaching methods that do not fit in with ... active discovery .... Children’s learning experiences should be planned to facilitate assimilation and accommodation. Children should be allowed to explore, manipulate, experience, and question. Instruction should be individualized. Teachers should just facilitate (Gauteng Department of Education, 1999: 15).

The injunctions came thick and fast at the time, and often confused teachers, already suffering from severe cognitive overload in trying to understand OBE discourse, even more.

In this paper we try to make sense of the issues that are raised by these apparent disputes about teaching as either (or both) of facilitation and mediation. We do so by employing a useful distinction made by Wilfred Carr (1995) between theory as a product of theoretical inquiry and theory as a particular way of thinking that guides practice. This allows us to understand that there are indeed theories of psychological development and learning which suggest a clear analytic distinction between facilitation and mediation as teaching strategies, in this case the cognitive developmental theory of Jean Piaget (1970) (as read through schema theory), and Lev Vygotsky’s cognitive development psychology (1978), respectively. It also allows us to suggest that, in the practice of teaching, the working sense that teachers have of facilitation and mediation is of different strategic moments in the process of pedagogy. In the practical wisdom of a teacher, the relationship between facilitation and mediation is a seamless one.

**THEORY AS PRODUCT AND THEORY AS PRACTICE**

Carr (1995: 32) argues that there are two distinct meanings attached to the notion of theory. On the one hand, theories are ‘the actual products of theoretical inquiries’, which are conventionally presented as a set of general principles, laws and explanations. These are formal theories, sets of systematically connected, coherent, corroborated hypotheses. For example, atomic theory in physics, Chomsky’s theory of transformational grammar (1972), or (as will become pertinent to this article) either of Piaget’s theory of genetic epistemology (1970) or Vygotsky’s cultural-historical theory of cognitive development (1978). On the other hand, suggests Carr, a theory is ‘the framework of thought that structures and guides any distinctive theoretical activity .... [it denotes] the underlying conceptual framework in terms of which a particular theoretical activity is carried out and provides it with its general rationale’ (1955: 32). Teaching is not a theoretical activity in the first sense, ‘but a practical activity concerned with the general task of developing pupils’ minds ... it is not concerned with the production of theories and explanations’. However, teaching is a theoretical practice in the second sense, in that it is a ‘consciously performed
intentional activity that can only be understood by reference to the framework of thought in terms of which its practitioners make sense of what they are doing and what it is they are trying to achieve’ (1955: 33). The first kind of knowledge about teaching is abstracted and formal; the second kind is accumulated wisdom. Both are theoretical.

Now let us get one possible objection to this out of the way quickly. This is the idea that teaching has nothing to do with theory, that teaching is ‘just’ practice. Teaching is the messy, hands-on business that happens in the classrooms of the schools down in the villages, townships, flatlands or suburbs. Theory is the esoteric, removed, protected business that happens in the academy up on the hill. ‘It’s all very well in theory, but what does it have to do with practice?’ is the common refrain. Our experience tells us that for the most part teachers do not like talking, even thinking, about theories of teaching or learning. Sometimes, they do engage in discussions about a particular idea they have encountered – so they might discuss amongst themselves Howard Gardner’s distinction between visual, mathematical and bodily intelligences, or B.F. Skinner’s objections to corporal punishment (Gardner, 1983; Skinner, 1953: 184) – but they do this only insofar as it allows them to express or to give voice to their own practices as they understand them. But does this mean that practice is not theoretical? Not at all! – we need to recognise that any practical strategy employed by a teacher in the classroom always has an underlying set of theoretical assumptions entailed within it (whether or not the teacher is aware of these); conversely, any theory of learning and/or pedagogy always has implicit within it a conception of teaching practice. There is no ‘gap’ between the theory and practice of teaching.

Carr provides us with an important insight into this state of affairs:

When ‘theory’ and ‘practice’ are looked at in this way, it becomes increasingly obvious that the gaps between them that usually cause concern are not those occurring between a practice and the theory guiding that practice, but rather those that arise because it is assumed that ‘educational theory’ refers to theories other than those that already guide educational pursuits … the gaps between educational theory and its practical application can only exist because practitioners do not interpret or evaluate the theories that they are offered according to the criteria used by those engaged in theoretical pursuits. (Carr, 1995: 34; our emphasis)

It follows that one of the tasks of an educational theorist is to bring the insights of formal theories of learning – such as strictly psychological theories of learning – into the theoretical terrain that makes sense to teachers, that of the latter’s ‘own accounts of what they are doing, [in order to] improve the quality of their involvement in these practices and therefore allow them to practise better’ (1995: 37).

Now this is precisely what we seek to do in the remainder of this article. As formal psychological theories of learning and development, the Piagetian and Vygotskian problematics are analytically distinct, and offer quite different accounts of the role of teaching in the construction of children’s learning. It is easy to see how Piaget’s theory led to the idea that teaching is facilitation, and how Vygotsky’s led to the idea that teaching is mediation. However, it is equally clear how both sets of ideas, when brought into concert with teachers’ practical wisdom, offer elaborations of and help make sense of a unified pedagogic practice in which there is both facilitation and mediation of learning.

**PIAGET: DEVELOPMENT PRECEDES LEARNING**

Piaget’s fundamental view is that the ‘engine’ of cognitive development is biological (for Vygotsky, as will become clear later, this ‘engine’ is social). As his starting point in the analysis of learning, Piaget posits that development precedes learning. For children to be capable of any kind of learning they must first have developed certain corresponding structures of thought: ‘the development of knowledge is a spontaneous
process, tied to the whole process of embryogenesis. Embryogenesis concerns the development of the whole body, but it concerns also the development of the nervous system’ (Piaget, 1964: 20). In the quest to justify how and why development precedes learning, Piaget argues that cognitive structures develop in a biological chronological order, which he conceives as four stages of development, namely the sensory motor, preoperational, concrete operational and formal operational stages (Piaget, 1964). He further stipulates that there are four factors that work together in the development process from one stage to the other. These are maturation, experience, social transmission and equilibration. Piaget believes that the first three factors (notably social factors) are all needed for development, but on their own are insufficient to explain how it takes place. He insists that, in the development of knowledge, it is the fourth factor, biological equilibration (the tendency of the organism to adapt to its environment) that is fundamental. Hence, for development to occur, equilibrium between the other three factors must be achieved. The child must first mentally or psychologically mature and develop the appropriate structures of thought in order to deal with environmental or social interactions in acquiring knowledge.

So Piaget views cognitive development as a biologically-driven process on which external forces have no influence, while inversely, learning results from our experiences of social processes and environmental features of the world. The implication that can be drawn from this is that for Piaget, learning is subordinate to development since it is only made possible by already constructed structures of thought. For a child to learn he/she must have matured and have developed the necessary formal structures of thought, but learning is ‘provoked by situations or the teacher’ rather than ‘spontaneous’ like development (1964: 8). Now this leads directly to an account of the essence of teaching as facilitation. The role of the teacher is to set up learning events and learning environments that will ‘provoke’ the prevailing cognitive structures of the child to learn something.

The strong version of this view is the following: that if children are placed in a carefully designed, conducive (i.e. a facilitated) learning environment and left to their own devices, then they will construct their own new understandings of the world. They are after all active learning organisms seeking to adapt to the knowledge environment in which they find themselves - they continuously seek to assimilate unfamiliar knowledge into their prevailing cognitive structures, and to develop new structures by accommodating themselves to the knowledge they have assimilated. Piaget (1953) used the concept of ‘schema’ (plural, schemata) to denote a mental structure that assimilates observed environmental patterns. In other words, schemata are intellectual structures that organise perceived events and group them according to common patterns. ‘All knowledge of objects is a function of those action schemata to which the object is assimilated; and these range from the earliest reflexes to the most complex elaborations acquired by learning’ (Inhelder & Piaget, 1958: 6).

Importantly, it was not Piaget that developed this strong version of the facilitation view of teaching, but rather neo-Piagetian thinkers, particularly in the United States. Broadly speaking, this refers to what is known as schema theory. David Ausubel’s assimilation theory of learning seems to have been particularly important in this regard (Seel, 2012a). Ausubel was strongly influenced by Piagetian ideas, particularly during the period he spent at the University of Berne in Switzerland in the 1950s (Seel, 2012b). For Ausubel, new information is assimilated (‘subsumed’ or ‘incorporated’) into an ‘anchoring structure’ (analogous to Piaget’s notion of ‘schema’, an operative unit of cognitive structure) already present in the learner. For example, a child might greet a dog by calling it ‘kitty’. At this stage of development she has an operative schema (anchoring structure) for ‘kitty’, which consists of a set of features such as four legs, fur, tail, and wet nose. She assimilates the unfamiliar creature into her pre-existing knowledge structure, into the schema of ‘kitty’. This recognition of the importance of the active structuring of learning by prior knowledge, itself structured, led Ausubel to his central principle regarding teaching: ‘If I had to reduce all of educational psychology to just one principle, I would say this: the most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly’ (Ausubel, 1968: vi).
Good teaching then is about facilitating a conducive learning environment; it is about presenting a learner with ‘appropriately relevant and inclusive introductory materials ... introduced in advance of learning ... at a higher level of abstraction, generality, and inclusiveness’ (Ausubel 1968: 148). Accordingly, learning refers to the process of acquiring or constructing meanings from new learning material. These materials, Ausubel called ‘advanced organisers’. In his early work, Ausubel coined the term ‘discovery learning’ to refer to the most active form of learning produced by appropriately designed advance organisers, which he contrasted with ‘reception learning’ (where ‘the entire content of what is to be learned is presented to the learner in its final form’- Ausubel, 1961: 17). Discovery learning happens when children ‘rearrange a given array of information, integrate it with existing cognitive structure, and reorganise or transform the integrated combination in such a way as to create a desired end product or discover a missing means–end relationship. After this phase is completed, the discovered content is internalised just as in reception learning’ (1961: 17).

In the neo-Piagetian universe, ‘discovery learning’ has come to be synonymous with the strong metaphor of teaching as facilitation: it refers to the idea that ‘learners are essentially independent, free-ranging problem solvers who construct their own learning pathways.... [that] children learn best when left to their own devices’ (Moll, 2002: 18).

However, it is important to recognise that Piaget himself did not hold this strong view of teaching as facilitation. Against the idea that the learner is a solitary centre of knowledge construction, Piaget argues:

> The individualist thesis consists in saying that logic is constructed at the heart of individual activities and, once achieved, permits the establishment of co-operation. The problem with this is that it is only by co-operating with others and not beforehand that the individual elaborates his logic. The current sociological thesis opposes a global interpretation to the individualist thesis, that is, social relationships constrain the individual to recognize a logic. While we agree with this, it is on the condition that these relationships themselves present such a logic (Piaget, 1955: 145).

And with respect to the idea that the teacher is merely a facilitator, Piaget chides those who interpret this to mean that teaching is relatively unimportant, or overrated, or out of date:

> [There is the] fear (and sometimes hope) that the teacher would have no role to play in these experiments and that their success would depend on leaving the students entirely free to work or play as they will. It is obvious that the teacher as organiser remains indispensable in order to create the situations and construct the initial devices which present useful problems to the child. Secondly, he is needed to provide counter-examples that compel reflection and reconsideration of over-hasty solutions. What is desired is that the teacher cease being a lecturer, satisfied with transmitting ready made solutions; his role should rather be that of a mentor stimulating initiative and research (Piaget, 1978: 16).

It is also important to acknowledge that Ausubel, in his later work, also distanced himself from the strong view, in relation to school learning: while he saw a place for the methods of discovery learning in the classroom, for example in problem-based tasks or in the science laboratory, he argued that they ‘hardly constitute an efficient primary means of transmitting the content of an academic discipline’ (1978: 26).

Piaget’s view is that cognitive development results from the child’s individual exploration of the world. The role of the teacher should be to create learning environments or situations that create a state of disequilibrium in thought: ‘the child can receive valuable information via language or via education directed by an adult only if he is in a state where he can understand this information’ (Piaget, 1964: 23). In summary, it is Piaget’s idea that ‘development precedes learning’ that has led pedagogical theorists to suggest that teaching should be facilitation.
Conversely, in relation to Piaget, Vygotsky is of the view that sociocultural activity is the ‘engine’ of cognitive development. His point of departure is that human beings learn and develop in specific social and cultural contexts, due to the interplay between them and their social contexts:

…every function in the child’s cultural development appears twice … first it appears on the social plane, and then on the psychological plane (Vygotsky, 1981a: 163).

Psychological tools … are social, not organic or individual (Vygotsky, 1981b: 137).

…the child’s psychological development shows us that, from the very first days … its adaptation to the environment is achieved through social means, through the people surrounding it (Vygotsky & Luria, 1993: 116).

In what is almost a mirror image of Piaget’s argument, Vygotsky argues that while the child’s biological maturation and curiosity are vital drives to learn, they do not in and of themselves take him/her very far in a learning situation. To extend these biological forces, a learner needs to recruit the guidance of more skilled other people (parents, teachers, friends, etc.) to acquire the psychological tools that culture provides (Crain, 1992). For a child to develop new cognitive structures, he/she must first learn to use the cultural tools that the environment provides, in shared activity with other, more skilled people. Vygotsky’s theory implies that ‘our thoughts’ are the internalised product of a social historical culture. For him, learning precedes development.

Social activity is the locus of learning, and cognitive development follows learning. Crain elaborates that people manage to create both tools to master both their social and psychological contexts to gain control over their own thinking (1992: 197). The essential tool that individuals use to aid their thinking is language. According to Vygotsky then, we cannot understand human thinking and its development without investigating the signs (tools of thought) that a culture provides. There is wide consensus that his theory insists that learning is systematic co-operation between a learner (or learners) and a teacher, who is thus an active organiser of the frameworks of knowledge of learners (Vygotsky, 1978: 86-90).

Vygotsky views mediation as the means through which successful school learning can happen. According to him, knowledge is constructed through social interactions between the child and the mediator (a parent, a teacher, a more knowledgeable peer); the child internalises the knowledge resulting in the development of more complex mental processes. This mediation takes place in the ‘zone of proximal development’ (ZPD), which he defines as the ‘distance’ between the already established cognitive structures of a learner (the ‘actual developmental level’) and the ‘potential developmental level’, which refers to the structured thought constituted in the learner’s activity under the guidance of a mediator (Vygotsky, 1978: 86). Clearly then, teaching in the ZPD can significantly push development forward.

Strong interpretations of Vygotsky’s theory led pedagogic theorists to insist ‘that the teacher’s role is to lead the learner to higher levels of thinking by interpreting and giving significance to things and events’ (Mason, 2000: 346). This idea of teaching as mediation has been drawn from Vygotsky, but also from the work of other educators. For example, John Dewey’s idea (1963) of the potential of the ‘current knowledge, level of experience, and capacity of the learner’, and its ‘endless growth through educative experiences’, is remarkably similar to Vygotsky’s ZPD (Mason, 2000). Both Dewey and Vygotsky have influenced the idea of teaching as mediation. Activity theory has also contributed to this sense of teaching. Stith and Roth (2010), discussing this strand of neo-Vygotskian thinking, argue that the ‘classroom is composed of countless overlapping activity systems that must be negotiated [by learners] with the teacher as mediator’
The teacher thus becomes what these authors call a knotworker, an organiser of classroom learning activities through making decisions about what will be done in class, what topics will be given time, which topics will be covered and when, etc. – in short, continuously mediating the complexity of the activity systems of knowledge consumption and production to learners. The important thing, though, is that all of this is done by the teacher in constant discourse with the learners, in active engagement with them through the use of the cognitive tools of language. There is no sense in which the teacher stands back from the active mediation of learning in the classroom. Or, as Mason puts it, ‘such teaching involves intentional mediation, and not facilitation or transmission’ (2000: 346).

From Vygotsky’s point of view, teaching is achieved through social interaction with learners. For him, good teaching ‘should march ahead of development, pulling it along, helping children master material that they could not immediately master on their own’ (Vygotsky, 1978: 89). In summary, it is Vygotsky’s idea that ‘learning precedes development’ that has led pedagogical theorists to suggest that teaching should be mediation.

FACILITATION VERSUS MEDIATION?

Wilfred Carr’s insistence on foregrounding the practical wisdom of teachers, adduced earlier, had roots in wide-ranging contributions to debate in the philosophy of education in the 1980s which questioned the technocratic orientations to teaching which had long dominated education theory. As one commentator puts it, education was up to then ‘largely driven by dominant paradigms in psychology or pedagogy … [which] limit[ed] both the effective and creative capability of working within that particular domain’ (Sale, 2011: 2). Some of the major contributors to these debates provide us with a sense of the intellectual milieu which sought to foreground this teacher effectiveness and creativity:

- Shulman’s (1986) account of pedagogic content knowledge (PCK) established a theoretical claim that the most important sources of teacher knowledge come from the ‘wisdom of the practice’ itself (Shulman, 1987: 233-241). PCK is an amalgam of subject-matter content knowledge and pedagogical knowledge, and is the unique terrain of teacher thinking. It is characterised by pedagogical reasoning, which is a mode of thinking that allows teachers to transform content knowledge into forms that learners will be able to understand. Importantly, pedagogical reasoning is symbolic reasoning, in Bruner’s (1966; 1974) terms: teachers reason about their own practices in situationally appropriate and authentic ways. Practical pedagogic concepts are articulated as objects of thought in their own right, and it is cognitively at this level that content knowledge is transformed ‘on the hoof’ by teachers to render it easy for effective instruction to occur (Shulman, 1987).

- Schön’s (1983) notion of reflection-on-action helped to focus pedagogic theorists on the process by which teacher knowledge is transformed through reflection on problematic classroom situations. Schön put forward the notion that teachers, when they think and speak about their practices in context, carry out a kind of thought experiment which he termed a ‘frame experiment’: we ‘name the things to which we attend and frame the context in which we will attend to them’ (Schön, 1983: 40). The knowledge of teachers as practitioners is tacit, and is realised in the ‘feel’ of what they do.

- Krashen (1982) famously argued that it is the ‘ideas and intuitions of teachers’, rather than formal linguistic or pedagogic theories that give researchers the best insights into their studies of second language acquisition and teaching. This required, he argued, a concerted effort on the part of education theorists to pay attention to the practical understandings of teachers: ‘the word of the teacher is sufficient evidence, often, for a new idea to be at least tried out in different classes’ (1982: 4). This is not to say that Krashen suggested that researchers should not pay attention to formal,
theoretical research. Indeed, in discussing the applied linguistics of second language acquisition, he acknowledges the major contribution that Chomsky's theory of transformational grammar made to understanding the structure and acquisition of language by human beings. However, Krashen also suggests that such 'strictly theoretical' knowledge is not easily assimilated by teachers, and does not help them produce successful second language learning in the classroom (1982: 5-6). It is to teachers' sense of 'ideas that work' – their practical wisdom, as it were – that we need to look to theorise effective language teaching.

Carr’s own prominent contribution to these debates (Carr & Kemmis, 1986) drew on Aristotle’s notion of phronesis or deliberative wisdom (Aristotle, 2004: 209) to argue that the major source of best teaching practices is to be found not in abstracted theory but in the ongoing activities of good teachers. Arguing for the adoption of action research as the pre-eminent research methodology in the study of pedagogy, Carr and Kemmis suggest that deliberative wisdom, the capacity to distance oneself from one’s own practice and to reflect on what has occurred within it to reach defensible decisions about one’s actions, is the hallmark of good teaching. Teaching is a practical discipline, and ‘practical disciplines are those sciences which deal with ethical and political life; their telos is practical wisdom and knowledge’ (Carr & Kemmis, 1986: 32). In action research, which is self-developmental and moral in nature, teachers seek to enhance their normal practice by collaborating in groups, and making their new understandings of their work public and available for scrutiny by other teachers.

In general then, researchers within these traditions, instead of seeking to develop and test theories of learning or teaching to apply in the classroom, sought pedagogic theories that emerged from the ‘wisdom of practice’ (Shulman, 1987) that teachers develop as they engage with and reflect on the ebb and flow of classroom activity. The theory of teachers, their accumulated wisdom, is formed as they reflect on the planning of lessons, the teaching of specific concepts in immediate context, and the representation of knowledge in the shifting moments of learners’ previous knowledge and responses.

The question now arises, are facilitation and mediation mutually exclusive approaches to teaching? Or, to deepen the question in relation to the current argument, could these two descriptors of practical pedagogic actions possibly be circumscribed in teacher understandings in the same way that they are in analytic debate between ‘Piaget’ and ‘Vygotsky’. If we consider the practical course of classroom teaching, then it seems obvious that they are not. When a teacher plans a lesson, conceiving and creating a learning pathway for children in relation to a particular topic, identifying text books and other artefacts that he/she will use to communicate ideas, and specifying (perhaps even designing) structured learning tasks to consolidate new understandings, then it is clear that he/she is facilitating a particular learning environment for learners. However, it is equally obvious that the teacher goes further, in the course of the lesson, to mediate the new understandings required for learners to complete successfully those facilitated tasks. This mediation takes place moment by moment, in constantly shifting discursive exchanges between learner and teacher, as the latter becomes aware of the cognitive spaces within which learners are able to recognise new conceptual problems – the ZPD, as it reveals itself in the richness of classroom life. The mediation also takes place in the way the teacher utilises, again moment by moment, the various texts and artefacts that he/she has brought into the lesson, as learning possibilities arise.

It is apparent that the ideas of facilitation and mediation coexist for a teacher, whether consciously or unconsciously. When the teacher sets up an environment conducive for learning, what he/she basically does is to facilitate (in Piaget’s terms, provoke) learning possibilities in relation to the actual developmental level of the child (Vygotsky). During the course of a lesson the teacher does indeed mediate new (in the sense of unfamiliar) knowledge to the learners, which clearly seeks to create disequilibrium (Piaget) in
relation to the potential developmental level of a child (Vygotsky). When, in the shifting conversation that a teacher has with a learner, he/she ‘assesses the child’s present levels of understanding’, she makes judgements about the prevailing cognitive structures of a child (Piaget), about the child’s established, actual level of cognitive development (Vygotsky). And so it goes, round and round, consciously or unconsciously, Piaget and Vygotsky, in the ongoing practical wisdom of the teacher.

**CONCLUSION**

This paper has suggested that, within the deliberate practice of teaching and the deliberative wisdom that arises from within it over time, ideas about facilitation and mediation complement each other. Even though their formal theoretical grounds might differ, in a classroom they cannot be separated. Therefore we propose that the focus for a teacher should be on how to best facilitate and mediate learners’ new understandings, rather than choosing one idea over the other. At certain points, one of the ideas will be most useful, at other points the other. But this does not mean — going back to Carr’s insights discussed earlier — that we should abandon the formal theoretical accounts of each of the notions of facilitation and mediation. At the end of the day, it is this analytic distinction that contributes to teachers’ understanding of teaching school knowledge. But teachers know — they know it in their bodies, in their embodied practices — that the facilitation of learning and the mediation of learning in the classroom complement each other. Perhaps what teachers can teach us, as theoreticians of Piaget and Vygotsky, is that there are much stronger grounds for a theoretical synthesis of the two traditions than we might sometimes suspect.

**REFERENCES**


ABSTRACT

According to some teachers practising their profession in some of the most advanced and privileged schools in widely different parts of South Africa, they are not allowed by their superiors to work (optimally) as professionals. As a first step towards searching for a solution to this problem, we consider whether Jeremy Bentham’s and Foucault’s Panopticon metaphor might not explain the problem in greater depth. Based on our conclusion that the metaphor, having been developed initially as a solution to the problem of improving supervision and surveillance in penitentiaries, does not seem to typify fully the situation that some teachers are experiencing in their schools, we attempt to address the problem by suggesting to school managements to draw on the capabilities theory of Nussbaum, Sen and others for strengthening teachers’ sense of professionalism.

Keywords: Bentham, J., Foucault, Panoptics, Panopticon, Nussbaum, Sen, capabilities approach

INTRODUCTORY REMARKS AND PROBLEM STATEMENT

Teachers are professionals, being accorded that status by law (Republic of South Africa, 2000). One of the features of a true profession is the practitioner’s right to practise his or her profession independently as an appropriately trained person with the necessary subject knowledge and composure based on his or her insight into the requirements of the profession, acting in accordance with the code of conduct of the professional council (Andrew & Crowther, 2013).

In view of the above, one would have expected teachers as professionals to be allowed to work independently without the constant feeling that another party is looking over their shoulder, always supervising their work, prescribing what should or should not be done, when and how to attend refresher courses, when to attend meetings at school, how to teach and conduct assessments, what clothing to wear, and so on.

The main thrust of this article is conceptual and theoretical, not empirical. It attempts to show that professional teachers in South Africa indeed experience a ‘panopticon problem’ and that this problem should be addressed. To ascertain whether appropriately qualified teachers in the most progressive and
historically advantaged secondary schools in South Africa are being subjected to some of the undesirable practices as outlined above, we conducted 10 semi-structured interviews. These semi-structured interviews represent, however, only a preliminary first step towards providing a rationale for our overarching conceptual-theoretical discussion in the remainder of this article:

- We identified suburbs all over South Africa known for their progressiveness and affluence.

- We made a random selection of 10 schools in those areas, and then a selection of an experienced teacher at each of the schools, based on the following selection criteria:
  - The respondents should work and live in a suburb as described above.
  - They should all be fully trained professionally (i.e. possess a degree and a teacher education certificate or diploma).
  - Race, age, gender, sexual preference, background, training institution, school where they are working (public or private, etc.) are irrelevant.
  - They should teach in well-functioning schools that tend to do well in the matriculation examinations.
  - They should see themselves as highly motivated for their teaching job.
  - They should see themselves as self-regulated and self-driven people.
  - They should see themselves as capable of working / teaching independently, professionally.

- We conducted semi-structured interviews with each, based on the following interview schedule:
  - How long have you been teaching?
  - Do you see yourself as a successful teacher? Please substantiate.
  - Do you see yourself as a professional who can work independently? Please substantiate.
  - Do you see yourself as a self-regulated and self-driven person? Please substantiate.
  - Are you being allowed by your superiors and the Department of Education to work as an independent professional? Please substantiate.
  - Are there any factors in your working environment that keep you from feeling fully in charge of your teaching work? Please substantiate.

We were particularly interested in the respondents’ replies to the last two questions. Analysis of the 10 interviews that we conducted revealed that the entire group felt that although they were adequately trained, registered and experienced professionals, were motivated for their profession and were highly self-regulated and self-driven, they experienced that they were not being treated as true professionals and were constantly under some form of supervision, surveillance or prescription – despite the fact that they were practising their profession in schools that are progressive, modern, well-equipped and well-staffed with appropriately trained personnel. We chose statements made by four of them to illustrate the problem:

2 Teachers such as these may be an exception to the rule in a developing country such as South Africa where the majority of the approximately 360 000 currently practising teachers find themselves operating in less fortunate circumstances, such as in deep rural areas or in townships, without the necessary training for their profession. In such cases, teachers might be convinced that they are not receiving sufficient assistance from their superiors. This article is not about them, however; it is about those teachers who feel to be professionals in the fullest sense of the word and nevertheless being hemmed in by a system designed to meet the demands and requirements of a teacher corps that is as yet without the required training, self-regulatedness, self-drivenness and sense of professionalism.

3 Note that the respondents work for nine different provincial Departments of Education; their responses are nevertheless quite similar. We chose these four to illustrate the problem.
A teacher from the far north of the country (the town of Makhado) responded as follows:

…my [immediate] superior is very supportive and encourages independent thinking and independent presentation, but the Limpopo Province Department of Education is quite prescriptive in determining the format of tests, defining the types of writing to be taught, and so on. A restrictive factor in my working environment that keeps me from feeling fully in charge of my teaching work is the prescriptive fashion in which tests and tasks are structured. I realise that it is probably done to standardise performance but it feels restrictive. For example, in my situation it is impossible to allow learners sufficient time to write an 80 marks test, and the Department is adamant that a test should not be split up into two sittings or even comprise two separate tests.

Another respondent in the far west of the country (the town of Mafikeng) said:

The Department of Education does not tolerate any deviation from its rigid procedures; in my opinion, the Department should understand that deviation from rules is sometimes necessary in order to achieve better teaching outcomes. Some of our superiors and the Department, however, do not allow any such deviation. I have had several clashes with my superiors and the Department because of their rigidity with respect to ‘teaching rules’. I also served under principals with very old-fashioned ideas and who resultanty refused any innovation in teaching and learning. I have to work with the intercom system permanently switched on and with cameras recording every move and word. We also have a registration system. What gets me is the fact that we have to sign for every piece of paper in the photocopy room as if we might steal the stuff. Also the principal who shows up for classroom visits unannounced. And parents who attack you when addressing their daughters about what they are wearing to school.

A respondent from the east of the country (the town of eMalahleni) said:

My superiors recognise my professionalism and hence allow me to teach classes at two universities in the vicinity (names of universities withheld). I nevertheless feel hemmed in as a professional because of the many prescriptions that we have to follow so slavishly. I sometimes ignore the prescriptions and the learners find my innovations very stimulating. However, I must be careful not to go too far. I also have a problem with the many prescriptions of principals, heads of department and of the Department of Education.

A respondent from the far south of the country (the city of Nelson Mandela Bay) responded as follows:

I can work independently; however, within teaching one is often not given full autonomy to do what you wish to do. Syllabus, teaching methodology and resources are all areas that can be highly regulated by various stakeholders [e.g. state, school, etc.]. No, [my superiors and the Department of Education do not allow me to work as an independent professional]. Teaching has never been a true profession as far as I am concerned. We do not have full autonomy due to the fact that we are answerable to so many masters [e.g. parents, children, governing body, the State, community, SACE, etc.]. With the advent of 1994, more rights and privileges have been taken away from us [e.g. discipline procedures] and the ‘era of legal counsel’ has had an impact on all teachers. I am not allowed to make independent decisions regardless of the fact that I am in middle management and in charge of a subject. Everything is monitored and regulated to the extent of micro-managing. The school system was and still is highly hierarchical in nature. Teachers, to an extent, are little more than blue collar workers with a thin veneer of white collar ‘professionalism’.
In view of these responses we thought it timeous to examine the problem from a pedagogical-philosophical point of view and to come up with a possible solution. The remainder of this article reports on our findings on both issues. In the first part, we discuss the problem that even the best qualified teachers who see themselves as highly motivated, self-regulated and self-driven and working in some of the most affluent and progressive parts of South Africa are experiencing. We do this on the basis of Benthamian-Foucaultian Panopticon theory, which – we have to concede in advance – does not fully fit the situation of the teachers in question. The second part of the article is devoted to a discussion of what we would suggest to school and education department authorities as well as to teachers as a more appropriate approach in that, instead of focusing on closely supervising and monitoring the teachers under their management, they should concentrate rather more on developing the appropriate abilities in teachers so that they are able to function independently as professionals, and can be trusted to do so.

**RESEARCH METHOD**

We aligned ourselves with subjectivist ontology, an anti-positivist epistemology, and an interpretivist, critical methodology (De Vos, Strydom, Fouché & Delport, 2005). We also attempted to outline some theoretical arguments about the ways in which the Benthamian-Foucaultian metaphor of policy Panoptics might be employed to aid our understanding of the situation of at least some of the teachers referred to above, namely as educators expected to be compliant, orderly, obedient and well-functioning individuals. For this purpose, we reflected (particularly in our analysis of the data) from a post-postfoundationalist orientation (van der Walt 2015), which is closely related to a poststructuralist4 stance. Since our mode of reasoning is predominantly inductive, our rationale for adopting a post-postfoundationalist / poststructuralist stance in this paper is threefold. Firstly, we opted for critical discourse analysis as the data analysis method. Secondly, we regarded Michel Foucault as the most important representative of the poststructuralist movement, and thirdly, we are convinced that there is no direct experience of education policy realities possible without critical interpretation. All interpretation is in some sense co-determined by the cultural and personal prejudices or prejudgements of both the participant and the researcher as interpreters.5

**FROM THE PANOPTICON TO POLICY PANOPTICS**

Like all laws and policies, education laws and policies gradually become ‘...the Napoleonic character... who looms over everything with a single gaze which no detail, however minute, can escape...’ (Foucault, 1977: 334). Eventually, regardless of whether or not departmental officials, district officials, local education authorities, school-based managers or even classroom-based educators are watching, everyone within a particular education community may feel as if they are constantly under surveillance. Educators cannot act freely because they feel as if they are constantly being observed. People who are being observed act predictably; they tend to act in compliance with laws, policies and regulations and the opinions of their supervisors (Foucault, 1977).

In 1975, psychoanalyst Miller (1975) published an essay entitled *Le despotisme de l’utile: la machine panoptique de Jeremy Bentham*. In the same year, Foucault also published a discussion of Bentham’s ideas

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4 Here, we are in agreement with Lye (1997). He maintains that Poststructuralism is marked by a rejection of totalising, essentialist, foundationalist concepts. In Poststructuralism, subjects are culturally and discursively structured, created in interaction as situated, symbolic beings. Subjects are social in their very origin. They take their meaning, value and self-image from their (cultural) identity groups, from their activities in society, from their intimate relations, from the multiple pools of common meanings and symbols and practices which they share with their sub-cultural groups and with their society as a larger unit (ibid.). Subjects are created through their cultural meanings and practices and they occupy various culturally-based sites of meaning - every site evoking a different configuration of the self (ibid.).

5 Also see the explanation tendered by Grassie (1997) as well as Klages’ (2006) account of Derrida’s *Of Grammatology*. 
about the ‘Panopticon’ in his book entitled Discipline and Punish: the birth of the prison (Foucault, 1977). In this book, Foucault uses Bentham’s notion of the panoptic space as a metaphor for the oppressive use of information in a modern disciplinary society (Bentham, 2013). In his interpretation of Bentham’s illustration of the ‘Panopticon’, he claims that oppression in the information age (which today is much more intensely present and observable than in 1977) is no longer about physical domination and control, but rather about the potential for complete knowledge and observation. He further argues that a small number of people can, through appearance of supervision (surveillance), enforce laws most efficiently.

As Bentham originally envisaged it, the Panopticon was a central tower in a gaol that provided an observation post for a guard or supervisor. This observation post would be arranged in such a manner that those being observed will not know if and when they are being observed. The prisoners or subjects would be arranged around the central tower in their own cells. One wall is open to the view of the central tower, enabling an observer to monitor closely what the cell occupant is doing at any moment in time.

Foucault (1977) makes particular mention of the backlighting, pointing out that it renders every prison inmate individualised and continuously visible to the guardian. The guardian, however, remains obscured in the central tower. Observation is invisible or - as Edwards (2003: 98) suggests - ‘unverifiable’. Large numbers of subjects can be observed at any time by one person. In his book Power/Knowledge, Foucault (1980: 148) also refers to the surveillance afforded by the Panopticon, calling it ‘surveillance which would be both global and individualizing’. Consequently, it is the threat of being observed that is effective in gaining compliant behaviour from those in the cells (Edwards, 2003).

The panoptic mechanism is a powerful tool of individualisation that utilises an invisible gaze to exact compliance or other forms of behaviour from those subjected to the gaze. In the Panopticon, the feeling of always being the object of the gaze becomes internalised to the point of becoming a type of self-supervising mechanism. Foucault (1977: 155) captures this essential feature in his discussion of the operation of this gaze:

> There is no need for arms, physical violence, material constraints. Just a gaze. An inspecting gaze, a gaze which each individual under its weight will end by interiorising to the point that he is his own overseer, each individual thus exercising this surveillance over, and against himself.

The individualisation of the subject is, however, only partly achieved through this gaze. Edwards (2003) argues that it is the field of visibility, the gaze or the panoptic view itself that constructs the circumstances whereby individuals begin the process of acting on themselves. According to her, the gaze encourages subjects to participate in processes that ultimately affect their own ‘remaking’, ‘self-regulation’, and ‘self-improvement’ (Edwards, 2003: 99). These are conscious and unconscious processes, experienced by the contemporary hybrid subject as individualisation, that is, the emergence of a new set of social relations of governance and ‘novel functional and scalar distributions of responsibility’ (Robertson & Dale, 2011: 27, 28).

Globally, a shift seems to have occurred, as far as public sector organisations such as schools are concerned, towards a framework of new ethical possibilities, new work roles and work relationships - a new moral economy. It involves the installation of a culture of competitive performativity which in turn involves the use of a combination of devolution, targets and incentives to bring about institutional redesign (of schools, for instance) (Maistry, 2014: 66). This process of transformation draws both on recent economic theory and various industrial practices ‘linking the organisation and performance of schools to their institutional environments’ (Chubb & Moe, 1990: 185) through the deployment of incentives and sanctions deriving from competition and performativity.
In the Panopticon, the feeling of always being the object of the gaze becomes internalised to the point of becoming a type of self-supervising mechanism (Foucault, 1980: 155). Power is visible yet impossible to verify. It instils a consciousness of constant visibility that assures the unconscious functioning of power by breaking down the reciprocity of seeing and being seen.

In the Panopticon, Bentham has structured visibility around a dominant all-seeing gaze. However, the gaze is just one form of power. Foucault (1980: 159) stated that Bentham’s thought was, even for its time, archaic in the emphasis it places on the gaze while modern in the emphasis it places on strategies of power.

The Panopticon metaphor is obviously applicable only to a limited extent to the situation of the teachers that we have interviewed (see introductory section of this article). They did not literally feel themselves to be supervised in a gaol-like situation, but they nevertheless felt being unnecessarily supervised and dictated to, to such an extent that they were experiencing a loss of a sense of professionalism (see some of the responses during the interviews which we quoted in extenso above). The surveillance in their cases comes not only in the form of literal observation and supervision through, *inter alia*, announced and unannounced visits, telephone calls, etc. by departmental officials, journalists, parents, community leaders but also in a more tacit form, i.e. as policy-monitoring. Our conclusions above are based on remarks such as the following made by some of our respondents during the interviews:

- I have the feeling that, as a professional, I was subjected to too many administrative duties and red tape, tasks that should rather be performed by administrative staff.

- At the moment, there are many factors that keep me from feeling that I am fully in charge: managers who are not capable of managing, and resources that are non-existent (no paper, no copy facilities, no cartridges for printers, the e-mail system not working, and so on).

- I served under very old-fashioned principals who were sceptical about innovation.

- I feel really frustrated because of the intercom system that remains switched on all the time, cameras that check every move that you make in class, the check-in system of the school and unannounced visits by the principal to my class.

We reiterate that the foregoing discussion might only be applicable to a select group of South African teachers and in all probability not to the great majority still working without the necessary training and having to practise their profession in less than optimal circumstances. It is clear, however, as far as this select group of teachers is concerned, that they are experiencing a degree of frustration with what they deem to be unnecessary supervision and surveillance.

In the next section, we examine a possible solution to this problem, one which in our opinion might prove not only to be applicable to teachers who operate in more fortunate conditions and are themselves well-trained and professional, but also those still practising in less than optimal conditions, without the necessary training for their task. The solution that we discuss in the next section might be professionally valuable particularly for school managers.
A POSSIBLE SOLUTION TO THE PROBLEM: THE CAPABILITIES APPROACH

We would suggest, as Cockerill (2014) has done for education in general, that education managers at all levels begin considering the capabilities approach as a way of allowing the teachers for whom they are responsible to exercise their independence and knowledge as professionals. As Dang (2014) has shown in his study, the capabilities approach is increasingly being used as an evaluative framework for individual welfare and social arrangements. We discuss this approach in the remainder of this section under sub-headings embodying some of the key propositions of the capabilities approach. In what follows, we reinterpret the capabilities theory in terms of how it can be employed by school management to promote and enhance the professionalism of the teachers practising in the school.

ESSENCE OF THE CAPABILITIES APPROACH IN SCHOOL MANAGEMENT

Management should understand the capabilities approach as a normative or evaluative framework for the evaluation and assessment of the individual well-being of all concerned in the school, the social arrangements in the school, and of the design of policies and proposals about social change in school (Robeyns, 2005; Dang, 2014). Management should realise that this approach differs from a utility-based approach (such as Jeremy Bentham’s principle of the individual’s happiness or pleasure) or a resource-based approach (in terms of, for instance, income or wealth) in that it is a freedom-based capabilities approach (Sen, 2010; Bessant, 2014; Cockerill, 2014). The capabilities approach calls on management to focus on what teachers and all others involved in the school are able to do and to be, in a way informed by an intuitive idea of a life that is worthy of the dignity of each of them as a human being (Nussbaum, 2000).

How should management see the capabilities of teachers?

Management should see capabilities as attributes of individuals, not of collectives such as communities in the first place (Sen, 2010). According to Cloud (1992), a person’s capabilities and talents are part and parcel of his or her identity; s/he is responsible for developing and practising them.

Management should furthermore see capabilities as opportunities for teachers to think, choose and do (Sen, 2010). They should attempt to conceptualise the ends of well-being, justice and development in terms of people’s capabilities to function, i.e. they should ask whether teachers have effective opportunities to undertake the actions and activities that they want to engage in, and to be whom they want to be. These ‘beings’ and ‘doings’, which Sen refers to as ‘functionings’, together constitute what makes a life valuable (Robeyns, 2005: 95; Dang, 2014: 461).

Management should concern itself with providing the teachers with opportunities to achieve various combinations of functionings that they can compare and judge against one another in terms of what they value. Promoting justice requires management to ensure that there is freedom for every teacher to identify, choose and pursue their objectives, namely the goods that they value (Bessant, 2014).

Management should take particular cognisance of the core principle of the capabilities approach, namely as Nussbaum (2000: 5; 2011: 18) sees it, ‘of each person as end’. Management should therefore

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6 As can be seen from the work of Cockerill (2014: 17), the capabilities approach can be utilised in very comprehensive terms despite its ‘incomplete and multidimensional nature’ (Dang, 2014: 460-461), even to the extent of deriving an entire philosophy of education or approach to education from its basic tenets (including discussions about the creation of social capital and efforts to ensure that social justice is done). Our focus in this article is more on how school managers can avail themselves of its key tenets in helping the teachers in their care to become and remain true professionals.

7 Our purpose is not to give a detailed and systematic exposition of the capabilities approach. Such expositions are already available (see, for example, Dang, 2014: 461-466).
distinguish between the means and ends of well-being and development; only the ends have intrinsic
importance, whereas means are the instruments for reaching the goal of well-being, justice and development (Robeyns, 2005).

Management should furthermore be cognisant of the fact that the capabilities can be distinguished in
terms of 10 categories: life, bodily health, bodily integrity, senses, imagination and thought, emotions,
practical reason, affiliation, other species, play and control over one’s environment (Nussbaum, 2011;
Robeyns, 2005). As far as possible, freedom and space should be provided for each and every teacher
to develop optimally in terms of these categories of ability. Capabilities are non-commensurable and
irreducibly diverse; the dimensions of the value that different people attach to something are irreducible to
one another. All of these capabilities should be developed to help teachers be and become emphatic and
thoughtful professionals (Cockerill, 2014).

The freedom to choose

Management should understand that the idea of capability is oriented towards freedom and opportunities.
Capability denotes the actual ability of people to choose to live different kinds of lives within their reach,
rather than confining attention only to what may be described as the culmination – or aftermath – of
choice (Sen, 2010), i.e. that which has been achieved through choice. Management should allow each
teacher the freedom and space to explore their own talents, and teachers should not merely accept
others’ (management’s) definitions of their talents and capabilities. According to Cloud (1992), trying
to live a (professional) life in a school in accordance with how others have defined one’s capabilities
could lead to frustration. Each person should therefore be allowed to live in accordance with his or her
true self in terms of talents and capabilities. To learn and to be allowed to work according to one’s own
understanding of one’s capabilities is the beginning of competency and goal-directedness. To say that
each teacher’s capabilities should be respected does not mean that teachers never need any guidance.
Every person needs help occasionally to learn what would be acceptable or not, what the limits of his or
her independence are and what the consequences of certain behaviour would be.

The capabilities approach can be characterised by the normative claim that freedom is morally important.
Freedom is required to achieve well-being, which is needed if a person is to have opportunities /
capabilities to do and be what s/he values. As such, denying freedom or capacity is morally wrong
(Nussbaum, 2011; Bessant, 2014). A focus on teachers’ capabilities requires management to ask about
the extent to which choices are available to the teacher in question, and whether s/he has had a genuine
capability to achieve a valued functioning (in the school, for example). Management also needs to ask
whether the teacher’s aspirations (what s/he hoped for) were constrained by his or her circumstances (in
the school and in their personal lives) (Bessant, 2014).

Management should constantly ask: What is needed for this teacher to be free to choose what s/he
values? Once s/he has made a choice, a second order question arises: What does it take to achieve the
‘beings and doings’ that s/he values? In the context of evaluating a choice, the incommensurability of
capabilities would mean that, in assessing results, management would tend to evaluate alternatives with
non-commensurable alternatives or aspects (Sen, 2010: 240-241).

The freedom to choose what one values

Bessant (2014) is convinced that a school management committed to a capabilities approach would
enable teachers to exercise comprehensive freedom by helping them make informed choices and by
assisting them to achieve what they choose. Individual advantage, according to the capabilities approach,
is judged by a teacher’s capability to do the things that s/he has reason to value (Sen, 2010). Without
an adequate level of freedom, a teacher would be unable to exercise his or her agency effectively as a
professional (Dang, 2014). His or her advantage in terms of opportunities is judged to be lower than that of another if s/he has less capability – i.e. less real opportunity – to achieve those things that s/he has reason to value, such as (among others) the freedom to choose. The focus here is on the freedom that a teacher has to do this in the classroom or school, or be that – things that s/he may value doing or being.

**The freedom to choose as the exercise of moral competence**

Applying a capabilities approach as a school manager would require that teachers be supported to make informed choices. In exercising such freedom, the teachers would learn of the available alternatives, the consequences of each and the paths to achieve them. Recognising a teacher’s capacity for moral competence is to recognise their capacity as political agents. In such an environment, teachers would be more active professionals, have some say over the work that they are doing and not just be recipients of information, guidelines and criticism that others determine they need or ought to value (Gilabert, 2013). Cockerill (2014) is quite clear about what the ethical dimension of the capabilities approach might entail: management should assist teachers to flourish as engaged actors in the school, capable of making good judgements individually and also with others. The capabilities approach embodies an explicit ethical dimension when considering human development, defined by a shared humanity with important capabilities that have to be realised. It is underpinned by the notion of a basic shared human capacity of care, affiliation and deliberation which is of intrinsic value and which forms an essential part of the moral imperative that the school as a community should work to realise. Management should therefore create and ensure space in the school for the development among teachers of important capabilities such as practical (moral) reason and affiliation (Nussbaum, 2011: 39), to engage in various forms of social interaction in the school, and to imagine and ‘re-cognise’ the situation of others. Teachers should be afforded the opportunity to do all of this through ethical enquiry, reflective practice and social action in the school and beyond its perimeters.

Cockerill (2014) furthermore emphasises the fact that teachers (in this case) should be allowed the space to become complete members of the school community who can think for themselves. They should become contributors to quality of life in the school by fostering a healthy, caring and cohesive school community. The capabilities approach has the normative undertone – the ethos - of attaching value to the enabling of both teachers and students to become responsible, caring individuals with a critical understanding of what a shared society requires to flourish (Cockerill, 2014).

Application of the capabilities approach would lead to more democratic schools (particularly if the capabilities approach is also followed in terms of the students) that provide opportunities to learn how to make well-judged (‘phronetic’) decisions and help build teacher and student self-identity as active citizens who are able and willing to exercise positive freedom (Bessant, 2014).

It is paternalistic, to take an argument of Bessant (2014) a step further, to suppose that management knows best how much freedom another person, in this case, a teacher, can and should enjoy in discharging his or her duties. Such an attitude constrains teachers’ opportunities (capabilities) to grow and develop. If provided with good information and well-meant guidance, teachers can make their own well-informed decisions about matters that concern them and are sensitive to their experience. Managers should accept that teachers possess the moral competence and cognitive capabilities to make rational choices. They should treat teachers in accordance with their needs and functionings (the things they can do) (Bessant, 2014).

The capability theory is a philosophy of which the major protagonists are economist Amartya Sen and legal expert Martha Nussbaum. It is a philosophy emphasising individual emancipation in the shape of personal choice and freedom. The concept of capability in this philosophy is not the narrow understanding
associated with skills such as numeracy or literacy. Capabilities are defined as the functions, opportunities and freedoms people possess to pursue goals they value and to bring about change that is meaningful to them. In an age of criticism against globalisation (at least in its present form) and neo-liberal economics and the impact of these on education, scholars often grasp at the capability approach as an alternative approach (e.g. Rizvi & Lingard, 2010: 149; Phillips & Schweisfurth, 2014: 90-91).

The freedom to choose according to personal wisdom

Bessant (2014) offers a new concept in connection with the capabilities concept, namely phronesis, i.e. the capacity for good judgement or practical wisdom, a capacity of which, in the present context, managers should avail themselves. Phronesis enables a manager to make assessments and decisions about how to act to achieve basic social goods in ways which enable a good life and which shape the habitus of the individual. Phronesis entails the capacity to be context-sensitive, to know the individual teacher, the interests and dispositions of each, to know how to guide the teacher in choosing between viable alternatives and in working out how to pursue the ends they value. In practice, it means helping teachers establish how and why they might act to change aspects of their lives for the best and what action is required in specific situations to achieve that.

A ‘phronetic management style or procedure’ would entail asking questions such as:

- What are the intentions or values of the teachers under my supervision?
- Whose interests are to be served, who gains and who loses and how is power exercised?
- Is what is happening good or desirable (what values are being promoted)?
- What action is required? (Bessant, 2014: 150)

The duty of management to promote a sense of agency in teachers

The term ‘agency’ in the capabilities approach refers to the ability of a teacher to achieve the goals that s/he values (Dang, 2014). Management should afford real opportunities to each teacher to live the life that s/he values and hence chooses by attending to three sets of ‘conversion factors’, namely personal (physical conditions, age and gender), social (institutional, cultural and social norms) and environmental (including climate, pollution and facilities). The degree to which available resources in the school can be applied for the well-being of the teacher and of the school is dependent on how these conversion factors are managed (Dang, 2014). Management should focus on helping each teacher reach ‘agency achievement’, i.e. to be successful as a person in the pursuit of the totality of his or her considered goals and objectives (Dang, 2014: 464).

The social facet

Individual human beings with their various plural identities, multiple applications and diverse associations are quintessentially social creatures with different types of societal interactions (Sen, 2010). The concern with teachers’ ability to live the kind of lives they have reason to value brings in social influences both in terms of what they value (for example, taking part in the life of the school community) and what influences operate on their values (for example, the relevance of public reasoning in individual assessment). People in society think, choose or act under a particular influence in one way or another by the nature and working of the world around them. A person undertakes certain activities on the basis of some comprehension of his or her societal relations (Sen, 2010).

There has been criticism, according to Robeyns (2005), that the capabilities approach is too individualistic; it does not satisfactorily see individuals as part of their social environment as socially embedded and
connected to others. In response to this criticism, the capabilities approach should be interpreted, according to her, as not necessarily referring to atomised individuals but as individuals that are, essentially, also social beings. The capabilities mentioned above can also unfolded in groups and social structures. The emphasis that the capabilities approach places on the capabilities of the individual can be ascribed to the method of explanatory individualism, i.e. the attempt to explain social phenomena in terms of individuals and their properties (Robeyns, 2005). The capabilities approach therefore recognises the social and environmental factors in a school environment that might affect teachers in their functioning. The capabilities approach takes into account the influence of societal structures and the concomitant constraints of such structures on the choices that individuals make to function with or within their capabilities (Robeyns, 2005). The options that a person has depend greatly on relations with others and on what others do and allow (Robeyns, 2005).

The overlapping capabilities of the different teachers in a school can also be the object of a consensus – a social contract – among people who otherwise have very different conceptions of the good to be striven for in the school (also see Nussbaum, 2011).

While taking the social and societal relationships at work into account, it should be kept in mind that the capabilities of each individual teacher have to be the focus, treating each as an end and none as a mere tool or the ends of others. The social goal of all involved should be understood in terms of getting everyone above this capability threshold (Nussbaum, 2000). This, in Nussbaum’s (2000) opinion, yields a form of universalism that is sensitive to pluralism as well as to cultural difference. In this way, the critique of capabilities theory being too individualistic and negating the social environment is addressed.

Employing capabilities for the well-being of the school as organisation

Nussbaum (2000) agrees with Sen that instead of asking about workers’ (in this case, teachers’) satisfactions or the resources they are able to command, managers have to ask about what they are actually able to do and to be. She is in agreement with Sen that the capabilities that management should strive for in a school should be understood to be valuable for each and every person; it is the capability of each that they should consider when they ask – for instance – how the school as an organisation is doing. According to Robeyns (2005), all evaluations and policies should focus on the quality of their lives (in this particular case, as professionals working in a pedagogical environment), and hence on removing obstacles in their lives so that they can have more (professional) freedom to live the kind of lives, and it can be added, to do the kind of work that they have reason to value. In short, determining whether an individual is living a good life and whether a society or institution such as a school is just, is evident from the extent to which people are free to choose between viable alternatives, and the degree to which they can pursue the ends they value. What matters is the whole of a person’s life and not detached objects of convenience’ such as incomes or commodities (Bessant, 2014: 144).

CONCLUSIONS

School managers should appreciate the dangers of a policy of exerting too much surveillance and control, if only to understand the dangers of running a school in such a way that at least some of the teachers, namely those who are able to teach professionally and independently, might feel themselves to be working in a virtual Panopticon. Schools are pedagogical institutions and should be managed without the fear of omnipresent, inescapable surveillance and its ubiquitous confidante of reprisal.

School managers should also familiarise themselves with the different aspects and facets of the capabilities theory,8 and apply those insights wherever possible. Most importantly, in view of the argument outlined

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8 The discussion above touched only on aspects of the capabilities approach that were relevant for the problem under discussion. The capabilities approach is ‘highly information intensive’ and difficult to operationalise in practice (Dang, 2014: 481).
above, they could, for instance, practise situational leadership: avail themselves of assessment procedures that would help them discriminate between teachers who are adequately trained, fully self-regulated, self-driven, highly motivated to meet the challenges of their profession and hence do not require to be micro-managed, and those teachers working in the school who have not yet reached such levels of professionalism and hence require more and more intensive guidance. The assessment procedures should be such that they would enable managers to distinguish where a specific individual finds him- or herself on the continuum between fully professional and completely unprofessional and inexperienced. In the case of those who are found to be full professionals or strongly on their way to become such, managers should apply what Sen (as summarised by Dang, 2014: 463-464) referred to as ‘the process aspect of freedom’, i.e. they should ask whether the teacher in question has sufficient freedom to participate in the decision-making processes, whether s/he is accorded the necessary decision autonomy and immunity against encroachment in their decision-making by their superiors.

School management should, finally, ensure that each teacher experiences well-being achievement and well-being freedom in terms of their personal well-being, and also agency achievement and agency freedom in terms of the goals that they have set for themselves as agents. Policies should be in place to act as driving force in helping achieve this, among others by removing obstacles to the development of each teacher’s capabilities.

REFERENCES


The preparation for principalship in the Mpumalanga Province (South Africa)¹

Corene de Wet, University of the Free State, South Africa

ABSTRACT

This paper reports on findings from a qualitative implementation evaluation study on the Advanced Certificate in Education: School Management and Leadership (ACE:SML) 2013-2014 programme presented by the School of Open Learning (SOL) of the University of the Free State for serving and aspiring school leaders in Mpumalanga Province (MP). Utilising Patton’s (2002) research guidelines for qualitative implementation evaluation studies, the aim of the study was to investigate how students experience the programme under investigation; the services provided to the students; as well as how the programme was organised. Based on thematic data analysis and evaluative studies on the preparation for principalship in South Africa, findings from this study shed light on factors influencing principals and aspiring principals’ decision whether to enrol for the ACE:SML programme. The study found that students’ experience of the ACE:SML programme was mostly positive. Their negative experiences may be attributed to factors both inside and outside the direct influence sphere of SOL. The SOL provided well-organised academic, administrative, mentorship and ICT services, as well as network opportunities to all the students.

Keywords: preparation programme; principals; programme evaluation; professional development; school leadership; South Africa

INTRODUCTION

South Africa spends 18.5% of its annual budget on education. Yet, the education system remains in a poor state of affairs (Modisaotsile, 2012). Countless reasons for the failure of schooling in South Africa, among other things ineffective principalship, have been identified (Bush, Joubert, Kiggundu & Van Rooyen, 2010). A reading of the literature (Bush et al., 2010; Jooste & White, 2011) highlights the appalling conditions of education in South Africa in general, and in Mpumalanga Province (MP) in particular. There is, however, recognition that effective leadership and management are important if schools are to be successful in providing sound learning opportunities for learners (Bush, 2009; Bush et al., 2010; Bush, Kiggundu & Moorosi, 2011; Naicker & Mestry, 2015). There is, nonetheless, no compulsory and specific qualification requirement for principalship in South Africa (Bush, 2009; Van der Westhuizen & Van Vuuren, 2007). According to Bush and Oduro (2006: 362), principals ‘are often appointed on the basis of a successful record as teachers with the implicit assumption that this provides a sufficient starting

¹ Date of submission 21 September 2015
Date of acceptance 2 June 2016
point for school leadership’. Mathibe (2007: 529) warns that this practice ‘places school administration, management, leadership and governance in the hands of “technically” unqualified personnel’. It may therefore be argued that a programme aimed at preparing serving and aspiring school leaders for their task may improve schooling in MP.

The existence of a programme to prepare serving and aspiring principals for their task in MP is however, not a guarantee of the programme’s effectiveness. Patton (2002: 160) writes that ‘is important to know the extent to which a program is effective after it is fully implemented’. To determine the effectiveness of the Advanced Certificate in Education: School Management and Leadership (ACE:SML) 2013-2014 programme presented by the School of Open Learning (SOL) of the University of the Free State (UFS) for serving and aspiring school leaders in MP, a qualitative implementation evaluation study was undertaken during the second semester of 2014. Utilising Patton’s (2002) guidelines for qualitative implementation evaluation studies, the aim of the study is to answer the following research questions regarding the ACE:SML 2013-2014 programme presented by SOL of the UFS in MP: (1) What did students in the programme experience? (2) What services were provided for the students? (3) How was the programme organised?

It is important to note that this study focuses only on the preparation for principalship in MP through the ACE:SML 2013-2014 programme presented by SOL, UFS. This does not mean that this evaluation study does not have broader significance. Patton (2002: 162) aptly writes that the ‘failure to monitor and describe the nature of implementation, case by case, program by program, can render useless standardization, quantitative measures of program outcomes’.

The findings will be linked to the literature on the development of principalship in South Africa.

**CONTEXTUALISATION**

Principalship is a specialised occupation that requires specific preparation. Prior to the launch of the ACE:SML, there have been numerous fragmented and uncoordinated attempts to prepare new and aspiring principals in South Africa (Mathibe, 2007). To give coherence to the preparations of school principals, the South African Department of Education introduced a threshold qualification for serving and aspiring principals as part of a strategy to improve educational standards. The programme was piloted in six provinces from 2007-2009. The pilot was open to serving principals, as well as deputy principals (DP) and heads of departments (HODs) aspiring to become principals. Since then, the programme has been rolled out to all provinces. Provincial departments of education use a tender process in awarding contracts to different providers (universities) to present the programmes in the different provinces. The SOL (UFS) was, for example, contracted to present the ACE:SML at three centres in the Free State Province and one centre in MP for the 2013-2014 cohort. The ACE:SML is delivered through a common framework agreed upon with the national Department of Education and the National Management and Leadership Committee. The intention is that the programme should be ‘different from typical university programmes in being practice-based’ (Bush et al., 2011: 32). The ACE:SML programme is still (2016) a voluntary certificate course. It was, however, envisaged at the inception of the programme that it would eventually become a compulsory requirement for all existing and would-be principals (Van der Westhuizen & Van Vuuren, 2007). The education departments did not advertise for new tenders or make bursaries available for new cohorts of students wishing to enrol at the beginning of the 2015 academic year. It is speculated that the education departments have put their financial support for the programme on hold until an Advanced Diploma in Education: School Management and Leadership (ADE:SML), that is under development, can be introduced. Since the inception of the ACE:SML, students have received full bursaries that cover their class fees, and make provision for a subsistence allowance that covers travelling costs, accommodation and food. All expenses of facilitators, administrative staff and mentors are also covered by money made
available by the provincial departments of education. The high cost of the ACE:SML programme that may, among other things, be attributed to the subsistence allowance for all students, as well as the remuneration and substance allowance for facilitators, administrative staff and mentors, make it virtually impossible for universities and/or students to carry the costs of the programme. The unavailability of tenders means the (temporary) termination of SOL’s ACE:SML programme in MP.

The two-year, part-time modular programme comprises core, optional and foundational modules. The core modules are: Understanding school leadership and management in the South African Context; Managing teaching and learning; Leading and managing people; Managing organisational systems - physical and financial resources; and Managing policy, planning, school development and governance (Department of Basic Education, 2008). The core modules are compulsory for all students. Optional modules are offered at the discretion of the provider. Foundational modules intend to help students with a limited proficiency in English or Information and Communication Technology (ICT) capability. All core, one optional (Mentoring school managers and managing mentoring programmes in schools) and two foundational modules (Language in leadership and management and Leading and managing effective use of ICTs in South African Schools) were offered by SOL to the 2013-2014 MP students. Students also had to complete a portfolio of evidence of their school management and leadership competencies.

All 40 principals or aspiring principals from MP who were enrolled for the ACE:SML presented by SOL in 2013 were presented with laptops which were bought by the university through the Student Laptop initiative. Funding was provided by the MP Department of Education. Contact sessions were organised into block sessions of five days each, four times a year, in either Bloemfontein (where the university is situated) or Ermelo (in MP). The contact sessions were during the school holidays. The students stayed in either school (Ermelo) or university (Bloemfontein) residences during these sessions. As there was no reliable internet access in the areas where most of the students lived, the decision was made not to use an online learning management system, but rather to create the ACE:SML course with all its modules in OneNote. This allowed for offline usage, as well as for online sharing and communication. OneNote was introduced during the first ICT workshop as a program that could be used to take notes in class. When students were shown how to use it offline, they easily adapted to the online version where they could collaborate on documents. This was enforced during the second ICT workshop. Within two contact sessions, students started using their laptops for notetaking in all their ACE:SML modules. Students were also encouraged to utilise free Wi-Fi, available in eateries in the larger towns and if available, at their schools. Some of the students who reside in areas that have internet connectivity, later on entered into contracts with 3G service providers. Although the latter may have been a (minor) financial burden for these students, it improved their learning experience in general and specifically, in the Leading and managing the effective use of ICTs in South African Schools’ module.

Three full-time and one retired academic, a retired HOD with years of experience as an English teacher, as well as a retired school principal acted as facilitators. Two members of SOL’s administrative staff (Sandra, the Chief Officer: Professional Services of SOL and Maritsa, an administrative officer at SOL) were always available during the contact sessions to assist in the event of any technical or administrative problem or query. The block sessions in Bloemfontein gave the students the opportunity to work in an environment where there was adequate, high speed Wi-Fi internet access. The visit to the UFS campus was also important as it was possible for a technician to be available to support students with issues, such as viruses on their laptops, forgotten passwords, or hardware-related issues.

**METHODOLOGY**

This study followed a qualitative implementation evaluation research design to collect, analyse and interpret data. Patton (2002: 161) argues that an important way of studying a programme implementation
is ‘to gather detailed, descriptive information about what the program is doing’. Using Patton’s (2002) guidelines for implementation evaluation studies, qualitative data were gathered from the students during the second semester of their final year of study. Additional information on the programme’s organisation was provided by the programme administrators.

This study primarily utilises data originating from the informal interviews with ACE:SML students during the second semester of 2014 (their final year). Self-selection sampling was used. Self-selection sampling is useful when a researcher wants to allow individuals to choose to take part in research on their own accord (Laerd Dissertation, n.d.). All 34 students who were enrolled during the period the data were gathered were invited to take part in the study (cf. Table 1). Eight of the students volunteered to participate in the study (cf. Table 2). The interviews took place at opportune times during the block sessions. Sandra and Maritsa, the two full-time administrators, interviewed the eight volunteers. Sandra and Maritsa were part of the MP project from its inception. There was a relationship of trust between them and the students. The role of a qualitative researcher is usually to collect, analyse and interpret data, and report findings for the purpose of increasing understanding the phenomenon under study (Jack, 2008). This study mainly uses data gathered by Sandra and Maritsa. Sandra and Maritsa therefore had to switch roles from administrators to researchers, whilst conducting the interviews. This may have resulted in role conflict (Jack, 2008). In line with Jack’s (2008) guidelines on how to minimise role conflict, Sandra and Maritsa clearly defined and articulated their roles to the eight participants. Jack (2008) however, warns that if participants’ experiences have been negative they may purposefully omit information. With this in mind Sandra and Maritsa assured the participants that their confidentiality would be respected at all times. Participants were told that pseudonyms would be used throughout the study. Participants were also assured that no identifiers, not even pseudonyms, would be used when reporting on their negative experiences with administrators, facilitators or mentors.

The interviews were digitally recorded and transcribed verbatim. The researcher had several conversations and e-mail correspondence with Sandra and Maritsa prior to the interviews to clarify the aim of the project, as well as ethical matters. To gain insight into the programme and the context of some of the data, the researcher had numerous conversations and e-mail correspondence with Sandra whenever she needed clarification.

Tables 1 and 2 give summaries of the students who enrolled and completed the ACE:SML in MP and the eight students (hereafter referred to as ‘participants’), who participated in the study, respectively.

Table 1:
Demographic details of the students for the ACE:SML (2013-2014)

<table>
<thead>
<tr>
<th>Post level</th>
<th>Enrolled (n=40) (2013)</th>
<th>Completed the programme (n=34) (2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Percentage</td>
</tr>
<tr>
<td>Principal (P)</td>
<td>19</td>
<td>47.5</td>
</tr>
<tr>
<td>Deputy principal (DP)</td>
<td>5</td>
<td>12.5</td>
</tr>
<tr>
<td>District supervisor</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
<td>Head of Department (HOD)</td>
<td>14</td>
<td>35.0</td>
</tr>
<tr>
<td>Post level 1 teacher</td>
<td>1</td>
<td>2.5</td>
</tr>
</tbody>
</table>
Table 2:
Demographic details of participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Gender</th>
<th>Age</th>
<th>Home language</th>
<th>Post level</th>
<th>Years teaching experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ayana</td>
<td>Female</td>
<td>45</td>
<td>SiSwati</td>
<td>DP</td>
<td>18</td>
</tr>
<tr>
<td>Thabo</td>
<td>Male</td>
<td>56</td>
<td>Northern Sotho</td>
<td>Principal</td>
<td>31</td>
</tr>
<tr>
<td>Fabio</td>
<td>Male</td>
<td>49</td>
<td>SiSwati</td>
<td>HOD</td>
<td>24</td>
</tr>
<tr>
<td>Salomae</td>
<td>Male</td>
<td>42</td>
<td>SiSwati</td>
<td>DP</td>
<td>19</td>
</tr>
<tr>
<td>Bheki</td>
<td>Male</td>
<td>49</td>
<td>SiSwati</td>
<td>Principal</td>
<td>23</td>
</tr>
<tr>
<td>Mafa</td>
<td>Male</td>
<td>50</td>
<td>Shangaan</td>
<td>DP</td>
<td>25</td>
</tr>
<tr>
<td>Nathaniel</td>
<td>Male</td>
<td>29</td>
<td>SiSwati</td>
<td>HOD</td>
<td>6</td>
</tr>
<tr>
<td>Fran</td>
<td>Female</td>
<td>49</td>
<td>SiSwati</td>
<td>HOD</td>
<td>24</td>
</tr>
</tbody>
</table>

The research was conducted with the consent and support of the Dean of SOL, UFS. The participants’ dignity, privacy and interest were respected at all times. Pseudonyms were used. Before conducting the interviews the participants were informed that the process was completely voluntary and that they could withdraw at any stage during the process.

The data analysis used a thematic approach to identify the main themes of this study (Nieuwenhuis, 2007) that assisted the researcher in comparing the core findings with the literature on the preparation for principalship.

**FINDINGS AND DISCUSSION**

Based on the data analysis and evaluative studies on the preparation for principalship in South Africa (Bush, 2009; Bush et al., 2010; Bush et al., 2011), the following main themes were identified in the study:

1. Factors influencing principals and aspiring principals’ decision whether to enrol for the ACE:SML programme;
2. Students’ understanding of the impact of the programme on students’ professional and private lives;
3. Students’ thoughts on the learning facilitators and administrative staff;
4. Mentoring as a distinct feature of the programme;
5. Networking; and
6. Lack of support as a stumbling block for students’ success.

**Factors influencing principals and aspiring principals’ decision whether to enrol for the ACE:SML programme**

The ACE:SML is a voluntary programme for principals and aspiring principals. Prospective students’ applications are submitted to and accepted/rejected by the different provinces’ Departments of Education in line with universities’ entrance requirements. Despite the voluntary character of the programme, education departments more often than not receive more applications than they can accommodate (Department of Basic Education, 2008). Some of the reasons why principals and aspiring enrolled for the ACE:SML 2013-14 programme became clear during the interviews.

Three of the participants said that they applied for inclusion in the programme because they realised the need to expand and update their professional knowledge. Salomae noted that although he already holds an ACE:SML qualification (obtained from another university), his hunger to expand his professional knowledge resulted in his registering for the ACE:SML presented by SOL. Bheki said...
I thought of getting another qualification … My qualification was a B.Ed. Honours. That gave me some idea about how to run a school, but things change.

Mafa enrolled for the programme because

I always wanted to act in a professional manner. So I was expecting to learn a lot of professionalism [and] … give quality to the people I am working with.

Ayana, a DP, on the other hand, said that she was going to use the ACE:SML qualification for career advancement:

I really want to move and grow, especially with the knowledge that I have gained with the ACE School Leadership. I wish I could be given the opportunity of getting my own institution; I am going to do things in the manner in which we are taught.

In motivating why the ACE:SML programme is important, Fabio moved beyond his own professional growth and aspirations, and looked at the problems regarding education in South Africa:

The reason why many schools are collapsing is that of a lack of leadership. I think that principals need to be taken on board with this course. If it could be compulsory for them it would be good [laughs].

In their motivation for studying, participants alluded to the potentiality of the ACE:SML programme in providing opportunities for professional growth that could lead to the professionalisation of principalship, the enhancement of career-opportunities, and the improvement of schooling in South Africa. The enhancement of principals’ professional knowledge is advocated by many researchers (Bush, 2009; Bush et al., 2010; Bush et al., 2011; Mathibe, 2007; Naicker & Mestry, 2015).

The blended mode of delivery, which requires the students to attend classes for eight weeks over a period of two years and communicate with and use ICT, intellectual prowess as required for a Level 7 National Qualification Framework qualification, numerous assignments and onsite evaluation (by a mentor), may have prevented many potential students from enrolling for the ACE:SML (Msila, 2011; Naicker & Mestry, 2015), despite suggestions that a formal qualification may become a prerequisite for principalship in South Africa. Msila (2011: 435) found, for example, that some principals or potential principals do not enrol due to an ‘unmanageable’ workload. The current study also revealed that participants often found it difficult to stick to cut-off dates for assignments, due to their dual responsibilities as students and education leaders and the high standards set by the programme. Fabio made reference to the difficulty of the assignments that we are doing – they are really challenging.

This study additionally found that a lack of interest may be a reason why potential students do not enrol. According to Nathaniel, none of the other staff members were interested in attending the course:

We had a meeting with the principal and he could not attend the course so he asked who was willing. The deputies were not interested.

Students’ understanding of the possible impact of the programme on their professional and private lives Six of the participants emphasised the role the programme played in confidence building. Ayana said for example

I am applying to be principal without any fears or doubts.
Participants used phrases, such as ‘really empowering’ (Thabo) and ‘I feel so positive [and] I will be able to apply the skills that I have learnt [when appointed as a principal]’ (Fabio) when describing their newfound confidence. Mafa gave reasons for his growth in confidence:

If you know something, it builds confidence obviously, because you know what you are saying is right. If you can distinguish between right and wrong it builds confidence.

Nathaniel mentioned that the programme gave him the confidence to articulate new ideas in front of colleagues.

Three of the participants mentioned that the programme led them to acknowledge the impact of community factors on teaching and learning. Salomae said he came to realise that not all schools are the same, and that

... you can bring an idea from somewhere, but you must learn to contextualise it.

The importance for education leaders to acknowledge the unique circumstances in which they must lead, is also highlighted by Jooste and White (2011) and Mathibe (2007). Jooste and White (2011) find that MP schools struggle with problems common to most rural schools in South Africa, such as the inadequate provision of study material and teachers not being prepared sufficiently for curriculum changes. MP schools however, also experience localised problems which often relate to traditional and cultural aspects, such as a lack of respect for female school leaders in a predominantly male chauvinist society, together with a decline of discipline among learners and educators due to the erosion of traditional values (Jooste & White, 2011).

The ACE:SML brought about change in the way Bheki sees his role as leader:

There was a time when we thought to run a school you leave curriculum monitoring to the deputies and HODs, but it is not that effective. It is effective if you, yourself do it. So I got involved.

Bheki's original assumption, namely that teaching and learning is the responsibility mainly of middle managers is in accord with existing practices (cf. Bush et al., 2010; Taole, 2013). Taole (2013: 75) writes that not all principals are knowledgeable about curriculum content and development in South Africa ‘especially in schools where principals do little or no teaching themselves’. Bush et al. (2010: 165) argue that ‘the closer leaders are to the core business of teaching and learning, the more likely they are to make a difference to students’. Bheki’s insight that principals should become instructional leaders is in accord with the research (Bush et al., 2010; Mathibe, 2007; Taole, 2013).

A distinct feature of the MP programme presented by SOL is that all students were given laptops. Using a hands-on approach, the ICT facilitator taught the students how to use a computer, and to utilise social media to communicate with her and fellow students. Through innovation and flexibility she tried to accommodate the students’ different ICT competency levels. Six of the eight participants mentioned the positive impact of the ICT module on their personal (e.g. being able to communicate with family and friends and do internet banking) and professional (e.g. PowerPoint presentations, budgeting and communicate with colleagues and departmental officials) lives. In his reflection on the different modules, Bheki highlighted the empowering impact of the ICT module on him as a leader. As a result of his new insights into the uses of ICT, he advocated the use of ICT in his school. Bheki embraced his role of ICT leader at his school. Afshari, Bakar, Luan, Samah and Fooi (2009) argue that the leadership role of the principal is the single most important factor affecting the successful integration of technology in schools.
Four of the participants alluded to the fact that the programme enhanced their ability to analyse current management practices and act as agents of change. Fabio made the following comments:

I will be a wonderful principal, because I can see where we are missing the point and what mistakes we are making as managers of the school.

Bheki moreover mentioned that he now realises the importance of motivating his staff. Salomae believes the programme motivated him to be more organised. Participants also made mention of better time-management; insights into how to handle stress; the ability to work with others as a team (mentees working together); and how to interpret education policy (specifically with regard to budgeting and school discipline).

This evaluative study highlights the participants’ positive experiences: they grew in confidence and gained new insight into their multiple roles as curriculum, instructional, ICT and community leaders, school managers, and agents of change. Their new insights moved beyond their professional development: the participants acknowledged the impact of community factors on education and gave credit to the empowering influence of the ACE:SML on their personal lives. Findings from this study on the positive influence of the ACE:SML on participants, is in line with findings from a study conducted among ACE:SML-alumni (Bush et al., 2009), a longitude study (Bush et al., 2011), as well as an evaluative study on the ACE:SML programme presented by the University of Pretoria (Aluko, 2009). The Bush et al. (2011) study reveals that the programme enhances alumni’s confidence as educators and leaders, improves their financial management and budgeting, as well as ICT and instructional leadership skills. Statistics however, reveal that schools led by ACE:SML alumni who participated in their study had differentiating success when comparing matric results over a five-year period (2006-2010). Bush et al. (2011: xiv) nonetheless conclude that ‘training school principals leads to school improvement in the majority of cases, for the benefit of learners and the South African education system’.

Students’ thoughts on the learning facilitators and administrative staff

An analysis of the data highlighted the importance of the University using knowledgeable and committed people to act as facilitators. Mafa praised an associate professor for setting high standards:

Prof. R set a standard of ‘if you want to pass this course then this is what you need to do; you need to work very, very hard’. It elevated me; it took me up to the next level.

Salomae acclaimed the hands-on approach followed in the ICT module, as well as the insightful way the facilitator responsible for the financial management module unpacked the content of the module. According to Salomae, this attests to the two facilitators’ profound knowledge of their subjects.

It should be noted that not all participants were unanimous in their praise for the facilitators. One of the male participants said that

most of the lecturers are presenting their modules well. The … module was the only disappointment.

Whilst this participant gave no reason for his critique against the specific facilitator, it seems from his colleague’s interview that this facilitator lacked in-depth knowledge:

It was a general presentation … he was speaking in general about what we were going to do … when you get the assignment you realise he did not cover everything you needed to know.
Mafa highlighted the importance of good administrative support for students. He told Sandra:

Just keep up with the hard work that you are doing … the energy that you show as administrators; the love of the work.

The participants suggested that experienced, knowledgeable facilitators and administrative staff are essential for the effective delivery of the ACE:SML programme. Whilst it seems as if all the facilitators and administrators have good credentials (cf. Contextualisation), two of the participants alluded to shortcomings regarding one of the facilitators. This suggests a flaw in the quality of service provided.

Although most of the participants commended the work ethic and knowledge of the facilitators, and hailed the work done by administrative staff, it should be noted that ‘satisfaction’ is not necessarily related to effective learning. Aluko (2009) argues that it is sometimes necessary for students to move outside their comfort zone for deep learning to occur.

**Mentoring as a distinct feature of the programme**

Mentoring is a ‘distinct and central feature’ of the ACE:SML programme (Bush et al., 2011: 35). According to Sandra, the Chief Officer: Professional Services of SOL and one of the interviewers, the mentors are ‘the top retired principals from very large secondary schools in Mpumalanga’. Some of them were previously employed as mentors by another university (this university’s contract to present ACE:SML in MP was terminated at the end of 2011) and others were recommended to Sandra by serving principals. Her point of departure in selecting mentors was that ‘if a person was able to lead a large secondary school successfully, he/she will be able to mentor new or aspiring principals’. Ten students were assigned to one mentor for the duration of the programme. It was decided by SOL that the mentors would mentor their mentees for a year after they had completed their studies. The reason for extending the mentoring programme to three years was to give additional support to the mentees. A two-stage model, i.e. group facilitation and individual on-site support, was used. The mentors sat in during the contact sessions, took part in class discussions, met with their mentees for 45-60 minutes after the classes to clarify any uncertainties that might have arisen, helped with the completion of school-based assignments, undertook school visitations four times a year and were in constant telephone and e-mail contact with their mentees. According to Sandra, it was ‘wonderful’ to witness the respectful manner with which mentors and mentees treated one another. Sandra said that numerous students told her that the key to their success was the continuous support and motivation of their mentors.

From the interviews it became clear that the mentors supported the mentees with their studies; were readily available; acted as links between mentees and their colleagues, as well as between fellow-mentees; helped them apply theory to practice; and even supported them emotionally. During the interviews mention was made of the important role mentors played in participants’ academic success. Ayana said:

…mentors remind you of things that you might have missed in the contact sessions … Their presence during the contact sessions is of importance, because we are not on our own with the lecturers.

Mafa furthermore said:

We need them to help and guide us. There is a lot we learn from them.

The fact their mentors were readily available and willing to help them, were cited by several mentees in their praise for their mentors. Ayana said that:

Even if you are far away, he will come to you and assist you.
Fabio mentioned that

When you call him he will respond immediately. You ask for support, he will immediately help you ... within ten minutes he could give me a response.

The mentors moreover, acted as a link between the educator-as-student and his/her colleagues during their onsite visits. Ayana said that

Some mentors go the extra mile and interview other staff members about how the school is doing.

Several participants mentioned that they often feel lonely and isolated (living and working in remote rural villages), but acknowledged that their mentors acted as a link between mentees. Mentors’ empathy with and understanding of mentees’ unique personal and professional circumstances seem to be important to the participants’ success. Fabio said his mentor:

… is always positive when he talks to us …He does not put unnecessary pressure on us.

Thabo, on the other hand, is in favour of a mentor pushing him to go the extra mile:

He can push you. He is good. It is actually surprising to get that support and to be pushed in the right direction. I appreciate that.

Salomae hailed his mentor’s empathetic, insightful demeanour:

There are sometimes situations where you just feel you’ve lost your morale. But the mentor will come and make you feel that all is not lost.

Only one of the eight participants had something negative to say about the mentors:

He usually visits us after the assignments are done, so for me that is not good. He should visit us before the assignments are sent in so that we can go through them and make some corrections. But he comes after, so what is there to discuss because my assignment is already in.

This study highlights how important it was for the providers of the ACE:SML MP programme to appoint experienced, knowledgeable and empathetic mentors who were willing to support their mentees in a respectful, professional manner. Participants’ praise for the mentorship programme is reassuring, since Bush et al. (2011) believe that the success of the ACE:SML programme largely depends on the mentoring practices of the mentors.

Networking

Networking, ‘a central component’ of the ACE:SML programme (Kiggundu & Moorosi, 2012: 216), is ‘a powerful leadership development process’ (Bush et al., 2011: 36). Although no formal networking structures were put in place by SOL for the 2013-2014 ACE:SML MP students, ample informal networking opportunities were created for the students during tea and lunch breaks. According to Sandra, students, mentors and administrative staff mingled freely during these breaks. Sandra said it was not uncommon to find students in deep conversations about experiences at their respective schools or with their assignments. Their common abode and the seven-hour bus trip between Ermelo and Bloemfontein also created network opportunities. Networking also occurred during meetings with mentors. The importance of these network opportunities was recognised by four of the participants who mentioned that interaction with fellow
students was especially important in learning about management problems and how to address them. Salomae was very positive about the group activities; he revealed that he often learnt more through the interactions with fellow students than from his facilitators. Nathaniel likewise said:

Since I went to Ermelo, I met other people from other villages and I learnt a lot from them.

The importance of interaction with fellow students, as highlighted by the participants, is supported by research on networking as a resource for collaborative learning (Kiggundu & Moorosi, 2012). These two researchers are guardedly optimistic that some of the networks created during face-to-face contact sessions may continue (with the use of technology) after the completion of the students’ studies. They however, acknowledge that the main aim of networking is often to receive support towards the completion of assignments (Bush et al., 2011 for similar findings).

The lack of support as a stumbling block for students’ success

The aim of the ACE:SML programme is not only to improve the management and leadership skills of principals, but to train future leaders. Whilst some of the participants who were not principals were given the opportunity by their principals to complete the school-based assignments and implement their newly found knowledge, others found it extremely difficult. Whereas Nathaniel enjoyed the support of the principal and members of staff in the implementation of a new discipline strategy, three of the other participants said they experienced negativity, which may be the result of jealousy, from colleagues and the principal. Fabio talked at length about the lack of support he received from colleagues:

I am a HOD and I don’t have any authority in decision making; my role can only be advisory…. I drafted policies and submitted them to my principal and I could see that he was very uncomfortable. … I don’t get support … I only managed to do the vegetable garden, but the other things…it’s really difficult to get support.

A lack of support for aspiring education leaders who are furthering their careers through studies by serving principals and colleagues is not uncommon (Bush et al., 2009: viii). Naicker and Mestry (2015: 8) find that the implementation phase of development programmes for principals will influence ‘whether the change is ultimately successful or not’. It is therefore essential that ACE:SML students get the opportunity to implement what they have learnt in school settings. Bush et al. (2011: 41) recommend that ACE:SML students who are linked to a school where they get little or no support should be moved to other schools ‘where they can receive appropriate support’.

LIMITATIONS OF THE STUDY

Findings from this study should be read against the background of the following limitations: (1) The study relied exclusively on self-reported evidence from students and administrative staff. According to Bush (2009: 384) this is a weak approach ‘because it is not subjected to corroboration … it is inevitably subjective’. (2) The interviews were conducted near the conclusion of the participants’ studies. The possible impact of the programme takes time. It is unlikely that noteworthy changes in leadership practices will have occurred during the training period (Aluko, 2009; Bush, 2009).

CONCLUSION

This paper reports on findings of a qualitative implementation evaluation study into an ACE:SML programme presented by a South African university during 2013-2014 in MP. A number of factors, such as the existing and aspiring principals’ desire to expand their professional knowledge, uplift the collapsing education system and career aspirations, motivated students to enrol for the programme. High academic
Standards, a heavy workload and a lack of interest however, prevented potential students from enrolling. Students’ experiences of the ACE:SML programme were mostly positive: The programme had a positive impact on students’ self-confidence, time-management skills, ability to work in groups, interpret policy, act as instructional and ICT leaders, and their understanding of the uniqueness of each school. Participants attributed negative experiences to factors both inside (unprepared or unknowledgeable facilitators) and outside (uncooperative colleagues) the direct influence sphere of the university. The study highlighted the role of knowledge and level of commitment by academics, administrators and mentors on students’ satisfaction. The SOL provided well-organised academic, administrative, mentorship and ICT services, as well as networks, career advancement and intellectual growth opportunities to all the students. The study also highlighted the fact that the financial burden for this rather expensive programme rested largely on the shoulders of the MP Department of Education. The Department was responsible for all costs incurred by students, including university fees and the laptops, as well as the ad hoc costs of facilitators, mentors and administrative staff. Even though the ACE:SML programme under investigation provided ample informal networking opportunities, it is recommended that formal networking structures and additional support for students who lack support from their principals whilst studying, be considered for all future programmes. Ideally the ACE:SML programme should be used as platform for continuing collaborative capacity building among ACE:SML alumni after the conclusion of the mentorship programme.

REFERENCES


Challenges of academic literacy for in-service teachers

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Jacqueline M. van Wyk, University of KwaZulu-Natal, South Africa

ABSTRACT

The teaching and facilitation of academic literacy skills in English second language for in-service teachers presents a challenge in the light of the increased enrolment of un- and under-qualified teachers on the National Professional Diploma in Education (NPDE). The course aimed to up-skill teachers to meet the minimum standards as required for the profession. Fundamental Literacy, a core module on the NPDE course, was designed to support and equip in-service teachers as students, with sufficient academic literacy skills to complete the teaching qualification successfully. This qualitative study explored the academic experiences of part-time in-service teachers in the fundamental literacy module. The collected data was analysed thematically to understand in-service teachers’ experiences of the module and the support needed to ensure academic success. Findings suggest that adult learners experience anxiety upon entering the higher education environment. Factors outside the educational sphere (i.e. home and work) presented major obstacles to their success as students. In-service teachers are oriented to more social ways of learning as opposed to an individualised and autonomous method of studying. Teamwork and scaffolding techniques accommodated the unique linguistic and cultural needs of this mature learner cohort. It is recommended that a more innovative and collaborative approach to learning is considered with in-service teachers.

Keywords: academic literacy; higher education; teacher training; adult learners

INTRODUCTION

In order to use knowledge and information effectively individuals must demonstrate the ability to identify their own knowledge gaps. In addition such learners should be able to locate, access and evaluate appropriate information sources to narrow the knowledge gap (Andrews and Patil, 2007; Rychen and Salganik, 2003). The ability to use these skills effectively is referred to as academic literacy and is a requirement for success in the higher education (HE) environment. In the academic context, emphasis is placed on the student’s ability to extract information and reconstruct ideas into written text. A key success factor in the academic world is therefore the ability to access information effectively, and to use spoken and written language skills in multiple settings (Bransford, 2000). Students are thus required to demonstrate critical thinking, reflect on the nature of knowledge or information and its socio-cultural, economic and ideological context and impact on the world in which they live.

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Competence in academic writing is also reflected in the ability to produce a clear coherent message or argument as a written piece through essays and thesis writing. Adult learners often enter higher education with limitations in academic literacy which severely impact on their ability to demonstrate the necessary stipulated exit outcomes of Higher Education Institutions (HEIs). Researchers suggest that students’ confusion about the elements of thesis writing is understandable since seasoned academics frequently struggle to articulate their expectations of what a ‘good’ essay entails (Elander, Harrington, Norton, Hannah & Pete, 2006). A further complication may occur as mature students do not always understand the need for appropriate academic writing given that they perceive themselves as competent and successful in general life skills and teaching in the primary and high school context. They may not understand the difference between their teaching and academic environments or the need for competence in the academic language of the HEIs. Their main reason for enrolment on courses such as the National Professional Diploma in Education (NPDE) often hinges on the improvement of their qualification for their current profession (Rose, Rose, Farrington & Page, 2008).

Adult learners enter the educational system with varied experiences, qualifications, deeply held views, assumptions and an intention to obtain knowledge specific to their individual personal and work-related needs. They further share characteristics such as a desire to enhance their employability, commitment to family and obligation to professional and social networks. It is especially their exposure to varied and previous life experiences that impact on their perceptions of reality and differentiate mature learners from senior certificate entrants in HEIs (Okezie, 2003).

An adult’s perception of the ability to be successful in the current educational task is often shaped by experiences of their previous successes (Bandura, 1998). These self-efficacy beliefs forms the foundations for human motivation, well-being and personal accomplishment (Pajaras, 2002), widely considered as the main driving factors in decisions to persevere even in the face of difficulty. Students’ motivation in continuing professional development activities are therefore profoundly impacted by their previous positive learning experiences (Lawler, 2003). Literacy for such in-service teachers as students, therefore seems to encapsulate the ability to manage challenges and problems within their daily world environment. Given that they seemingly manage most of their daily challenges with ease, these adult students therefore assume competence, also in literacy skills. An additional reason for students’ reluctance to engage in literacy programmes may stem from the fact that the programme often competes with the limited time available to pursue their personal interests and activities which may include time for friends and family and/or events in their communities (Taylor, 2006).

This study was conducted to ascertain whether the Fundamental Literacy Module (FML) course impacted on the individual students’ literacy level and whether the course equipped students in organising their learning. In the rest of this paper, we provide the background and context, aims and structure of the course.

CONTEXT AND PURPOSE OF THE RESEARCH

The issue of under-qualified educators is a problem throughout South Africa (SA) with the Eastern Cape having been identified as one of the most affected regions (Department of Education, 2006). The NPDE was introduced in this region to ‘up skill’ the number of un-and under-qualified teachers (Wildeman, 2000) in Segoe (2012). The main rationale for the qualification, as introduced in 2001, was to improve the quality of teaching and learning at schools and Further Education and Training (FET) colleges (Department of Education, 2006).

In January 2010, an institution of higher learning in the Eastern Cape accepted a total of 82 students into the 360-credit NPDE programme. This was a higher intake for the institution which generally accepts
an average of 50 students per year. The increased 2010 intake related to the Department of Basic Education’s (DBE) re-assessment plans for the course and the possible replacement thereof (Department of Education, 2006).

The training of un- and under-qualified educators is the focus of the 360-NPDE programme. Educators who enrol in this programme are usually employed in public and private schools, Adult Basic Education and Training (ABET) centres and Further Education and Training colleges throughout the province. Many teachers who enrol on the programme have been teaching by virtue of having completed only a National Senior Certificate (NSC) qualification. The NPDE course offered at the HEI in the Eastern Cape, is equivalent to Relative Education Qualification Value 10 (REQV) status and the successful completion of the National Professional Diploma in Education provides educators with the required REQV 13 status; i.e. fully qualified educator status (University of Fort Hare Learning Guide, 2010). The successful completion of the qualification also translates into a salary increase and the possibility of permanent employment with added benefits for those who enrolled on the course.

**OVERVIEW OF THE NATIONAL PROFESSIONAL DIPLOMA IN EDUCATION (NPDE)**

The NPDE with its strong classroom focus aims to equip educators with the foundational, practical and reflexive competences to qualify for entry in advanced study, i.e. Level 6 of the National Qualification Framework (NQF). The qualification was originally designed as an alternative access route into further study as it offered entry and the possibility to pursue a degree course in education. The qualification focuses on the up-skilling of teachers in the general education and training sector. These teachers typically teach in the foundation, intermediate, senior and further education and training phases. The exit level outcomes of the qualification are organised around four categories, i.e. fundamental learning; subject and content of teaching; teaching and learning; and school and the profession. Table 1 below provides an overview of the course structure of the NPDE qualification.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
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</thead>
<tbody>
<tr>
<td>School and the Profession [1;24]</td>
<td>Life Skills/Life Orientation [y;20]</td>
<td>Life Skills/Life Orientation [y;24]</td>
</tr>
<tr>
<td>School and the Community [1;36]</td>
<td>Languages/Literacy [y;20]</td>
<td>Languages/Literacy [y;24]</td>
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<tr>
<td>Fundamental Literacy [y;24]</td>
<td>Fundamental Literacy [1;12]</td>
<td>Fundamental Numeracy [y;24]</td>
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<td>Fundamental Numeracy [y;24]</td>
<td>Fundamental Numeracy [1;12]</td>
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**Total Credit Value: 264**  
**Total Credit Value: 120**  
**Total Credit Value: 96**

The first number in the bracket indicate an offering in either 1st, 2nd semester or year (y) long module. The number following the semi-colon in the [ ] indicate credit value (University of Fort Hare, 2011: 38-49).

**The Fundamental Literacy Module (FLM)**

The overarching exit level outcome of the literacy module requires the candidate to ‘demonstrate competence in reading, writing and speaking the language/s of instruction to facilitate their own academic learning
and to facilitate learning in their classrooms’ (South African Qualifications Authority, 2009). The module is a fundamental and core component of the qualification, which promotes competence (i.e. reading, writing and speaking) in English as the language of instruction. Included in the learning outcome is the understanding that interaction in the module will enhance academic learning and enable learners to transfer their own experiences when designing learning experiences in their own classrooms. The module thus uses a four-focused approach which includes the ability to communicate effectively in the language of instruction, use appropriate methods to access and select suitable study material, applying the skills to manage self and studies in the context of the academic module. The 24 credit module was delivered over 22 x 2 hour sessions as a year-long course during the students’ first year of study to attain the educational aims. The module template can be obtained from the first author, who coordinates the module.

This study was conducted to ascertain whether the Fundamental Literacy Module impacted on the individual students’ own literacy level and whether the course served as a useful tool for organising the students’ own learning at the HEI.

**METHODOLOGY**

This qualitative study was conducted to explore whether the Fundamental Literacy Module impacted on the students’ literacy level and whether exposure to the course had equipped students in organising their own learning. The primarily qualitative research approach took the form of an in-depth study of the progress in a module for a cohort of in-service teachers over the course of one academic year. The qualitative approach involved the collection of data in an interpretive naturalistic setting in an effort to make sense and interpret the phenomena in terms of the meanings people bring to them (Denzin & Lincoln, 2000).

**Sampling**

The research, conducted in a systematic and methodical manner, aimed to gain insight into individual attitudes, behaviours, concerns and motivations for mature students when re-entering the study arena. The data was collected from first-year NPDE students (n=82) during time-tabled periods on the Fundamental Literacy Module at four intervals during one academic year. The entire year 1 group were selected to be part of the research sample.

**Data Collection**

The researcher served as the primary instrument in data collection. As indicated in Table 2, data was collected at four intervals during the course.

<table>
<thead>
<tr>
<th>Data Set</th>
<th>N=82</th>
<th>Data gathering tool</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>81 respondents 98%</td>
<td><strong>Base-line indicator</strong> – February Written Assignment</td>
<td>Data used to establish student’ base-line competence and group them into co-operative learning groups</td>
</tr>
<tr>
<td>2</td>
<td>79 respondents 96%</td>
<td><strong>Mid-year Progress: July</strong> Scaffold/Supported Written Assignment</td>
<td>Data used to ascertain students’ progress to date, and to provide them with an opportunity to reflect on their learning experiences in the university setting thus far</td>
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Students’ written assignment and questionnaires served as data sources. The base-line assignment as data source collected an introductory written piece that learners constructed about themselves at the first contact session. The introductory assignment further informed the grouping of the students into smaller co-operative learning groups for the rest of the course.

A second set of data was gathered approximately half-way through the module after the June semester exam. This written group assignment required students to reflect on their learning experiences of the first semester at the institution. The completion of this assignment was supported by the course leader/researcher who facilitated the session by scaffolding the activity in the following three ways.

First, smaller groups brainstormed the activity to generate ideas to frame their written piece. Secondly, groups created mind-maps to indicate how they would structure (organise) the information in a written format. Thirdly, the group presented their ideas to each other in a plenary session. The plenary session was also facilitated by the course leader/researcher. Each student had to design and submit an individual assignment which required them to present an illustration as evidence of planning and refinement. This had to be submitted with the completed written assignment which reflected on their learning experiences at the institution.

A third set of data was gathered through semi-structured questionnaires obtained from the identified ‘at-risk’ students by September. These students (n=9) had failed to obtain an overall year mark of 50% for the module and had been identified as being at risk of failing. This group was asked to complete an open-ended, self-administered questionnaire. The questionnaire gathered information on their biggest academic challenge while enrolled at the institution. They were also asked to reflect on whether the Fundamental Literacy Module had addressed any of their academic difficulties and the extent to which their needs had been met by the module. The students were asked to list the topics where they had required or expected additional support.

The fourth and final data-set was gathered at the concluding session of the module in October. It was structured and presented in the form of a module evaluation and provided students an opportunity for their final reflection.

**Data Analysis**

The data gathered from students’ written work at the base-line test and the mid-year assignment were analysed in terms of the language and grammatical errors committed by the students. According to James (1988) in Darus and Subramaniam (2009: 486) errors in writing such as tenses, prepositions and weak vocabulary are the most common and frequent type of errors of second language speakers. The information gathered at the base-line test informed lesson planning to address these shortcomings, whilst the information gathered from the mid-year assignment provided feedback to the course instructor on the effectiveness of her teaching. The students’ grades were also used as an indicator of students’ progress on the course.
The data gathered from the two sets of questionnaires were analysed by coding the students’ responses. Coding is an interpretive technique which organises the data into categories. Coding involves a process of ‘assigning some shorthand designation to various aspects of the data, which will allow the researcher to retrieve specific pieces of the data’ (Merriam, 1998). The qualitative data were first coded individually by each of the researchers and then collaboratively to obtain consensus on the themes.

Validity and Reliability

Conducting the research in an ethical manner is one of the ways in which validity and reliability can be ensured in qualitative research. The question of ethics in qualitative research involves informed consent, anonymity, confidentiality and finally the integrity of the researcher as the primary instrument of data collection and analysis (Howe and Moses, 1999). The researcher was privy to confidential material in this study. The nature of the research led the researcher into private spheres; deep personal experiences and cultural and cross-cultural factors and inhibitions which helped researchers understand specific lived experiences of African teachers (Tillman, 2002).

Ramos in Orb, Eisenhauer and Wynaden, (2001) highlights the ethical dilemmas present in studies of this nature. These dilemmas arose from the researcher/participant relationship; the researcher’s subjective interpretations of the data and the design itself. In this study the dual role of the researcher as teacher and data gatherer allowed the opportunity to gather ‘uncontaminated’ data. The intention of the researcher was to observe participants in their natural environment as students grappling with the HE environment. The study was thus designed to allow the researcher the opportunity to observe students and engage with adults in their natural learning environment. These interactions were facilitated through the researchers’ role as teacher.

Consent was sought from the student sample upon their completion of the course. Participants were unaware during the course of the module that data was being gathered for research purposes, which aided in the gathering of authentic and honest responses. The reasons for non-disclosure were explained and consent was sought from each participant for the use of the gathered data upon the conclusion of the module. This provided participants with the opportunity to exercise their right as autonomous persons to agree/disagree voluntarily for data to be used for the intended purpose. The group agreed and gave the researcher permission to use the gathered data used for research purposes by signing consent forms. The research has descriptive validity which Maxwell (1992) defines as the accuracy of the behaviours, events, objects, settings and influences reported by the researcher; for example, that which is reported is actually what happened or what was heard or observed. The internal validity of the study was maintained by ensuring a process of data collection which spanned a period of 10 months (February to October). This relatively long period enabled the researcher to obtain an accurate and holistic picture of the setting and phenomenon under study, which in the case of this study is whether students were progressing on the course.

The data was analysed independently by the researcher who gathered the information at the site of the research and verified by the co-researcher as a way of ensuring the trustworthiness and quality of the findings. Consensus on the interpretation of the data was reached in subsequent discussions and is presented in the following section.

**FINDINGS**

The findings are presented firstly in terms of the participants’ biographical data, and secondly of students’ reflections on the challenges reported at three strategic points during the academic year. The three data collection points as detailed in Table 2 occurred (1) at the first contact session with the class, (2) six months
into the course following the mid-year assessment and (3) at the last contact session of the year. Additional reflections were gathered from ‘at risk’ students, three months after the mid-year assessment. The students’ perceptions of factors impacting on their learning environment and in their interaction with the lecturer, are also reported.

Biographical details of participants
The participants (n=81) consisted of 74 female and seven male students. The ages for the group ranged between 20–60 years with the majority 53% (n=65) aged between 31–50 years. Except one, all the participants were employed at public schools by the provincial Department of Education. Most participants 37% (n=45) matriculated between 1990 and 2000. The participants were mainly teaching in the Foundation and Intermediate phases (64%; n=9). Few taught in the Further Education and Training phase (5%; n=6), the Senior phase (n=1) and in the ABET (n=1) phase.

Initial base-line assessment
An initial base-line assessment required students to write a short introductory biographical essay upon entry (first contact session) to the course. The written piece was assessed for clarity of expression in an assessment activity that counted 10 marks. Fifty one percent (n=42) of the cohort obtained a score of four and less. Forty percent (n=33) scored 4 and less and 10% (n=9) scored a mark that ranged between five and 10 marks.

The scores on the assessment task enabled the identification of the main focus areas for improvement and instruction. These included primarily, commonly misspelled words, errors in punctuation (such as the use of capital letters), the correct use of prepositions, the use of correct tenses and general sentence construction. The identified difficulties were addressed as part of the course.

Mid-year reflection
This assessment was conducted after a six month period. This written assignment aimed to elicit how students adapted to the academic environment. Data gathered from the group indicated the following themes:

i) Anxiety around difficulties linked to being a student
Students reported anxiety over issues of finance, meeting the required standards at the institution, attending classes on Saturdays and difficulties in securing transport to and from the lecture sessions as illustrated in the following excerpts from student essays…

I also had a problem financially because I was not used to going to school on Saturdays and holidays.

I spent too much money for the deposit, and also spent money for transport because I am living far from school.

Some expressed concerns around their ability to pass the examinations and doubted their ability to be successful in course assignments. Some respondents were anxious about not being able to keep up with notetaking in class and indicated that they struggled to keep up with the pace of work ‘because we are chasing time’.

Taking notes whilst the lecturer is busy teaching is not easy.

ii) Anxiety and fear about entering the Higher Education system
Respondents reported anxiety around studying at an institution of higher learning; meeting new people
and the possibly of not being able to understand different lecturers (due to fears around using English as a medium of communication).

As illustrated by the quotes from students below, some respondents became anxious at the thought of interacting with lecturers from other race groups.

It was my first time to deal with white lecturers. I was so scared.

Coming in the lecture, a white man was speaking English that was a problem for me speaking English the whole day...

At-risk student feedback on questionnaire
Questionnaires were distributed to nine students who scored a Duly Performed Mark (DP) of less than 50% on the module. Two of the nine (n=9) students completed the questionnaires.

The difficulties identified by both respondents are related to aspects that impacted on their private lives, i.e. outside of the actual academic environment such as problems with illness and death within their own families. Both respondents indicated how these events impacted on their ability to concentrate on their studies. Neither of the respondents identified their language ability as an academic obstacle. Respondents did not answer the questions relating to course content, teaching methodology or the need for interventions at the university to support them more effectively in the future. One of the respondents indicated that the course did not address her difficulty, but did not elaborate further on this.

Course evaluation
The end-of-course evaluation was conducted to elicit information on the impact of the course on students’ learning. Respondents (n=69) were required to rate their overall learning experience on the course, and offer an opinion on the following teaching and learning related areas:

Teacher Learner-Lecturer Interaction
Respondents were invited to reflect on the teaching strategies used during the contact sessions and the extent to which they perceived the strategies to be either learner- or teacher-centred. Eighty four percent (n=58) indicated that they perceived the teaching strategies as learner centred. Nine percent (n=6) thought it had elements of both while 7% (n=5) perceived it as being teacher centred.

Classroom Climate
In this section, respondents were requested to indicate the extent to which they felt valued and respected on the course. Ninety four percent (n=65) of the respondents felt valued and respected while 6% (n=4) did not. Due to the size of the group (n=81) classes were conducted in one of the larger venues which is primarily used during exam times. This led students to report an unsuitable teaching venue; the size of the group and an inability to hear the lecturer as additional factors which impacted on how the classroom climate was perceived.

One respondent had the impression that ‘coloured’ students were favoured. The group included Black (n=61); Coloured (n=5); Indian (n=2) and White (n=1) students.

The impact of the course on their personal classroom practice
Of the 69 students who answered this question, 97% (n=67) respondents reported that learning on the module impacted favourably on their own classroom practice.
Learning Guides

Respondents offered comments on the usefulness of the module guide in supporting their learning. Ninety seven percent (n=67) indicated that the guide was very useful. Three percent (n=2) thought that it was not useful. Of concern was a comment from one of the respondents who did not find it useful indicating uncertainty about the purpose and reason for a course guide.

I did not know what the Learning Guide/Course Guide is all about.

Additional comments

Additional comments recorded in the open-ended section of the course evaluation were read and categorised independently by the two researchers as either positive, negative or general comments. Fifty one students offered comments (74%) relating to the course.

Positive statements such as…

At first I did not understand the way of teaching, but the UFL module helped me in writing assignments for other modules.

I told the lecturer she is too fast. She is not worried about it, she just changes her strategy. She is very calm and firm.

Liked the strategy of group work – helped me very much.

I have learnt to be punctual and disciplined and to work with groups.

Negative statements such as…

I would like to speak in Xhosa sometimes because I do not know how to explain something in English. The lecturer should be able to translate into Xhosa because some of us have difficulty in speaking English.

I am a slow learner. Lecturer did not work according to my pace.

University must have a standard way of doing things. The way of adding tests and assignments.

Need more computers to accommodate most learners at the university.

General comments such as…

Give first years a clue of what is expected from them re: DP’s; late assignments; copying assignments from previous students/give student’s information in January.

In some modules we were asked to give back information as it appears in notes. We give back our own understanding of it. Sometimes we do not understand what is in the manual.

DISCUSSION

For many adults, the process of deciding to become a student is neither quick nor a once-off event; rather it is a complex and extended process, and specific factors may have salience at different times (Williams,
It is possible to identify a number of stages in the development of learner identity. Beginning as a ‘non-participant’, potential mature students move through an ‘aspirant’ phase where they explore the idea of becoming a participant in an HE programme. Next they advance to the decision-making stage where as a ‘decider’ they engage in weighing their options. Before students commit to becoming an ‘applicant’, they may need to upgrade their qualifications and organise their financial and domestic affairs to support their studies. These preparatory arrangements may take time and several years may have passed between initially considering and entering the aspirant stage and actually applying to an HEI.

This process however varies for different adult learners. For some potential HE students the process may be much faster (there may be greater support available - family, friends, etc.) and not everyone has to pass through each distinct stage. Little is known about how potential mature students weigh the personal advantages of studying at an HEI and gaining a qualification or how they seek to overcome the perceived barriers to begin the transition process to become actual students. To what extent, for instance, is the desire to improve one’s employment prospects more important than an intrinsic interest in a subject?

Motivations are complex, and the barriers are many (McGivney, 1996; Pascall and Cox, 1993). For this group of students the added qualification as stipulated by the South African National Policy on teacher qualification, brought prospects of permanent employment and an increased potential for income. An additional promise of financial aid for up-skilling from the Department of Basic Education might have facilitated the enrollment for many participants, but the shortfall, as students incurred additional expenses was unanticipated, and added to their stress and frustrations. These adult students, many of whom stem from disadvantaged communities and areas with minimal contact with English speakers further needed re-orientation and group support to navigate the many challenges in the HE system. While the situation is not unique to SA, the scale of under-qualified teachers amongst the poor, disadvantaged, most socially marginalised Black African communities are disconcerting. A study in the UK similarly identified how complexities of ethnicity, gender and marital status intersect with, and compound, the consequences of social class and the resultant difficulty during transition for single working-class mothers (Reay, Ball & David, 2002).

The HE environment is generally geared towards supporting learners entering the system straight after school. None of the support services at institutions of HE make special provision for mature-entry students. Support services (apart from the library) are generally not available over weekends or after hours. Mature students often also fail to understand their responsibility in seeking additional forms of academic support to supplement the face-to-face contact sessions. The HEI’s established support structures include seeking additional information from lecturers.

The students perceived their limited vocabulary as a barrier in learning and they noted some difficulty in following the lectures. Their skills in notetaking were also inadequate. Lack of confidence in their communication ability prevented students to approach lecturers when facing such difficulty. In this study it was therefore necessary to use group work and scaffolding strategies to build students’ confidence and to provide a learning environment to support their active participation in academic matters. The students also found it easier and more comfortable to use their peers as a resource than to risk exposing their inadequacies in the traditional didactic classroom setting.

The mature students in this case study did not comprise a homogeneous group. They differed in age, gender, ethnicity, educational background, personal circumstances and their motivation to be successful as students. Their decision to become students impacted heavily on their lifestyles and work lives. Furthermore, mature students have multiple roles and responsibilities, which carry considerable emotional and financial
burdens. Despite the fact that the students value and prioritise their learning, it was clear that the decision to enter HE is highly constrained. Considerable uncertainty exists amongst potential entrants in relation to the financial arrangements for entry into HE. While available bursary schemes such as the National Student Financial Aid Scheme (NSFAS) implemented in 1999 provides aid to school leavers to achieve a first qualification, many mature students are left to fund their own studies.

For this group of mature students, willingness to enrol for the qualification was influenced by the promise that the course would be funded by the Department of Basic Education. The bursary that the students however received only covered their tuition leaving them disillusioned and out-of-pocket. The students had to cover the outstanding amount in addition to other expenses incurred due to their status as a student. Many students in this study incurred costs to travel to and from contact sessions in an economic climate where transport costs had become exorbitant. Those students who travelled from places further afield on a weekly basis added further strain to their already fragile financial situations. The finding that students fear increased debt upon entering HEIs are not new. A study of students of lower socio-economic backgrounds in the UK affirmed that such students may be deterred from advancing their qualifications due to a fear of debt (Callender & Jackson, 2005).

Nevertheless, regardless of their individual backgrounds, all mature students had concerns about their abilities to learn at a university. While some initially lacked confidence at the start of their studies, they however do demonstrate a willingness to be successful once they have committed to the course. Mature students unlike those entering HE straight after school, place a higher value on class attendance and would seldom stay away from contact sessions for insignificant reasons.

Mature students are often goal-directed and previous studies, albeit on a medical programme, had indicated the preference of mature students to work alone (Singaram, Dolmans, Lachman & Van der Vleuten, 2008; Van Wyk & Moodley, 2013). In this particular study the students, however, valued the group learning process that had been advocated during contact sessions. Students were encouraged to work co-operatively and in teams. In traditional classrooms, teachers manage the critical balance between teaching and learning. This has a direct bearing on the level of interactivity between students and teachers. A by-product of peer learning is that the interaction amongst students increases, and that the interaction with the teacher increases. Increased interaction is vital for establishing the foundation for the acquisition of skill. It also extends the possibilities for knowledge creation and knowledge acquisition (Purnell, Callan, Whymark & Gralton, 2004).

This study focused on how mature students progressed in one module in an initial teacher training course aimed at up-skilling un- and under-qualified teachers. The teaching approach followed in the delivery of the module was the scaffolding of learning through group work and collaborative learning. The multiple challenges in becoming proficient in the language of teaching and learning (LOLT) while at the same time attaining academic content and skills required that the learning be carefully supported to facilitate the learning process (de Jong & Harper, 2008). The scaffolding process during contact sessions entailed flexible grouping which allowed student’s access to their peers to discuss content in their mother tongue and time for collective problem-solving and joint project completion (Reiss, 2008). The approach provided and accommodated mature students’ unique linguistic and cultural needs.

It is recommended that lecturers involved with teaching mature students be aware of their need to be affirmed in their academic endeavours. Mature students, once convinced of the value of pursuing further study, will see it through until the end. They have a bigger chance than their younger counterparts of staying motivated and ultimately being successful if they perceive the learning environment as being caring and supportive.
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Peer-to-peer programming versus individualised programming: The real world

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ABSTRACT

Does programming alone depict the real world scenario? It is often said, ‘In programming, One is the loneliest number’. Addressed in this paper is a strategy referred to as ‘peer-to-peer programming’, and the focus is within an object-oriented programming (OOP) paradigm. The paper explores options available to students at secondary and university levels who are engaged in individualised programming, and potential opportunities associated with peer-to-peer programming which resemble programming in the real-world scenario. Most programmers learn to program as individuals and then are faced with the real world, programming in a team. This research was based on confirmed observation, analysis and assessment against published data and information extracted on peer-to-peer programming and its influence on contemporary instruction and comprehension of computer science programming concepts. The research was conducted within the parameters of the programming information technology curriculum at three secondary and two university-level academic institutions. Gaining the perceptions of peer-to-peer programming was arrived at through using threshold concepts in Computer Science and an interpretive paradigm. Two critical questions were posed:

• What are learners’ experiences of programming alone and programming with a partner?
• How does peer-to-peer programming enhance programming in an OOP paradigm?

Based on assessment and analysis of the data, our recommendation is to create an environment of peer-to-peer programming in an OOP setting which is similar to programming in a team in the real-world scenario. The benefits are not only better problem solving and better programmers but also the enhancement of good social skills.

Keywords: peer-to-peer learning, learning programming, collaborative learning, object-oriented programming

INTRODUCTION

Many will agree that programmers have a reputation for not being social. Yet, we have to work in teams all the time, and use highly social development processes. In schools and universities we learn programming as a ‘Lone Wolf’ developer, while in the real business world (software houses), we are...
required to program in a team. Over the course of the last half century much discussion has continued as to the most beneficial and effective means of presenting the elements of Computer Science programming and the relevant associated programming languages. A single paradigm embodied in a single language is deemed by Roy and Haridi (2003) as the most suitable application for programming instruction and training, while Cooper, Dann and Pausch (2003) believe in an ‘objects-first application’. Furthermore, Howe, Thornton and Weide (2004: 291) contend that the approach with the most impact is the ‘object-oriented’ (OO) and ‘component-first’ approach. Research by Govender (2006: 19) demonstrated that there ‘exists tension between procedural paradigm and OO paradigm’, although an OO approach to programming is ‘not a good starting-point for introducing students to the basic concepts of programming’, according to Ismail, Ngah and Umar (2010: 216).

Contemporary data and information indicates that examination results are cause for concern, and the percentage rate of first-year students abandoning the programme is increasing at a staggering rate (Department of Higher Education and Training, 2012). Many believe that this can be attributed to an improper utilisation of available resources and issues associated with student learning and comprehension.

A collaborative learning framework has been implemented to counter the abandoning and failure rate of first-year students (Hakizimana & Jürgens 2012; Letseka & Maile 2008; Horn, Collier, Oxford, Bond jun. & Dansereau, 1998). The premise of this framework is structured on the collaborative efforts of each individual (Horn et al., 1998). This study’s intent was to establish if a collaborative learning framework is a practical pedagogical tool for instruction and comprehension of an introductory programming curriculum at secondary schools and university-level institutions within KwaZulu-Natal and to determine to what extent this collaboration will develop skills in programmers that are needed when programming in a team. Its focus was to decide if collaborative Pair Programming (PP) has a definitive influence on those individuals’ learning, and if it is deemed a practical application for Information Technology (IT) instructors to utilise. More intensive observation would also reveal the views and opinions of IT instructors in KwaZulu-Natal and their application of PP as a means towards achieving the instructional and comprehension methods regarding the OO paradigm.

In introductory programming courses at university level, Microsoft C# and Java were utilised as primary programming languages. Programming problems were solved with a specific programming language and within a particular programming paradigm. Enrolled students at all education levels have the ability to excel at programming individually, but in an organisational setting the environment is more of a collaborative effort with other individuals. This can present a myriad of problems for individuals who are used to solving problems individually.

Studies were crafted to assess PP usage and its benefits in association with the instruction and comprehension of an introductory programming curriculum (Mentz, van der Walt & Gorsen, 2008; Nosek 1998; Williams, Robert, Cunningham & Jeffries, 2000). Some of the advantages of PP noted are high program quality, efficient time management of programs, enhanced comprehension of the programming methodology, elevated course completion percentages and examination performance rates (Preston, 2005). In North West Province, South Africa, successful PP application of instructor training was attained, according to Mentz et al. (2008). Contemporary data and information gathered from research by Breed et al. (2013) showed that elevated productivity is attainable by means of meta-cognitive skills during PP. The nature of the data from PP usage served as an impetus for the implementation of this study.

The objective was to provide learners and educators at schools and tertiary institutions with a strategy that they could adopt when teaching and learning introductory programming courses.
The theoretical and conceptual framework for this study comprised threshold concepts in Computer Science. A threshold concept can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, interpreting or viewing something without which the learner cannot progress. Threshold concepts are those which might be used to organise the educational process, and are likely to be transformative, integrative, irreversible, and potentially troublesome for students, and are often boundary markers (Cousin & Meyer, 2006). The interpretive paradigm was chosen for this study because it is concerned with descriptions that produce deep understanding and emphasise interpretation of data from educators and learners. It is within the boundaries of this theoretical framework that the following research questions were answered:

- What are learners’ experiences of programming alone and programming with a partner?

And

- How does peer-to-peer programming enhance programming in an object-oriented programming (OOP) paradigm?

OVERVIEW OF THE LITERATURE

Benefits of the use of PP

Many sectors of the software development industry embrace PP, and it is utilised as a training application (Nagappan et al., 2003). Its usage is widespread in the workplace, according to Chong and Hurlbutt (2007). Employees do not receive the benefit of a collaborative effort when they program individually, as they are not exposed to alternative ideologies of resolution, communication and inspiration. Working in a collaborative environment fosters self-esteem, builds on one’s confidence and serves as a springboard for further advancement, according to Williams et al. (2000).

Elevated knowledge utilisation resulting from meta-cognitive skills implemented during PP was deduced from data and information research conducted by Breed et al. (2013). The primary element that initiates difficulty in comprehending programming and coding is the ‘inactive involvement’ of individuals engaged in programming tutorials, according to Ismail, Ngah and Umar (2010: 128). PP was overwhelmingly preferred over individual programming, as individuals were prone to making more mistakes, according to Nosek (1998).

Comparable data and information were revealed in our study. Braught, Eby and Wahls (2008) released information that indicated that students who had low Mathematics standardised test scores demonstrated improvements in individual programming skill when exposed to PP. In addition, drop-out percentages lowered and academic achievement rose. Nagappan et al. (2003) contend that PP was instrumental in better course completion rates.

A positive student experience at the outset of any introductory programming curriculum greatly enhances the probability of continuing on the course track in Computer Programming (McDowell, Werner, Bullock & Fernald, 2002). Not limited to just males, female programmers collaborating excelled (Werner, Hanks & McDowell, 2004). Research data and information from Carter (2006: 29) revealed that a high percentage of females refrain from entering the field of Computer Science, citing their wish to undertake a more ‘people-oriented’ field of study.

Females enrolled in the various grades/levels of higher learning found PP to be of great benefit and enjoyment in their IT and programming class assignments, according to Liebenberg, Mentz and Breed.
Female productivity was far greater when in a collaborative environment, with a higher grade of finished product, completed in a time-efficient manner. Such a climate of productivity and efficiency elevated their confidence and fostered an elevated interest in IT careers (Berenson, Slaten, Williams & Ho, 2004).

Nearly 20% of Computer Science students in the United States of America are female (Zaidman 2011). PP is a ‘people-oriented’ strategy; therefore employing techniques of PP augurs well for the inclusion of more females in undergraduate courses and subsequently in the workplace. Females made up nearly 33% of the sample population in this study.

Improved understanding of programming principles

Utilising PP can enhance an individual’s comprehension of programming principles, contemporary research confirms (Prottsman, 2014). Assembling groups for collaborative efforts permitted these individuals to demonstrate further the knowledge they acquired, progressing their knowledge of the IT spectrum, according to Barker, Garvin-Doxas and Roberts (2005). Similar findings were revealed by Tillema and Van der Westhuizen (2006), with groupings of individuals promoting concern and attentiveness towards resolving issues. Research by Preston (2005) indicated that PP was an attractive means to employ to have students learn basic programming syntax and principles.

McDowell et al. (2002) contend that results for PP sections were highly elevated in comparison to those from non-pairing classes, and collaborative efforts demonstrated higher-quality programs. Nagappan et al. (2003) contend that improved course completion percentages were a demonstrated advantage of PP. Bain (2004) suggests that ‘undergraduates learn most effectively when they can work collaboratively with other learners to grapple with problems’.

This study found a similar result. Educators must encourage and stimulate individuals that are learning to expand further their realm of knowledge, according to Berglund, Box, Eckerdal, Lister and Pears (2008). Investigative research suggests that the social interactions of students may be an indicator towards lowering the percentage of individuals that drop out of the curriculum, according to Kinnunen and Malmi (2006).

PP offers an opportunity for individuals to enhance their own comprehension and optimise such knowledge in a collaborative arena with other individuals (Sextro, 2012). Programming is optimised as a collaboration and not as a solitary occurrence. Observations of this study in KwaZulu-Natal revealed students in a collaborative effort conversing in their mother tongue when confronted with a major obstacle or hindrance. Use of their shared mother tongue put everyone on the same plane of thought, which is conducive towards finding resolution.

Preston (2005: 41) cited the following benefits to the use of PP: ‘Higher quality of programs; Decreased time to complete programs; improved understanding of the programming process; improved course completion rates; improved performance on exams’. Mentz et al. (2008: 250) concluded that ‘the experimental group not only outperformed the control group but there were also fewer drop outs’.

Cockburn and Williams (2001) summarised the significant benefits of PP as follows:

- Errors are discovered at key entry instead of during quality assurance applications or in the field (continuous code reviews)
- The end defect content is statistically lower (continuous code reviews)
- The designs are better and code length is shorter (ongoing brainstorming and pair relaying)
- The team solves problems faster (pair relaying)
• The people learn significantly more about the system and software development (line-of-sight learning)
• The project ends up with multiple people understanding each piece of the system.

**Benefit to inexperienced and experienced programmers**

In order to obtain diverse results, research conducted by Padmanabhuni, Tadiparthi, Yanamadala and Madina (2012) assembled individuals in pairs across a vast platform of knowledge. Results from their assessment and analysis of their research indicated that PP is an efficient technique in programming that provides an opportunity for individuals to expand further their capabilities and knowledge.

Comments from programmers with verified experience have stated that they have found benefit in being paired with junior programmers (Lang & Ottinger, 2011: 3-5). Some of the benefits included:

• As a new hire in a pairing environment, you don’t spend week one (or month one) sitting and reading out-of-date documentation or fearing a code base that you can barely begin to understand on your own. Instead, you get to jump right in and wet your feet with live production code. The rest of the team doesn’t resent having to take time out from ‘their’ work to answer your endless questions about the system – they can instead work with you directly, because that’s how the team has chosen to work.

• We love learning new things about software development. We think we’re pretty good at programming, yet rarely a day goes by when we don’t learn something new and significant – even from the most junior programmers on the team.

• If you’re the team’s rock star, pairing can give you mentoring and teaching opportunities that you’ve never had before, plus the respect you deserve. Invariably, a great programmer on any team becomes revered by the team. If you have the skills alone, you have the skills paired too.

• If you are the weakest player on the team, you will find that pairing gives you an opportunity to learn from your teammates. In addition, as the partner shares the keyboard and ensures that you’re doing test-first work, you will find that it’s harder to make a mistake that gets through to integration. You have a safer working/learning environment.

• When you are tired, frustrated, less well, hungover, underslept, low on biorhythms or feeling unlucky, you are far more likely to stay engaged and productive if you are pairing. Partners look out for you. Your worse days pairing won’t look like your worse days as a solo programmer.

While this study only studied students on an equal academic level, it should be noted that educators should give due consideration to pairing programmers from various academic year groups. However, this was beyond the parameters of this study.

**Increased social development and enjoyment of programming**

A critical benefit of PP, according to Pikkarainen, Haikara, Salo, Abrahamsson and Still (2008), was a high rate of interaction amongst those participating in the collaborative effort. Observations recorded during research indicated in excess of 250 verbal interactions per PP hour, and both partners collaborated on 93% of their tasks. Such collaborative efforts stimulate productivity, which counters the notion that talented individuals can resolve issues on their own and without interaction with others (Cockburn & Williams, 2001). Cockburn and Williams’ research also revealed more confidence and heightened harmony amongst those who were interacting. Research conducted by Liebenberg (2010) confirmed the
findings of Cockburn and Williams (2001) of greater fulfilment and vision of programming. Lang and Ottinger (2011) noted the following:

… having a whole team in a room can be noisy and distracting, while a focused pair can more easily block out distractions than an individual and that people are also less likely to interrupt a pair deep in work and conversation than an individual sitting alone.

An elevated verbal interaction was observed by Pikkarainen et al. (2008) and Lang and Ottinger (2011) indicated that the interaction between two programmers eliminated interruptions imposed by other individuals.

Costs related to software development and programming

Roughly 60% of software projects which are initiated do not come to fruition (Molokken & Jorgensen, 2003). Programmers are often viewed by managers as a prized commodity, who command a high price – which is a reason PP principles are not implemented in many instances. Cockburn and Williams (2001: 95) contend that ‘the development cost for the benefits of PP is not the 100% that might be expected, but is approximately 15% and this is repaid through shorter and less expensive testing, quality assurance and field support’.

Lax planning, insufficient engineering, untimely decisions and poorly calculated estimates serve as reasons for software project failures, according to Galorath and Evans (2006). Wrongly calculated estimates are the core of virtually every software project failure, contend Molokken and Jorgensen (2003).

PP can lower the amount of the time spent by student programmers on academic software projects, according to our study. Macgregor (2007: 1) states that ‘40% of South African students drop out of tertiary institutions in their first year of study’. A major issue is the elevated rate of individuals dropping out, which would suggest that PP would increase individual passing percentages, while at the same time lowering costs. Success in contemporary programming in conjunction with utilisation of PP can be attributed to where programmers interactively engage in group programming, designing, and testing and assume new responsibilities with other group members. In many instances collaborative efforts are implemented in the review of software design prior to full integration. The Chrysler Comprehensive Compensation system is a prime example of the implementation of PP, according to Anderson, Beattie and Beck (1998).

The practical application of PP makes it viable for institutions of higher education to adopt (Salleh, Mendes, Grundy & Burch, 2010). If viable in the industrial field and with students being prepared to enter the global marketplace, should there not be a mandate for industry standards of work ethics and practices? Research conducted by McDowell et al. (2002) indicated that scores from PP were noticeably elevated in comparison to scores of individuals that did not participate in PP, serving as valid proof that collaborative efforts significantly enhance software program quality.

As academic achievement was attained, the percentages of individuals that withdrew from the program decreased. Improved course completion rates were derived from use of PP (Nagappan et al., 2003). As with many undergraduates, learning can be a troublesome issue, but grades improve when they engage in a collaborative effort (Bain, 2004).

The use of PP enhanced cognitive skills of individuals and optimised their own productivity, according to Breed et al. (2013). Cost-effectiveness and efficiency are realised in organisational, industrial and academic frameworks when the percentage of individuals withdrawing from the curriculum is reduced and overall productivity increases. In conjunction with monetary gain through implementation of PP, are
the successful launches of software coding. Profit is increased, downtime is reduced and in an academic environment government funding increases.

Time constraints often hinder student-teacher interactions in settings that foster large assemblies of individuals. This necessitates that educators seek other means of achieving face-to-face consultations with students with computer-mediated models of communication (Field, 2005).

A University of the Witwatersrand study revealed that person-to-person consultation with individuals in large assemblies does not foster learning in collaborative efforts, and promotes more individuality and one-on-one competition, counter to the ideology of PP. Such vast numbers, in this case 600 students, of individuals in a large learning arena (lecture hall) impose an undue burden on the educator and stymies the intent of fostering learning and knowledge (Thatcher, 2007).

The University of South Africa (UNISA) is a distance-learning/video-conferencing learning institution that initiated intervention strategies to support its programmes (Macgregor, 2007) in 2007, investing nearly R50 million. Utilised at regional education facilities, peer-to-peer learning was an application designed to elevate the percentage of individuals passing the curriculum and eradicating the high withdrawal rate of students from the programme.

Salleh et al. (2010) demonstrated by means of anecdotal and empirical data and information that PP resulted in major strides in the performance of introductory programming courses in Computer Science. Initial qualitative evidence leads one to believe that PP improves not only learning amongst introductory programming individuals, but assists educators in maximising time spent in consultations with students.

The second principle from Ramsden (1992) for effective academic instruction relates to understanding how individuals comprehend matters presented before them; the strategies employed were a conversational framework, consultation and negotiation processes.

In lieu of consultation and negotiations, PP would be employed as an applicable strategy by those in academia to optimise their relationship with students in the instruction of programming in a collaborative manner between individuals. Research for this study was motivated by the need for relevant and necessary support for individuals learning programming and coding. Achieving such support is critical, and PP offers one such solution to complementing traditional lecturer/student consultation and reduces the percentage of individuals withdrawing from the IT curriculum.

The participants in this research consisted of 60 Grade 11 and 45 Grade 12 IT learners from three secondary schools, and 75 first years IT students from two universities. It was deemed that two or more data collection methods were necessary to lend credibility to and substantiate this study. Methods employed to assemble data included: (a) personal interviews, (b) observations, and (c) questionnaires. Observations were made of collaborative pairs, and participants were required to respond to pre- and post-pairing questionnaires. Prior to and after the intervention, educators were interviewed.

**Data Analysis and Interpretation**

Information and data gathered from questionnaires and observation sheets were assembled as numerical data in a spreadsheet format that enabled statistical representation in percentages and graphs. Results of data mining were assembled into relevant categories in conjunction with the theoretical framework, steered by the questions posed.
The intent of the study was to determine the application of PP as a means of supporting the introduction and demonstration of an introductory programming curriculum, and to engage an appropriate and beneficial strategy for educators and administrators to adopt.

**RESULTS**

The findings which emanated from the study are now summarised according to each of the research questions.

**What are learners’ experiences of programming alone and programming with a partner?**

To ascertain the individuals’ perceptions of programming, pre- and post-test questionnaires were administered. Questions posed to individuals inquired as to their views towards the benefits of PP. Responses indicated that there was a strong sentiment towards PP having value. The overall view of participants on the questionnaire was that ‘it was an indispensable tool, critical in assisting with the comprehension and understanding of various programming concepts’. They believed that PP was ‘instrumental in enhancing the programming abilities and was a positive strategy necessary for success’. With the majority of responses to the questionnaire being favourable, educators expressed a high level of confidence in the implementation of PP concepts.

PP was perceived, from responses, as ‘easy to implement and adopt’ and embraced by individuals and educators. Individuals expressed their confidence in PP and saw it as an appropriate avenue for the resolution of an issue with which they were presented. Individuals that often preferred individual assignments expressed an approval of a paired assignment in a collaborative effort. Although PP was readily embraced in this study, it was found that it was not fully implemented at the secondary level and at universities as reflected in our observations.

If academia were to fully employ PP, it would heighten programming concepts learning, according to this study. Many participants sincerely believe that PP is a suitable choice for ‘lending support in a learning environment’. Data confirm the long-standing belief that pairing individuals in a collaborative effort sustains quality software production and fortifies individuals’ quest for knowledge.

Research data indicated that enhanced forms of enjoyment were experienced by individuals when paired with another individual in lieu of a solitary endeavour. In their responses male programmers indicated that they ‘felt more productive when paired with a female programmer’. Results from post-test data and information indicate that individuals were confident with resource availability, paired partners and educator support.

**How does peer-to-peer programming enhance programming in an OOP paradigm?**

Results revealed that individuals enjoyed addressing potential strategy avenues with the paired partner instead of their instructor in a PP environment. Individuals only turned to their instructor as a last resort, first exhausting all other options with their partner, although some individuals expressed hesitancy in approaching an instructor to find resolution of the issue.

The following benefits were derived from the learners’ interaction with PP:

(a) enhanced communication (collaboration)
(b) interactive participation with peers
(c) greater accessibility of resources
(d) a supportive and favourable setting
(e) enhancement of collaborative learning.
A collaborative effort has the advantage of allowing the learner to discuss their experiences with their paired partner prior to approaching their instructor, which fosters independent learning and problem solving.

Individuals found an ease in collaborating with a paired partner from the same linguistic group or mother tongue. Cultural background has a large influence and impact in fostering an amicable relationship amongst collaborators. Interactive participation is a mutual benefit within a PP scenario. It fosters a climate of assistance and support in search of errors and omissions, and is a learning experience which may be built upon.

The findings of this study showed that the learners found PP to be an easy, efficient and enjoyable way to learn problem-solving techniques.

**OVERVIEW OF RESULTS**

This study ascertained that implementing PP achieves the following:

- PP contributes towards motivating students to complete a programming task or even learn a new programming concept, and the probability of successful compilation and completion is greatly increased by working in pairs.

- Paired programmers can develop strong relationships of friendship that go beyond the programming task assigned to them, and the continuous discussion of a programming task or concept makes for more sociable and better programmers.

- The process of PP encouraged academically weaker students to develop their programming ability by acquiring programming skills from a peer in an informal setting, and similarly academically strong students acquired the humility of learning to keep their ego in check and learnt alternate programming solutions.

- PP can afford the educator more time and create a more conducive, stress-free learning environment – whereas previously the educator was inundated with programming queries, with PP the query is discussed within the pair and most often solved within the paired partnership.

- Programming ‘mistakes’ or bugs are discussed within a pair and not in front of the entire class. Pair partners look out for each other and vehemently support their program when confronted by detractors.

- Not all learning and teaching environments are conducive to implementing PP. For effective PP experiences educators need to rearrange the classroom and computer facilities.

- Educators must support the use of PP in the classroom; without such support, PP is doomed from its inception.

- Sometimes it may be necessary to halt PP implementation and allow for individual programming or even a completely different activity, then regroup the pairs or even change paired partners.

- It is essential that when individuals are paired in collaboration, educators break down any barriers when pairing individuals together. This provides for a more conducive and less competitive environment, and in most instances leads to fostering a spirit of cooperation.

All of the above benefits are crucial in a business environment in the real world. To advance further the benefits and attributes of PP, it is strongly suggested that academic institutions become more actively involved in collaborative and PP techniques. With proper instruction and training for educators and administrators, PP will then be properly introduced and demonstrated to those individuals that wish to
advances further their career path in IT and enhance their skills through the utilisation of collaborative efforts.

CONCLUSION

Individual programming has always been the norm in schools and universities. Traditional teaching methods were premised on the ‘all-knowledgeable’ educator who ‘spoon-fed’ a learner. With advances in contemporary technology such as the Internet, video conferencing, cell phones and computers, these elements are instrumental in the promotion and utilisation of PP in the classroom as a means to resolving issues associated with the negative elements (especially problem solving skills) associated with contemporary programming. Using PP will ensure that students are being prepared for the real world where they will be required to program as a team.

It is the view of the authors that if recommendations culled from this study are properly implemented, PP can be of great benefit in the classroom environment. PP is an adjunct to the traditional classroom environment of teacher-student learning. A traditional classroom is where teacher and students connect, and in most instances is not a setting for collaboration. Introduction of PP induces group participation and collaboration. Such collaboration stimulates creative thinking, which is more applicable towards finding resolution of programming issues.

With annual exposure to PP in an academic environment, PP is positioned to provide those individuals learning programming with an opportunity to get one step ahead of others in preparation to enter the workforce in years to come.

REFERENCES


Lessons learnt in applying automated code plagiarism detection in an introductory programming module

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ABSTRACT
This paper investigates automated code plagiarism detection in the context of an introductory programming module. Three methods for detecting plagiarism are compared to determine whether these systems yield differing results. These methods are the use of MD5 hashes and the application of two plagiarism detection systems, namely MOSS and NED. The same set of solutions to the same problem was evaluated, using each of the three methods. This set was selected as a representative sample as it was characteristic of most other data sets submitted by students in the introductory programming module over the course of four years. The discrepancies in the results obtained by these detection techniques were used to devise guidelines for effectively detecting code plagiarism.

Keywords: programming, plagiarism, detection methods

1. INTRODUCTION
An academic course requires interaction between the instructor and the student. We subscribe to the learning theory of Gibbs (1988) that doing is an effective way of learning. We believe that students learn best by writing their own code. It increases their understanding and if assessment is timely, it allows the instructor to gauge their level of understanding. Unfortunately, students often submit work done by other students because they are more interested in getting marks than in learning and gaining programming experience. These submissions constitute acts of plagiarism, which is the bane of many lecturers.

This paper critically reflects on the lessons learnt in the application of automated techniques for the detection of plagiarised code. This study applies plagiarism detection as a tool for identifying the students who plagiarise. Knowledge about whether homework was plagiarised could be used to ensure that the marks awarded to students are a true reflection of their understanding, and also to identify individuals who may benefit from an intervention.

This paper shares the experience and reflects on the lessons learnt when applying different techniques for detecting plagiarism. The aim is to describe the insight gained in a way which other academics may find useful. These insights might assist others to extend their current teaching practices to include strategies for the identification of plagiarised code.

1 Date of submission 30 August 2015
Date of acceptance 29 January 2016
The next section (2) sets the scene for our discussion. In Section 3.1 we discuss the possible reasons for acts of plagiarism and give an overview of how plagiarism can be addressed in academic institutions. This discussion highlights the need for an automated process for the identification of plagiarised assignments. Section 3.2 explains some of the methods and systems that could be employed to detect code similarity.

The main objective of this paper, namely to provide guidelines that may improve the accuracy of the detection of code plagiarism, is based on our observations of the results obtained from applying three existing plagiarism detection techniques to a selected data set. This data was generated in our introductory programming module. Section 4 gives an overview of the classroom situation which inspired this study and describes the data set used in our investigation. Section 5 discusses the observations made when applying the different checks for code similarity to the selected data. The lessons learnt from this investigation are condensed in a series of guidelines in Section 6. Section 7 summarises the observations and concludes by positioning the application of techniques for detecting code plagiarism as part of a broader educational responsibility.

2. PROBLEM STATEMENT

Assessment should enhance the students’ learning experience and measure their competence accurately. Recent technological advances which enable students to cheat, threaten the purpose of assessment. To counter this threat, plagiarism detection has become commonplace in academic institutions and has sparked the development of sophisticated tools to detect cheating.

Various factors may prevent institutions from using the proprietary tools or other tools that are publically available to detect copied work. One such factor is the varying results of the detection techniques contrasted in this study. Another factor is that software development houses tend to employ a closed development model which does not permit external access or modification to their proprietary code. A third factor might be the intellectual property constraints on the code that students have written and on student information. These may restrict permission to submit the student’s homework solutions to a plagiarism detection service. These and other factors may make the local development of an automated plagiarism detection technique the most viable option for most information technology and computer science departments.

The purpose of this study is to propose guidelines which could be used when developing a plagiarism strategy for the identification of copied code in an introductory programming module. Educators should be able to combine the insights gained from these guidelines with their local subject knowledge so that they can devise a plagiarism detection technique which is adapted specifically to their needs.

3. BACKGROUND

This section is an overview of contemporary views on plagiarism and the techniques used for automatically identifying possible cases of plagiarism. It gives insight into the underlying reasons why students copy assignments and discusses several of the techniques used for identifying copies.

3.1 Views on Plagiarism

Different communities have varying views on plagiarism. Many practices such as working together and reusing code may be acceptable in a professional context but are considered unacceptable in an academic context (Simon & Sheard, 2015). On the one hand, professors and administrators regard plagiarism as a serious academic crime, an ethical transgression or even a sin against an ethos of individualism and originality. Students, on the other hand, revel in sharing, in multiplicity and in accomplishment at any cost (Blum, 2011). It is likely that ignorance of which behaviours constitute plagiarism is widespread among students and staff alike (Gullifer & Tyson, 2014).
Students may justify official punishable behaviour on a moral basis which focuses on values such as friendship, interpersonal trust and good learning. In situations where students are aware that the likelihood of being caught is minimal, they may feel that they are justified in copying since everyone else is doing it (Selwyn, 2008). Louw and Pieterse (2015) identified several reasons why students copy, such as a lack of ability to write their own version, a lack of time to finish a task on time, a desire for better marks, a lack of interest and a distrust of the automatic assessment of their code. They maintain that lack of ability is most often the reason why a student would copy someone else’s work. Kyrilov and Noelle (2015) also find that students are likely to cheat and disengage if their work is automatically assessed.

Various ways of dealing with plagiarism have been proposed. What is clear, however, is that it is an academic’s duty to educate students about cheating, plagiarism and intellectual property rights (Granzer, Praus & Balog, 2013). This simple act of education may prevent plagiarism by fostering an attitude that condemns plagiarism (Briggs, 2003; Gibson, 2009). Other prevention strategies include emphasising low stakes formative assessment (Macdonald & Carroll, 2006), punishing students who cheat and expecting students to work in conditions where it is difficult to cheat (Schoeman & Pieterse, 2004).

When a student has copied code, the authors of this paper interpret it as an indicator that the student needs intervention. Such an intervention is a response to the reason for copying. Depending on the reason, intervention may provide training to enhance the student’s understanding of the work. Furthermore, an intervention may provide guidelines for better time management or motivate the student to pursue goals aimed at acquiring knowledge, not aimed solely at achieving better academic results.

3.2 Detecting Plagiarism

There are various automated systems for the detection of plagiarism in prose, such as Turnitin (2015) and PaperRater (2015). These systems allow an input text to be scrutinised and compared to existing sources to determine how much of the document has been plagiarised. These plagiarism detection tools tend to be inaccurate, however, if used for the detection of plagiarised documents written in a programming language. As programming languages are more rigid than natural languages; they also contain many acceptable cases of repetition. This may make the system mistakenly identify standardised, repetitive programming structures, shared among a large number of files, as an indicator of plagiarism (Acampora & Cosma, 2015). For this reason, such systems are not feasible solutions for detecting copied code.

A rudimentary way of identifying copied code, applied by Pieterse (2014), is the comparison of the message-digest 5 (MD5) hashes of documents. The MD5 algorithm is a widely used cryptographic hash function which produces a 16-byte value for any input. When used for observing code similarity, the input to the function is the entire student program. MD5 is believed to produce a unique value for any given file (Rivest, 1992) and is commonly used to verify data integrity. If two documents produce the same MD5 hash, it can be assumed that the contents of the documents are identical in every respect. This technique is only useful for identifying exact copies. More advanced techniques are required to identify sections of code which are similar, but not exact matches.

Software for detecting code similarity may be broadly classified into two categories, namely attribute-counting and structure-metric systems (Chen, Francia, Li, McKinnon & Seker, 2004). Attribute-counting systems track certain attributes, such as repetitive tokens, in an input text, in order to devise a profile of the input text. Structure-metric systems extract and compare representations of the overall program structure. These two categories encompass a wide variety of systems for detecting similarity in code. These systems include: Measure of Software Similarity (MOSS) (Aiken, 1994), JPлаг (Prechelt, Malpohl & Philippsen, 2002), Plaggie (Ahtiainen, Surakka & Rahikainen, 2006), the Software Integrity Diagnosis system (SID) (Chen et al., 2004) and the n-gram and Edit Distance plagiarism detector (NED) (Haskins, 2014). Many
of these systems hide the details of their underlying algorithms to avoid a situation where students learn how to circumvent the plagiarism detection process.

MOSS is a widely used free Internet service hosted by Stanford University for automatically detecting similarity between programs, in languages such as C, C++, Java, C#. It has been publicly available since 1997. As part of its implementation, it uses an algorithm for document fingerprinting (Schleimer, Wilkerson & Aiken, 2003). Bowyer and Hall (1999) discuss an implementation of the MOSS system which evaluates documents at various levels. The plagiarism indicators used in the evaluation include the number of tokens matched, the number of lines matched and the percentage of overall overlap between two programs. Their approach is not unique, since Joy and Luck (1999) present a study involving an incremental approach for comparing the code of two programs at three different levels of pre-processing. The purpose is to create feature sets which serve as input into a neural network and clustering algorithms.

JPlag is a publicly available web service, which compares input programs as pairs to compute a similarity value and highlight regions of similarity. It outputs plagiarism reports as a set of HTML pages. As part of its plagiarism detection process, it converts each program into tokens (substrings) and then attempts to match these tokens to substrings in another program. It can apply this technique to program a source code written in Java, Scheme, C or C++.

Plaggie is a stand-alone Java-based system used for detecting code plagiarism in Java code. The use of Plaggie is governed by a GNU licence and, as such, it is freely available for download. It was created to address an initial shortfall in JPlag in which it was unable to distinguish or exclude the pre-written code given to students as part of an exercise. JPlag has since addressed this shortcoming.

SID makes use of an information-based metric to measure the amount of information shared between two sequences. Input programs are broken down into tokens and an algorithm is applied to calculate the shared information among the tokens. Then program pairs are ranked according to the amount of shared information, referred to as their similarity distances. SID currently accepts programs written in Java or C++, but may be expanded to include other languages if a parser for the language is written.

NED was developed, tested and validated on first-year C# programming assignments in an introductory programming course (Haskins, 2014). The software employs three means of performing comparisons, namely exact match, n-grams and inverse edit distance. The n-grams are a means of dividing a word or sentence into smaller, overlapping sections or tokens. The n signifies the length of an individual section. These individual sections may then be compared with the sections of another word to determine similarity. This may include a process as simple as calculating a frequency measure of the n-grams in an input statement and then comparing these frequencies to a reference (Cavnar & Trenkle, 1994).

Other studies measure the number of changes necessary for converting one statement into another, referred to as the edit distance (Masek & Paterson, 1980; Wagner & Fischer, 1974). Haskins and Botha (2014) apply a combination of n-grams and edit distance as a means of gauging the similarity between words, for the sake of automatically normalising text to resemble English more closely. They apply the normalisation to text found on a mobile mathematics tutoring platform.

NED was created to compare the content of files at a character level with no direct regard for underlying language structure by applying n-gram comparisons and edit distance measurements. Therefore it is applicable not only to files containing C# code, but also to those containing content in languages such as C++ and Java. A decision was made to investigate the applicability of three of the techniques discussed in this section to the selected introductory programming module. The techniques were chosen because they could process C++ code and their use was free of charge. Moreover two kinds of plagiarism, namely direct matches and code similarity, had to be addressed. MD5 hashes were chosen for comparisons as
the hashes are a simple method of identifying direct copies of assignments. MOSS was selected as it is one of the best-known systems for detecting plagiarism (code similarity) and is freely available. Lastly, NED was selected as it is a fairly new system which is being developed at one of the universities involved in this study. This allowed the insights gained during this study to be applied to the improvement of the plagiarism detection capabilities of NED. The next section discusses the approach taken in this study when contrasting the three selected automated plagiarism detection techniques.

4. SITUATIONAL OVERVIEW

This section describes the data used in our investigation. The first two subsections describe the classroom situation where the data was created and how the specific data set for the investigation was selected. The concluding subsection describes the characteristics of the data, based on a manual scrutiny of a sample drawn from the data. This was needed to support the observations described in Section 3.

4.1 Scenario

The investigation was into the plagiarism practices of the students in an introductory programming module, with large student enrolment numbers. The module introduces imperative programming using the C++ programming language. Table 1 shows the student numbers in this module for 2012 to 2015.

<table>
<thead>
<tr>
<th>Year</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of students</td>
<td>554</td>
<td>593</td>
<td>679</td>
<td>750</td>
</tr>
</tbody>
</table>

The MD5 hashes of the student programs were used to identify exact copies. This test was repeated three times a year; at the beginning, around the middle and at the end of the semester. Figure 1 shows the results of these comparison tests, which were conducted from 2012 to 2015.

During 2012 no effort was made to follow up the culprits, whereas in 2013 the students who were identified as having participated in this practice were called in for an intervention.

The graph in Figure 1 shows that the practice of uploading exact copies of code stabilised after the lecturing staff started to intervene when students were identified as being involved in copying the work of others.
4.2 Selecting a data set
The variation in coping behaviour is lowest in the middle of the semester. Accordingly, a decision was made to use the submissions of a task in the middle of the semester in 2014. This set serves as a representative sample of student submissions in the representative introductory programming module. The basis for this selection was that the number of submissions in this task was closest to the average number of submissions for the different tasks. This data set contains 452 C++ solutions to the same problem.

4.3 Characteristics of the data set
The characteristics of the data set should be known if the investigation is to be meaningful. To this end, the characteristics of the data set were determined by manually securitising a random sample of 50 programs drawn from the set.

Two researchers independently scrutinised and analysed the submissions in the sample. Their findings were compared and a collaborative final decision was made in each case where there were differences in individual judgements.

Figure 2 shows the characteristics of the data in the sample. One of the 50 submissions was invalid, because it was the solution to a different problem. The student might have inadvertently submitted this solution in the wrong place. Most of the solutions (52%) were classified as not copied as no evidence was found in these solutions to justify the notion that they were not the student's own work.

Eleven (22%) of the submissions in the sample were identified as being copied by or from peers. Four pairs of students and one group of three students submitted almost identical solutions. The textbook contains a complete solution to the problem but uses advanced techniques which had not yet been taught at the time when the problem was given to the students. Nonetheless 24% of the submissions in the sample had obviously been copied from the textbook.

Based on the random nature of the sample, it can be assumed that the data used in the comparison of plagiarism detection techniques, as described in the next section, would demonstrate characteristics similar to those of the sample described here.

Figure 2:
Characteristics of the data in the sample

- 52% Not copied
- 24% Copied from the textbook
- 22% Copied from a peer
- 2% Faulty upload
5. COMPARISON OF RESULTS

The three plagiarism detection techniques selected as described in Section 2 were used to process the data set discussed in Section 3. Their results are compared, not to prove the viability of these systems, but to highlight the differences in their detection capabilities. The examples highlighted in this fashion are used in Section 5 to propose a set of guidelines for the detection of code plagiarism.

Students were allowed to submit their solutions multiple times, therefore we were able to compare each new submission with all their other submissions, including the previous versions of their submissions. The older versions were only compared, however, when using the MD5 technique. The other two techniques were used for comparing the final submissions only.

When comparing the MD5 hashes of programs, a total of 18 student pairs involving 19 individuals were identified as possible offenders. The MOSS system reported that a total of 250 pairs, involving 156 individuals, were potential cases of plagiarism. NED identified the assignments of 122 individual students as possible cases of plagiarism.

The assignments identified by the three techniques were not the same because of differences in their approaches. The Venn diagram in Figure 3 shows the number of assignments that each of the techniques identified as possible copies. The areas of overlap signify the assignments that were identified by multiple approaches.

![Venn diagram showing overlaps between NED, MOSS, and MD5 techniques]

Figure 3:
Overlap between individual assignments

The following section provides some insight into the causes of the discrepancies in the various detection techniques.

6. LESSONS LEARNT

This section probes and reflects on the reasons for the variances in the results of the three techniques. The insights gained from this reflection are condensed into a series of guidelines for the adoption of an automated code plagiarism detection technique in an introductory programming module.
6.1 Insights

The various approaches to plagiarism detection have varying strengths and weaknesses. Each can detect copies which the other approaches cannot detect. When combining the assignments that all three approaches identified as possible copies, 231 individual assignments were identified as possible copies. This constitutes 51% of the 452 submitted assignments.

The initial analysis of the 50 assignments in the sample, shown in Figure 2, shows that approximately 46% of the submitted assignments are likely to be either copied from the textbook or from a peer. The results obtained from the automated plagiarism detection show only a 5% deviation from the analysed sample. These results are promising in that an automated plagiarism detection approach which combines the strengths of all three investigated approaches may achieve a level of plagiarism detection similar to a manual approach.

In some cases, the plagiarism is fairly clear-cut, as the assignments are exact copies of one another. Unaltered copies tend to be the least frequent, especially in the later stages of a module. Most cases of plagiarism involve making subtle changes to assignments, possibly in an attempt to fool the program or the person performing the comparison.

The findings obtained from scrutinising the possible cases of plagiarism, identified by the automated detection methods, indicate that the students used four main approaches in an attempt to hide their acts of plagiarism. These approaches are the renaming of identifiers, the addition or removal of variables, a change in the order of statements or the use of alternate forms of statements.

In total, 106 students submitted tasks that MOSS identified as being possible copies but had a similarity lower than 90,0% according to NED. In all the cases where copies were identified as possible breaches by MOSS but not by NED, the students had changed the variable names but made limited changes to the rest of the code. A single submission had a similarity of 98,5% with the entry in one of the pairs. On closer investigation, this less-than-perfect similarity arose because the student had added ‘y’ to a list of vowels in the code.

To avoid the detection of duplicate assignments, the students also frequently changed the order of statements. This is a simple but effective change, as many direct text comparison techniques would be completely fooled by this reordering. In 66 cases, NED was the only process that identified the cases of plagiarism. On closer scrutiny, it seems that almost all of these assignments were in fact copies of one another but with slight modifications intended to ensure that they were not exact copies of one another. These modifications included making changes to the case or adding or removing white spaces, such as tabs.

Based on the lessons learnt in our experimentation with automated code plagiarism detection techniques, a set of guidelines was devised to aid in the adoption of such techniques in any module similar to our introductory programming module.

6.2 Proposed Guidelines

Martins, Fonte, Henriques and da Cruz (2014) define various types of plagiarism, such as exact copies and changes in comments. We realised that the forms of plagiarism found in this study correspond with the types set out by Martins et al. (2014). Accordingly, we combined our observations from the previous section with the plagiarism types of Martins et al. (2014) to compile a set of guidelines for the adoption of automated plagiarism detection techniques in an introductory programming module. These guidelines are listed in Table 2. These guidelines have a twofold purpose: firstly, to advise the lecturers who are in a position to develop their own code plagiarism detection software; and secondly, to guide other lecturers to
determine which features to look for in automated code plagiarism detection software. Lecturers could also use these guidelines to pre-process assignments before handing them to a human marker or submitting them to an automated code plagiarism detection tool. This may reverse some of the actions students are likely to take to avoid detection.

Table 2:
Guidelines for the automated detection of plagiarism

<table>
<thead>
<tr>
<th>Number</th>
<th>Guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Examine metadata</td>
</tr>
<tr>
<td>2</td>
<td>Check for direct matches</td>
</tr>
<tr>
<td>3</td>
<td>Remove unnecessary white space</td>
</tr>
<tr>
<td>4</td>
<td>Ignore non-contributing content</td>
</tr>
<tr>
<td>5</td>
<td>Address comments</td>
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<tr>
<td>6</td>
<td>Generalise the input files</td>
</tr>
<tr>
<td>7</td>
<td>Prepare for out-of-sequence statements</td>
</tr>
<tr>
<td>8</td>
<td>Be aware of the effect of assignment length</td>
</tr>
</tbody>
</table>

The first guideline, ‘Examine metadata’, refers to the fact that many students simply submit exactly the same file. These submissions require no further examination of the file content if a match can be made when comparing their metadata, such as the creation date. Although this seems a fairly simple comparison; and one which may quite easily be modified, the results have shown that a fair number of the copied assignments can be identified by such a simple comparison, and consequently this avoids using the more expensive comparison techniques.

The second guideline, ‘Check for direct matches’, addresses assignments which have been copied among a group of students, opened and then saved again before submission. Such assignments can be identified by performing a simple direct string comparison or by comparing MD5 hashes.

Adding extra white space, such as tabs, spaces and new lines, is a simple way to fool direct string comparisons. To address Guideline 3, we suggest removing all unnecessary white space characters and condensing multiple spaces to single spaces before performing comparison checks.

In most programming assignments, in any language, certain portions of the assignments will occur in every submitted assignment. These may be forward library declarations or even specific method names such as Main. Guideline 4 attempts to address this content by allowing for the creation of a mechanism which ignores these types of frequently occurring non-contributing content. To this end, the lecturer can compile a list of statements which may safely be ignored in the comparison process.

The inclusion of comments as a documentation feature in the program code is a common feature in programming languages. These statements may influence the similarity of files. Therefore, Guideline 5 suggests that comments should be addressed before comparing assignments. Comments may include valuable information which ought to be compared. We suggest an approach in which the comments in a document are separated from the code. This would allow only the code to be compared and then the comments could be analysed separately.
Many of the assignments identified by MOSS, but not by NED, were instances where the assignments were copies in which only the variable names had been modified. Guideline 6 therefore suggests that a generalisation step may be useful in which all variable declarations and usages are converted to simple instances of key words such as VARIABLEDEC or VARIABLEUSE. A similar process could be applied to method names. Removing this level of variance would facilitate a much better comparison of text, as changing the variable names is one of the simplest ways for students to modify their assignments.

An easy way for students to attempt to avoid the detection of plagiarised code is to change the sequence of the content in the file, i.e. by swapping the sequence of methods. This change does not affect the function of the program, but could have a dramatic effect on the metrics of the detection software. To overcome this, Guideline 7 suggests that whichever technique(s) is(are) chosen for performing the comparison should take into account that the content of the files may be the same, but jumbled. Lecturers may counteract this by asking students to submit assignments which follow a specific sequence in method and structure. This may also help lecturers to enforce specific programming practices.

The final guideline, ‘Be aware of the effect of assignment length’, emphasises that the shorter an assignment, the greater the overlap between the content of individual assignments. This is especially problematic in an introductory programming module because the assignments are frequently fewer than 100 lines in length. Addressing this issue would require user intervention or a form of supervised learning to determine the optimal threshold of overlap among assignments.

7. CONCLUSION AND FUTURE WORK

The main objective of this study was to propose a set of guidelines to improve the accuracy of the detection of code plagiarism. To this end, three different automated techniques to identify plagiarised assignments were described. These techniques are the use of an MD5 hashing algorithm, a well-known plagiarism detection system called MOSS and a recently developed system called NED.

The comparison of MD5 hashes of programs can identify the lowest number of copied assignments and is only useful for identifying assignments in which the content is an exact match. Both MOSS and NED are very useful for identifying possible cases of plagiarism. MOSS can identify copied assignments even when variable names have been modified. NED can identify assignments in which the structure was modified by the addition of white space, changes in comments and the reordering of statements. As MOSS allows boilerplate code to be ignored, better results may be obtained from MOSS by tweaking its settings. The results obtained from NED may also be optimised by determining the optimal threshold at which the similar programs are likely to be copies on a per-data-set basis.

The results of both MOSS and NED may have been influenced by the short length of the submitted assignments and by the fact that many students seemed to have worked in groups. Group work often means that many of the submitted assignments contain only slight cosmetic changes.

We acknowledge that the detection of possible copies is only one of the activities needed to fulfil our responsibility to educate students about cheating, plagiarism and intellectual property rights. The technical guidelines we have compiled have the potential to increase the accuracy of automatically detecting the plagiarism of code, which in turn is likely to enhance the effectiveness and quality of our teaching regarding these matters.

Furthermore, the lessons learnt from comparing the results of the various automated detection techniques have highlighted the discrepancies in the results obtained from these techniques. The accuracy of plagiarism detection could be increased by applying the guidelines either in a technical manner, i.e.
analysing or modifying the submitted assignments, or by using the guidelines to restructure parts of the teaching process, such as adding extra requirements for, or restrictions on assignment specifications. This restructuring might also result in students focusing on their own assignments, which may decrease the number of plagiarised assignments submitted.

Future work in this domain will focus on the optimisation of our existing plagiarism detection techniques and classroom practices in order to develop a reflective view of the plagiarism rate before and after the implementation of the guidelines devised in this study.

REFERENCES


Changing mental models and developing global mind-sets of business students through international study modules

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ABSTRACT
The fast-changing interdependent global context and the accompanying need to teach capabilities required in the global marketplace led to the implementation of international global modules for business management students. The study explored students’ perceptions about their learning experiences on international modules to BRIC (Brazil, Russia, India, China) countries abroad. The findings suggest that a module abroad encouraged a broader vision outside of their own mental representations and contributed to the development of students’ mental models and global mind-sets. The module exposed them to foreign ways of thinking and behaving in diverse contexts and in so-doing disturbed current thinking. The global educational experience enhanced experiential learning, stimulated reflection, and contributed to the development and transfer of deep knowledge. This article provides insight into the experienced value of international global modules, and it proposes a reflection framework on improving the learning outcomes of such modules abroad.

Keywords: Cultural sensitivity, emerging markets, experiential learning, global mind-sets, International Study Module, mental models, reflective learning, study abroad, worldviews

INTRODUCTION
Globalisation has transformed the market place, not only for countries and industries, but also for higher educational institutions (Dowling, 2014). The complexity, scale and interconnectedness of the challenges in our rapidly changing global community, in national and international contexts, cannot be met through conventional education. Business school graduates are expected to contribute and assume roles and responsibilities as citizens of a global community. Cogan and Derricott (2012) call for an approach to citizen education which includes personal development and a commitment to thinking and acting in ways that consider local, national and global community concerns. Yet, graduates possess limited awareness of global issues (Rynes & Bartunek, 2013). McMillan and Overall (2016) found that, in general, MBA curricula do not address the needs of employers and the evolving needs of organisations.

1 Date of submission 20 August 2015
Date of acceptance 15 July 2016

2 All research was carried out at the University of Stellenbosch Business School and the lead author at the time of writing and submitting the article was affiliated to the University of Stellenbosch Business School. She is now at the University of Cape Town Graduate School of Business.
Given criticisms from various stakeholders about the relevance of the Master’s degree in Business Administration (MBA) programmes, business schools are challenged to ensure their programmes are in touch with the realities of an interconnected world and relevant to the needs of practising managers (Rubin & Dierdorff, 2009). The management skills required include: global business acumen, cultural sensitivity, multi-cultural teamwork and reflection (Randolph, 2008). Employers today want graduates who are globally aware, can communicate across cultures, and can develop leadership competencies (Carlile, Davidson, Freeman, Thomas & Venkatraman, 2016).

A critical challenge for business schools is addressing the leadership skills deficit by giving significant attention to values-based leadership development (Carlile et al., 2016). Business schools are responsible to contribute to the development not only of managers, but of high-calibre global leaders: ‘We need leaders who can see past culture and politics to engage people who are wholly unlike themselves’ (Javidan, Teagarden & Bowen, 2010: 113). One has to recognise the key role and impact of leadership in terms of addressing imbalances in rule-making, unequal distribution of benefits, driving economic recovery and sustainability and making global markets more sustainable (Bergsteiner & Avery, 2008; McIntosh, Thomas, Leipzier & Coleman, 2003).

The decade leading up to the year 2010 saw the emergence of new global economic growth centres away from the G7 (United States, Japan, Germany, France, United Kingdom, Italy, and Canada) to the G20. The G20 includes Brazil, Russia, India, China and South Africa (BRICS), and Korea, Indonesia, Mexico, Argentina, Turkey and Saudi Arabia (Klein & Salvatore, 2013; Ghauri, 2014). From 1993 to 2007 the combined share of China and India’s global output more than doubled to nearly 16%, which was more than twice the United States’ average growth (The Economist, 2013). Given the broad-based growth experienced by the BRICS economies, they were significant contributors to global recovery after the 2008 financial crisis, Jayan (2012) argued that expanding the scope of cooperation among the BRICS countries has immense relevance in this century. Since economic growth increasingly depended on meaningful engagement with emerging markets, business schools responded in their research and curriculums with increased attention to these markets (Dhanaraj & Khanna, 2011). Although South Africa is a small player in the BRICS association, the African continent is inextricably linked to BRICS. Of relevance to students is the impact of emerging markets such as the BRICS countries on the world economy and evolution within the global economic environment.

Also relevant in business education today is preparing future managers through developing global business competencies. The skills challenge with graduating students entering into business is a continuous discourse among business education stakeholders (Carlile et al., 2016). Research done by Dhanaraj and Khanna (2011) found that, although the strategic implications of the emerging markets are clear, executives are often ill equipped to deal with the harsh realities and complexities regarding doing business in these high-growth emerging markets. Business schools in developing African countries, including South Africa, are responsible to grow managers who can apply global business knowledge to improve the domestic performance (Kaynak & Kucukemiroglu, 1997).

International study modules abroad are a popular way for business schools to internationalise MBA curricula. Due to the responsibilities around offering relevant MBA programme content and developing global leaders, the University of Stellenbosch Business School (USB) made a strategic decision to offer a compulsory one-week international study module on its MBA programme from 2011 onwards. Yet, empirical confirmation of how the international module contributes to MBA students’ professional skills, competencies and leadership development, is limited. Also, while the costs associated with modules abroad are considerable, it is necessary to assess rigorously the relevance and significance of experiences abroad from the students’ perspectives.
The aim of the study was to explore student perceptions about their experiences during their international MBA modules in BRICs (BRIC countries). At the USB, 126 out of 331 USB students (38%) chose to travel to BRICS on the MBA International Study Modules during the years 2012 and 2013. The module consists of lectures and engagement with faculty at the host business schools, visits to local and global companies in the host country, and some cultural activities. After completion of this module, all students submitted assignments in the form of reflective essays. These essays allowed students the freedom to share their honest, subjective and personal views on their experiences abroad, in addition to more theoretical and academic perspectives covered in standardised course evaluations.

Extracting the reflective learnings from the reflective essays, the study explored three research questions:

1. In what ways does the international study module contribute to MBA students’ understanding and insights about doing business in BRIC countries?
2. In what ways does the international study module broaden, develop and/or change MBA students’ personal mental models, perspectives and worldviews?
3. What are MBA students’ perceptions about the experience (learning and other) during the international study module?

The insights into students’ experiences on international study modules contribute to knowledge about best practices and learning outcome opportunities in an increasingly globalised and differentiated world. The author argues that an international module abroad is a beneficial mode for experiential learning for the development of MBA students’ global mind-sets. Key learning outcomes are proposed that could contribute to developing future managers and leaders with mental models and perspectives that are relevant to national and international challenges.

LITERATURE REVIEW

In this study the theoretical perspectives on students’ experiences on their international study module focuses on the development of mental models through experiential learning and the practice of reflection, with the aim to develop global (worldly) mind-sets.

As the product of concepts and contexts with which one grew up and have developed over one’s life, mindset can be seen as a person’s philosophy of life (Taylor & Gollwitzer, 1995). Worldviews, seen as a synonym for perspectives in the context of this study, refer to how individuals structure their different perceptions into a coherent system of ideas, according to Leo Apostel and Jan van der Veken (cited by Vidal, 2008: 3). For managers to be open to challenging their worldviews, they need to realise their worldviews are sets of assumptions and not necessarily true facts (Senge, 1990). Perspective transformation is a process of personal emancipation whereby students are freed from previously-held constrictive beliefs, attitudes, values and feelings, and whereby learners develop more reliable beliefs, exploring and validating their authenticity, to make more informed decisions (Taylor, 2008; Yang, 2004).

The practice of transformation learning in higher education is ‘where educators challenge learners to critically question and assess the integrity of their deeply held assumptions about how they relate to the world around them’ (Mezirow & Taylor, 2011). Mezirow (1991: 167) defined transformation learning as

The process of becoming critically aware of how and who our assumptions constrain the way we perceive, understand and feel about our world; changing these structures of habitual expectation to make possible a more inclusive, discriminating, and integrative perspective; and finally, making choices or otherwise acting upon these new understandings.
Through reflection on experience, learners can revise their assumptions and expectations, leading to paradigm shifts and behavioural change (Taylor, 2008).

According to Gregersen, Morrison and Black (1998: 28) the ‘basic mental process for development [of global leaders] is to understand the world, not just one country ... that requires both some rearranging and stretching of our mind-sets’. Dhanaraj and Khanna (2011) recommend that instead of only expanding information about doing business in emerging markets, it would have greater impact to attempt transformation of the managerial mind-set. Cohen (2010: 5) argued that developing a new perspective called a ‘global mind-set’, was a more important attribute required for effective global leadership than a new set of skills or experience.

A global mind-set summarises what is believed to make a global leader and an effective manager in a cross-cultural environment (Javidan et al., 2010: 111). The authors propose that a global mind-set has three major components, namely, Intellectual, Psychological, and Social capital. Intellectual capital refers to knowledge of international business and the capacity to learn, and it is the easiest of the three types of capital to develop. What is important is the student’s capacity to understand how his or her business works on a global level. In another article, Alon and McAllaster (2008: 1) argued that ‘Leadership abilities in the 21st century are partly a function of intelligence about our global environment’.

Psychological capital refers to openness to different cultures and the capacity to change. The premise is that you cannot effectively influence people different from yourself without a good understanding of what those differences are. One of the goals of an MBA programme is to help foster critical thinking and analytic skills beyond students’ own ‘inherent biases’ (White & Griffith, 1998: 108). International best practice compels business schools to offer their students opportunities to develop competencies to deal with people from different cultural backgrounds, and how to operate in different business contexts and environments (Javidan et al., 2010; Jones, 2012; Mintzberg & Gosling, 2002; Randolph, 2008). To increase the more difficult and personal component of a global mind-set, psychological capital, students should travel and be exposed to new experiences and ideas (Javidan et al., 2010).

And thirdly, Social capital refers to the ability to bring people together, make connections and to influence stakeholders. Social capital is largely relationship based and acquired through experience. The ideal is to widen the circle of social interaction and to make an emotional connection with people who are different from oneself. Globalisation has created opportunities for collaboration among different countries, but this also created challenges relating to the effective management of partnerships between different cultures. Fan and Zigang (2004) reported that cultural differences ranked first as the biggest barrier in doing business in the world market. First-hand experiences in other cultures develop the ability in students to be more appreciative of different viewpoints and the benefits of cultural differences in the business environment (Randolph, 2011). Ultimately, business educators must help students understand how cultural differences work in order to turn cultural competence into a competitive advantage.

The role of business schools, therefore, is to influence students’ thinking towards such a global mind-set. While perspectives and mind-sets ultimately control behaviour, educators have to identify compelling motivations and relevant tools for creating shifts in students’ mental models. Senge (1990) argued that new ways of thinking are only possible if one has the skills to inquire into one’s own and others’ ways of thinking. Donald Schön said the following: ‘I have come to feel that [the] only learning which significantly influences behaviours is self-discovered self-appropriated learning’ (as cited by Ungerer, Herholdt & Le Roux, 2013: 28). Mental models determine how people make sense of the world and how they take action, but unless students make a conscious effort to identify them and talk about them openly, they cannot think of their impact and develop new mental models that serve them better (Senge, 1990).
Mental model development can take place through the experiential learning model proposed by Kolb, Rubin and Osland (1991). Their holistic learning cycle comprises the following: concrete experience, reflective observation, abstract conceptualisation, and active experimentation, which again leads to concrete experience (Kolb, Rubin & Osland, 1991). In this way, experiential learning can address the criticism of business education as being unable to prepare students for practical challenges in a globalised and differentiated world. In fact, to meet the demands of MBA education, the design of curricula has followed a trend of using more experiential learning methods (Bevan & Kipka, 2012; Caza, Brower & Wayne, 2015).

Mental model shifts also occur through disturbed thinking in new contexts. Being immersed in other cultures not only as tourists, but with a practical business focus, provides students the opportunity to develop their global mind-set (Javidan et al., 2010). Study abroad trips increase levels of ‘world-mindedness’, while it offers students unfamiliar and uncomfortable environments, territories and spaces where they gain maximum learning in the stretch zone of learning. Such stretched mind-sets can lead to better understanding and appreciation of business and cultural diversity (Taras et al., 2013).

However, experiential learning without the necessary interpersonal skills, remains fundamentally adaptive, not generative (Senge, 1990). Managers require reflection and inquiry skills in order to challenge their mental models. Reflective learning can be enhanced when students are exposed to diverse cultures and are required to reflect on what they have learnt (Randolph, 2011). Students should be motivated to challenge the status quo, search for alternatives, and provide concepts and context for new cognitive structures. They should be encouraged to clarify their assumptions, discover internal contradictions in those assumptions, and think through new strategies based on new assumptions (Senge, 1990).

Further to the issue of cultural diversity, Randolph (2011) believes that diversity and potential conflict are keys to better cultural understanding and can lead to synergy of ideas. He reported that his students learnt how to analyse cultural differences and demonstrated knowledge of how to work with people from different cultures. This is what ultimately improves performance on tasks that require cross-cultural competencies. An essential part of developing students’ global business capabilities is by reducing the gap between theory and practice (Randolph, 2011). This requires more interaction between academic theory and exposure to first-hand experiences to help students develop the skills to work in a global business context. Therefore, a key element in providing mental model development stimuli through experiential learning is in-market experience and engagement in different contexts, including interaction with executives, managers, students and local people (Dhanaraj & Khanna, 2011). It is necessary to create opportunities for students to have personal experiences through which to learn cultural sensitivity and a way to see stereotypes and personal biases for what they are (Taras et al., 2013).

The reflective learning process is based on a clear link between action, reflection and change. The deeper one reflects, the more insight increases, which leads to greater depth in learning and internalisation. This causes more deconstruction (understanding more fully) and finally, leads to the reconstruction of one’s worldview (or thinking principles). Through redirecting students’ natural inclinations towards new conversations, one can produce new learning (Senge, 1990). The ability to hold more than one viewpoint or perspective at the same time becomes possible after reflection, and the individual is in a better position to influence and change his or her behaviour (Dostal, Cloete & Jaros, 2004; Johnson-Laird, 2013; Ungerer et al., 2013).

Senge (1990) argued that all managers know that many of the best ideas or strategies never get translated into practice or action. Further to exposing and engaging people, there remains a gap between what people know and what they do (Ungerer et al., 2013). It is believed that this gap stems from new insights conflicting with deeply-held internal worldviews limiting people to familiar ways of thinking and acting. Ultimately, the question one should ask following a mental model development approach, is whether
students showed differences in interpreting contexts, and whether this influenced their behaviour. The goal is to transform the mental models of students to the level where they are not only understanding on an intellectual level, but also capable of relevant action (Dhanaraj & Khanna, 2011). Considering changed behaviour and the development of action mind-sets, Bergsteiner and Avery (2008) found that students made an active effort to relate what they experienced on study tours abroad to other parts of their lives.

**RESEARCH DESIGN**

This research employed qualitative research through theme-based content analysis using ATLAS.ti (a software application) to explore student perceptions extracted from their submitted reflective essays upon completion of their MBA International Study Module (ISM). The research purpose was to look at whether the ISM contributes to students’ understanding and insights about doing business in BRICS, at the ways in which the ISM broadens, develops and/or changes students’ worldviews and personal mental models, and to explore students’ perceptions about the experience (learning and other) during the ISM at the USB.

Data collection and sampling method

The main unit of analysis for this research were the compulsory reflective essays (ISM assignments) submitted on the School’s learning hub via Turnitin, by the 126 students who travelled to BRIC countries in 2012 and 2013 on their ISM.

The outline of the ISM assignment brief given to students by the accompanying faculty members was to reflect on the main learnings they have gained and the implications thereof on their current and future thinking as leaders in their organisations; and to discuss the implications these insights have for them personally.

Given the assignment brief, the essays contained students’ personal views, perceptions and reflections about their experiences on their ISM.

Ethics

The ethical guidelines and requirements imposed by the host institution were met. The benefit of the content-analysis research approach was that it was unobtrusive – available data was used that had been already submitted by students as compulsory assignments, and students were informed about the purpose and nature of the research. Students were not affected by the usage of this data, and their identities remained protected.

Analysis

The sequence of analysis employed in the study was first to complete a literature review to identify preliminary categories and themes around doing business in BRIC countries, international study modules, internationalised curricula and changing mental models, perspectives and worldviews. During this initial deductive process, codes were suggested by the pre-data analysis literature review. This allowed the researcher to identify the main themes through which to explore student perceptions on international study modules. The main themes that emerged from the theory were the following:

- Bridging the theory and practice gap
- Cultural competencies
- Experiential learning
- Global mind-set
- Global leadership
- Mental model development.
The research then followed an inductive process, whereby the further analysis was grounded in the reflections, perceptions and perspectives of students. In this way the researcher remained open to explore the research questions from the perspectives of the internal paradigms of the sample subjects (Babbie, 2010). Atlas.ti enabled the researcher to analyse systematically the student submissions, assign meaning to selected text, and manage the identified codes. It further enabled carrying out data mining and extracting knowledge and insights that point to theoretical understandings relevant to this study (Babbie, 2010).

One of the biggest advantages of using Atlas.ti was that it allowed the researcher to code, analyse and integrate simultaneously. Throughout the data analysis process, the researcher linked student observations with the literature review, related these to the research questions, as well as recorded own reflections and insights. At the end of the analysis, reports were generated for selected groups of codes, namely code families. These reports presented quantitative and qualitative evidence of typical observations, reflections and comments made by students about their experiences. In the integration phase of the research process these reports enabled the researcher to compare results to the literature review’s main themes in relation to the research questions.

Quality
Qualitative research is measured against the criteria of internal validity, external validity, reliability and objectivity (Guba & Lincoln, 1994). A carefully conducted computer-assisted qualitative data analysis increases the validity of research results, and remains easily accessible throughout the research process (Friese, 2012). For qualitative research, Guba and Lincoln (op cit.) proposed an alternative to reliability and validity, namely trustworthiness. Trustworthiness can be described through four sub criteria, namely dependability, objectivity, credibility, transferability (Bryman & Bell, 2007; Guba & Lincoln, 1994). In order to ensure the trustworthiness of the coding process, the researcher maintained a reflective journal by way of analytic memos, as proposed by Saldana (2010). These memos also increased the credibility, transparency and dependability of the analysis, while they served as the building blocks for the findings for this research report, as recommended by Friese (2012). An unintended benefit of the sequence of this study, using a preliminary list of codes and categories linked closely to the research questions, was that personal measurements from the researcher’s perspective were minimised. This increased measurement dependability.

Researcher bias was managed through a deliberate awareness of own preferences, adherence to established data collection and analysis techniques, as well as an open-minded approach to the interpretation of the data (Babbie, 2010). The researcher’s purpose was exploration and discovery and with the intention to report honestly the findings for the benefit of all stakeholders. The researcher allowed the data to speak for itself, which contributed to objectivity. The findings reported provided a rich description of the social world, thereby increasing transferability (Bryman & Bell, 2007; Guba & Lincoln, 1994).

FINDINGS AND DISCUSSION
Experiential learning and the practice of reflection enable transformation of assumptions and generation of new meaning. MBA programmes offering first-hand experiences abroad, coupled with the students’ thoughtful deliberate considerations of their experiences through the practice of reflective learning, provide the possibility of them looking at their experiences from different perspectives. In this light, this study explored the impact of cultural immersions in BRIC countries on the development of students’ mental models and worldviews. One of the most powerful ways of changing perceptions, worldviews, beliefs, values and attitudes is self-reflection. It is through such increased depth of reflective learning that people obtain the freedom to reconstruct, change and broaden their worldviews.

The key International Study Module (ISM) learning outcomes emerged from the reflections of the MBA students directly and are discussed.
Global mind-set developed: Intellectual capital

For South Africa to tap into the opportunities offered by the BRICS association, the country’s business leaders and managers need deeper knowledge and insights into doing business in the other four BRICS countries. By travelling to different global marketplaces, students experienced first-hand the BRIC countries' potential for growth economically, politically and socially. The findings contain evidence of student insights gained about doing business in the BRICS, the observed cultural differences, and the business challenges and opportunities.

In addition to developing intellectual capital, it was evident from the recorded findings that the MBA students expected to have their mental models challenged and that they were open to new perspectives and worldviews. Students also reflected on their need to grow continually and develop to become better leaders, for example:

I realised through this India trip, that I am in a state of impermanence and life is moulding me to become the leader that I am meant to be. I have to realise that I am in the process of ‘prototyping’ myself and that through each stage of development, I should reflect, engage and learn how to improve myself and never be complacent that the ‘current model’ is the answer (India, 2012).

And

A key insight for me as an aspirant leader in the African region is, how do I start shaping my thinking and developing leadership capabilities in order to be part of an eco-system that formulates innovative ideas? (India, 2012).

Shifting mental models through experiential learning

The study found that, as proposed by Dhanaraj and Khanna (2011), shifts in mental models occurred through the experiential learning students experienced on the ISM, as expressed by a student from the India 2012 group:

Being exposed to other cultures and ideas has challenged my paradigms and has forced me to think differently about myself, my work, my family, my goals and my ambitions.

The ISM experience provided students with a window to the world and themselves that did not otherwise exist, and new ways of thinking became possible (Senge, 1990). Student reflections also revealed how the experience abroad encouraged them to change their mind-sets in order to become better leaders, for example:

My mind-set has shifted from being money focused to making a difference in others’ lives…I want my leadership to add value and not only be focused on how much wealth I can accumulate for myself (India, 2012).

The findings support Randolph’s (2011) argument that reflective learning can be enhanced when students are exposed to diverse cultures and reflect on what they have learnt.

Changed mind-sets, perspectives and worldviews

Perspective transformation leads to students being freed from previously-held views (Yang, 2004). The study found evidence of students’ challenged perspectives and worldviews, as seen from the Russia 2013 students’ reflections:
The experience has really widened my own perspective on my view of the world. I find myself energised to test my own paradigms more regularly and create further learning from the experience.

The lecturers encouraged us to think differently, to have a worldview and mentality that stretches you to think in new ways, outside the box, and this allows you to see new opportunities.

A student from the Brazil 2013 group said:

It was a great learning experience for me – understanding how different people from different backgrounds think about and approach the same scenarios so differently. And even more noteworthy was how not only one approach is successful in a given situation. What is vital to the success of the different approaches is taking yourself out of your own context and understanding the context of the problem being solved as well as the different role-players. I have been able to apply this in my leadership and I find that being aware of the context from which others view a situation allows you to view problems from a different perspective and therefore also find more creative solutions.

The findings also conform to Senge’s (1990) theory that the exposure of students to diverse contexts and different scenarios can unfreeze mental models and lead to the creation of a new worldview.

Also, corresponding with Senge’s (1990) view that study abroad experiences help students realise that their worldviews are sets of assumptions and not necessarily true facts, student reflections included the following:

As leader, my visit to Russia taught me the danger in predefined thinking about another country. I learned again to be very careful of the false images the media and popular political ideology can imprint on one’s own thinking. The truth is often very different’ (Russia, 2013).

Also, in the words of another student from this group to Russia:

The lesson I learnt is that there is context in every society’s difference in worldview and both may be the correct perspective at the same time.

This ability to hold more than one viewpoint or perspective at the same time puts students in a better position to influence and change their behaviour (Ungerer et al., 2013). Students’ realisations about the existence of truth outside of their comfort zones support the development of social capital.

**Global mind-set: Social capital gained**

On the ISM students recognised the prevalent influence of culture on business practices and behaviour. They experienced how values in the workplace are influenced by culture, and importantly, the effect of culture on a country’s economic growth, as per the following:

When reflecting on the insights gained on doing business in Brazil, it is imperative to remember where the country came from, what the people have been through, and the day-to-day challenges they still face and experience. Their culture derived from history is more important that the history itself or the actual events (Brazil, 2013).

In addition, on the ISM, students were stretched out of their normal surroundings, and when they reflected about the new context and scenarios it helped them to see things in a broader context. According to student perceptions, the ISM in India presented a refreshing perspective and their current thinking was
disturbed in terms of how Indian people challenge the norm and prevalent thinking when it comes to social innovation and finding solutions to socio-economic challenges, for example:

The exposure was an eye opener, academically, economically and socially. Travelling the world takes us out of our comfort zone and somehow we become empowered (India, 2012).

Students started to consider other associations and relationships beyond their known connections, as noted in this quote:

We should approach our environment and look beyond the generally-accepted or associated businesses. We need to encourage people to look beyond their realm of association – not simply in terms of growing a business or for looking for new business opportunities, but also for developing your own personal truths (Russia, 2013).

Furthermore, the findings concur with the research by Dhanaraj and Khanna (2011). They found that students’ experiences serve to break down stereotypes by them understanding diverse outcomes, multiple stakeholder commitments and the complex interactions that drive strategy in emerging markets. For example, students commented that:

The visit to India has broken some of the stereotypes I had before the trip.

A key learning for me was that by experiencing a situation first-hand, provides you with much better insight and it removes many of the preconceived assumptions that you might have had (India, 2012).

In this way the cross-cultural interactions and students’ experiences on the ISM reduced perceived differences and prejudice towards different cultural groups, and fostered interest in future international collaboration, as recommended by Taras et al. (2013). Student reflections recorded include the following:

The world is changing. The old rules will soon not apply anymore. The growing disparity between the have and the have nots are at levels that are simply not stable. The world can simply not go on in the same manner as it has for the past few decades. … Change has to happen. Communication between different countries, cultures and economic blocks will have to improve. People will have to trust each other. They need to understand what the needs of the other party are (Russia, 2013).

A student who went to India in 2012 said:

We can accomplish much more as humans if we would share all the knowledge we have to ensure we share the wealth and prosperity.

Furthermore, a student who went to Russia in 2013 noted:

I believe now more than ever that cooperation is driven, not by compromise, which contains elements of all positions of opinion, but rather a new position, which improves on each and all as a whole.

Global mind-set: Psychological capital gained
The study found that students welcomed the opportunity offered on the ISM to analyse cultural differences and to deepen their knowledge about how to work with people from different cultures, which concurs with Randolph’s (2011) recommendations. Reflections showed that students had gained a cultural sensitivity to the norms, values and social representations of others, for example:
People are different, think different, do different, have different inherent cultures, beliefs and ways of working. Unless we as individual leaders choose to capitalise on the uniqueness of countries and regions and people, we will continue to invest negative energy trying to understand why we are different or who are smarter, as opposed to measure, internalise and innovate from our current way of thinking (Brazil, 2013).

It has exposed me to the sensitivity required to work with different people and has given me some key first steps in learning how to create a successful team through diversity (India, 2012).

One of the ways in which Randolph (2011) measured his students’ action mind-sets was to see whether students demonstrated the ability to build synergy out of differences. This study showed that for the students from the India 2012 group, such ability was indeed developed. The ISM to India included a workshop that required USB students to work with students from the host school in India on a local low-income housing project. Reflections recorded in the data analysis of the India 2012 group, confirmed that these students had learned how to capitalise on the synergy that stems from appreciating and utilising diversity through collaboration, for example:

I believe that the trip to India has given me wonderful exposure, especially the design workshop that required us to work with the students from the Indian business school. Being dependent on others for cultural context, language interpretation and the feasibility of business ideas was a wonderfully frustrating experience ... After this session I saw that by managing diversity well, one can truly create a better end solution. Sure, managing diversity well isn’t easy, but it has become a prerequisite for success, especially if one wants to take your business global – something which I one day would like to do.

This trip has made a lot of theory more real to me. I can see how diversity leads to learning and tolerance...We learn from each other if we are tolerant.

The findings provided evidence that the module abroad lead to better cultural understanding and students learnt how to leverage diversity to find better solutions to problems and challenges, which confirms Randolph’s (2011) findings. Another key learning that emerged from the student reflections was the realisation by some students about the advantage South Africans have over many other countries given our familiarity in dealing with diversity issues. This provides a valuable platform for practising better cultural sensitivity at home.

Bridging the theory and practice gap

An essential part of developing students’ global business capabilities is by reducing the gap between theory and practice (Randolph, 2011). Student reflections indicated that the theory and practice gap was bridged through concrete experience which helped broaden or change their mental models and worldviews. Again, students from the India 2012 group commented on their unique and concrete experience with local people and local problems, which offered them the opportunity to find relevant radical solutions to the problems within a cross-cultural team.

Ultimately the question that needs to be asked following a mental model development approach is whether students showed differences in interpreting contexts, and whether this influenced behaviour. The study found evidence of students indicating that they wish to make an active effort to relate what they experience on international modules abroad to other parts of their lives. Examples of reflections recorded in this regard, include the following:
It was evident that engaging MBA students in hands-on projects, like the Design-thinking workshop in India, helped them to develop skills to work in a global business context. This is in line with the findings of Bergsteiner and Avery (2008), and it further contributed to bridging the gap between theory and practice in the learning experience.

Finally, the study found that the module abroad enhanced students’ ability to think globally and act locally, as advocated by Kaynak and Kucukemiroglu (1997). In addition to broadened perspectives globally, the ISM experience also broadened students’ perspectives of their own countries, organisations and businesses. There was also evidence of students gaining an understanding of the required competencies to be successful in their South African businesses within the future globalised world.

CONCLUSION

Globalisation has created tremendous opportunities for collaboration among different countries, but this also created challenges relating to the effective management of partnerships between different cultures. There is a need for collaboration with local and international actors in the current global context where economic, political and social challenges and opportunities affect all stakeholders as never before. In addition to specific knowledge about new markets, students need particular cognitive capacities to enable them to broaden their worldviews, develop cultural intelligence, make novel connections and recognise potential opportunities. The study showed how the ISM developed these crucial cognitive capacities in students.

In addition to the responsibility for relevant education, business schools have a fertile opportunity to transform student perspectives and to grow global leaders geared towards collaboration and action. From the recorded and analysed student perceptions, a number of key learning outcomes related to transformed mind-sets and perspectives on MBA global modules abroad were identified.

Exposure to other cultures and perspectives on the ISM was found to have disturbed students’ thinking and increased their critical thinking skills. Students became more open to other contexts and truths, which resulted in them undergoing mind-shifts, reaching new awareness about themselves, and changing their perspectives through experiential learning and the practice of reflective learning. Following Kolb’s learning cycle students were enabled to reduce the theory-practice gap and further enhanced their reflective competencies.

The development of students’ psychological and social global mind-sets enabled them to learn about the advantages of better cultural understanding and more synergy in the light of diversity and cultural differences. It showed how students came to appreciate the necessity of bridging cultural barriers, finding commonality and nurturing long-term partnerships. Their experiences encouraged them to adapt to other cultures, which in turn helped them learn more about themselves. Through the processes of experiential and reflective learning on the ISM, students gained cultural sensitivity, and were able to start seeing new business and collaboration opportunities, both locally and globally.

The article highlighted the value proposition entailed in the compulsory ISM offered to MBA students. Moving forward, the focus should be on how to improve the design of such a module in order to ensure the MBA programme remains relevant in terms of learning outcomes and management competencies required by student customers, local and global businesses, and international accreditation bodies.

To meet these desiderata, the following reflection framework is proposed:
WHAT?
The international study module contributes significantly towards developing MBA students’ global mind-sets.

SO WHAT?
➢ MBA students’ recorded experiences of their international MBA study module confirm the fertile opportunity business schools have to transform student perspectives and develop global mind-sets.
➢ The development of global mind-set is a relevant and measurable outcome of international study modules.

NOW WHAT?
➢ Integrate the ISM with the rest of the MBA curriculum.
➢ Increase attention in curriculum and research to emerging markets – BRICS and African countries in particular.
➢ Critically consider the primary learning objectives related to the international module and ensure relevance of learning outcomes and management competencies developed.
➢ Include cross-cultural projects on all ISM’s (like the Design-thinking workshop in India)
➢ Commit to continuous improvement of the module design.

REFERENCES


An analysis of secondary school heads’ perception of their supervisory role in Nyanga District: Zimbabwe

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ABSTRACT

The main focus of this paper is an analysis of heads’ perception of their supervisory roles in the context of rural day secondary schools. A survey research design was used to describe the variables. Heads are seen as head teachers, heads of departments, deputy head teachers and senior teachers who are involved in supervision. The paper argues that supervisors in day secondary schools are usually relatively young and overburdened with work. There is role conflict between teaching and supervision and as a result there is a low pass rate. There is a need for establishing other causes of ineffective supervision which are crippling the supervisory system. The investigation seeks to provide solutions to facilitate supervision and improve pass rates. The paper views the concept of supervision from a more recent perspective - the human resources approach. The study reveals that most supervisors are overburdened with administrative work. Nevertheless, they have a positive perception of their roles despite the confounding constraints at a rural day secondary school.

Keywords: supervision, perception, rural day secondary schools, heads of departments, vice principals

INTRODUCTION

The destiny of individuals in particular and for a country at large is shaped in the classrooms through education. It is a process of human capital development (Ayeni, 2014) and espoused as a fundamental human right of all citizens in the 1948 United Nations Human Rights Act. UNESCO (2015) placed a great value on quality assurance in education to the international community.

The ordinary level and advanced level pass rates in Zimbabwe’s day secondary schools across the country are usually below 50% compared to boarding and urban secondary schools. Although most rural day secondary schools are not adequately resourced to produce good results, several other factors contribute towards the poor results; one of which may be inadequate supervision. It seems many supervisory activities have been assigned, at least, in the titular sense, to people who already have administrative responsibilities. Such overburdened administrators tend to give cursory attention to new responsibilities. While there could be other reasons influencing inadequate supervision, central to it is the supervisor’s perception of his/her supervisory roles.

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Supervisory roles of heads involve managing the school curriculum, defining vision and mission, and promoting teaching-learning processes. Boissiere (2004) views quality as being at the core of the motivating forces for supervision in education through strategic improvement plans. The roles include those activities directly concerned with improving the conditions which surround the learning and growth of pupils. According to Ogakwu (2010) supervision stimulates professional growth; revision of educational objectives; development of teachers; and selection of instructional materials.

A role is a set of societal responsibilities or expectations of behaviour that is based on situations one encounters. These expectations of behaviour are fulfilled by people often with many conflicting demands apart from their time. These conflicts manifest in many facets of life stemming from work-related issues, family matters, religious expectations, and personal beliefs. Supervision in education is one potential cause of role conflicts especially coupled with another full-time occupation like teaching.

Teaching and supervision can include multiple expectations or responsibilities for a role that may create stress, or conflict. In the school set up and the world of work, expectations are often incompatible for multiple roles and that scenario defines role conflict (Millsagle & Morley, 2004). Role conflict can affect the head/supervisor adversely in either role and creates what is known as role retreatism (Austell, 2010). This is a condition in which a role player (head) makes one role dominate over other roles in a bid to relieve role conflict (Millsagle & Morley, 2004). Ryan (2008) observes that, the pressure that full-time head teachers/supervisors face has frequently been researched in an attempt to identify the underlying causes of stress between the two roles of teacher and supervisor.

BACKGROUND TO SUPERVISION IN EDUCATION

Teachers tend to associate instructional supervision with fault-finding and therefore become resentful of the process as instructional supervision was known as inspection when the whole school was examined and evaluated as a place of learning (Tshabalala, 2013). Experienced teachers, student teachers, newly qualified and the under-qualified teachers may not have mastered sufficient skills for effective teaching, hence, the need for instructional supervision.

Kadziya and Katanha (2014) note that the Ministry of Education Sports and Culture had to put in place a Better Schools Programme of Zimbabwe (BSPZ) as a way to improve supervision skills in schools. However, Monyatsi, Kamper and Kamper (2006) argue that the literature on teacher appraisal shows that it can be very complex and either impedes or supports teacher effectiveness. Supervision and appraisal in schools are continuing to receive attention globally to ensure relevance and appropriateness to the needs of the youth. Supervision seeks to improve individual performance and motivation. It remains imperative to evaluate effectiveness of supervision, including the perceptions of those who supervise.

The supervisory practice in education is an indispensable vehicle to quality education and an improved pass rate. Professional competence is required for teachers to perform effectively. Supervisory work, both for the purpose of helping and for judging or evaluating is becoming more recognised. According to Isaiah and Isaiah (2014) there is no clear mandate for any particular type of leadership behaviour defined by educational systems. As a result the majority of heads expect their roles to revolve around instructional leadership, but they also perform other roles like being keepers of discipline. In a school situation, the head is expected to have a good grasp of what is known about effective teaching. Teachers are expected to have knowledge about classes they teach and to be ever searching for new materials to enhance teaching. They should constantly be attempting to improve their ability as classroom practitioners.

In any school, if the organisation does not improve its expertise, workers are bound to be redundant. If it is an industrial company, it may soon come to a standstill as the products may become unfashionable
compared to similar competitive companies. To enhance professional growth, school managers should supervise the work done by their subordinates. Fasasi (2011:135) sees a supervisor as

...somebody who guides and coordinates the activities of teachers and other school personnel towards the realization of educational objectives. He mediates between people and school programs in order to ensure that the processes of teaching and learning are improved.

What is seen in some schools is a state of apathy by teachers towards supervision. Supervisors tend to suppress negative judgements, and gloss over problems of those they are supervising. To some teachers there is more of a focus on ‘witch hunting’ rather than supporting them. Supervisors frown at a teacher with a bad rating rather than to alert the teacher of his/her weaknesses. In Zimbabwe, this seems to be a colonial legacy born out of the old school inspectors. The supervision of schools must be for promoting and developing settings that are favourable for learning and teaching and which eventually improves society (Adu, Akinloye & Olaoye, 2014). Newly appointed heads should be given formal training and induction with respect to their roles (Morrison, 2013).

DEFINITIONS OF SUPERVISION

There appears to be no unifying single definition available in the literature about the concept of ‘supervision’. Bernard and Goodyear cited in Adu et al. (2014:269) said:

Supervision is an intervention that is provided by a senior member of a profession to a junior member or members of that same profession. This relationship is evaluative, extends over time, and has the simultaneous purposes of enhancing the professional functioning of the junior member(s), monitoring the quality of professional services offered to the clients she, he, or they see(s), and serving as a gatekeeper of those who are to enter the particular profession.

Educational supervision can be defined as a collaborative action aimed at developing effective instruction. It is this definition on which this study is focused, and inspired by the Ministry of Education (2010) which defined supervision as the responsibility for evaluating, monitoring, linking and supporting schools. It underscores that, supervisors are not necessarily line managers. School supervision can either be instructional or administrative. This study is more inclined to instructional supervisory roles.

THE STUDY

The researcher studied the day secondary school heads’ perception of their supervisory roles in order to recommend improvements on supervision in schools. The study identified constraints in supervision in relation to heads’ perceptions and suggested possible remedies.

Statement of the Problem

Supervision in day secondary schools is not being effectively done resulting in poor performance by staff and students.

Sub-problems
1. Administrative tasks are given preference to supervision.
2. There is a low pass rate in local and public examinations.
3. Heads do not understand the concept of ‘supervision’.
4. Heads are not clear on their supervisory roles.
Hypotheses
1. There is role conflict between teaching and supervision.
2. Students’ exercise books are not being appraised regularly and effectively.
3. Heads are not well informed on the concept of supervision.
4. Heads have a negative perception of their supervisory roles.

Delineation of the Study
The study investigated and analysed the secondary school heads’ perception of their supervisory roles in Nyanga district in Zimbabwe. The study was confined to 11 sampled day secondary schools. Fifty-five subjects were studied. The schools represented rural day secondary schools owned by government and local authorities in the district. The study was carried out over a period of six months.

Limitations of the Study
Forty two out of 55 responded to questionnaires. Speculatively, for those who responded, others may not have given true information for fear of victimisation by their superiors in case there is leakage of information; notwithstanding that the researcher guaranteed anonymity.

REVIEW OF RELATED LITERATURE
The teacher-learning process depends on a number of variables that includes teacher attitudes towards supervision and the judicious deployment of resources. The restructuring of these variables help to give insight into what is achievable in a particular context (Kortide & Yunos, 2015). In a study by Yildirim (2013) in Turkey; metaphors were used to describe the supervisory roles against pre-determined themes like frightening, guiding, controlling, evaluating, criticising, developing and protecting. Interesting metaphors in respect of each theme in that order were ‘angel of death’, ‘shepherd’, ‘detective’, ‘sequestrator’, ‘prosecutor’, ‘expert’, and ‘parent’. Beaton (2005) observes that an element of inspection lingers on despite political changes in the 1980s that encouraged supervisors to be human in their approach to teachers in Zimbabwean schools. This observation is confirmed by a study (Mlilo, 2007) in Hwange District on the effectiveness of school heads. Madziyire (2013) argues that there is role conflict of the head as an instructional supervisor and administrator. Supervisory behaviour and administrative behaviour are neither congruent nor complementary since administrative behaviour is derived from bureaucratic authority. Bureaucratic authority is naturally impersonal and confined to principles and procedures. On the contrary, supervision is guided by personal relationships (Beaton, 2005) and a trusting atmosphere. The colleagueship in supervision per se does not obtain in the administrators’ perceived authority.

Mapolisa and Tshabalala (2013: 356) observe:

In the Zimbabwean context, there is no officer in the Ministry of Education, Sport, and Culture who has the obligation and authority to carry out instructional supervision at school level other than the school head.

Departmental heads, deputy heads and senior teachers assist the school head in matters of instructional supervision and inspection especially in secondary schools. In some cases, cluster supervision is also done where supervisors from other schools in the same cluster conduct supervision.

Perspectives of supervision
Supervision models in school management can be briefly classified as traditional scientific management, human relations, and neo-scientific management. The first represents a classical autocratic philosophy
which views teachers as appendages of management hired to carry out specific duties to the wishes of management. The atmosphere which prevails is that of a clear boss-subordinate relationship. Vestiges of this brand of supervision can still be found in some Zimbabwean schools though this type is currently not in favour.

Some supervisors perceive their roles as embedded in the second supervisory theory-human relations. According to this theory, teachers are viewed as human beings in their right rather than packages of energy needed by supervisors. This means supervisors work to create a feeling of satisfaction among teachers. It places emphasis on personal feelings and comfortable relationships. The neo-scientific management theory (also called the behavioural science approach) is a reaction against human relations supervision. The explanation of the results of Hawthorne experiments gave rise to the birth of neo-classic management theory (Celik & Dogan, 2011). It places emphasis on teacher competencies, performance objectives and cost-benefit analysis. It relies heavily on extremely imposed authority, as a result it lacks acceptance from teachers.

A more recent image of supervision is a human resources approach. Motivation theories, communication theories, leadership theories, conflict theories as well as decision theories (Agih, 2015) constitute the human resources approach. Managers should not focus on controlling employees or getting them to accept their decisions, which are the hallmarks of scientific management and human relations. They need to create a working environment that promotes employee creativity and risk taking while tapping into the resources employees bring to the job. A supervisor who employs the human resources approach views satisfaction as a desirable end toward which teachers will work. This satisfaction results from the successful accomplishment of important and meaningful work. It adopts shared decision-making practices to increase school effectiveness which in turn increases teacher satisfaction.

The characteristics of the head’s supervisory roles

Perhaps one of the most worrying problems in educational administration is the lack of satisfactory criteria for administrator effectiveness. Some problems are a result of the administrator’s negligence of his/her supervisory roles. Supervisors in education as in other fields ranging from medicine to industry are expected to be experts in the production system in their organisations. Their supervisory roles differ from the more administrative roles by such characteristics as given by Lowise Back in Agih (2015: 69). These are that he/she must:

- adapt at helping young people control themselves and even more at controlling self
- be a good listener and less talker
- be attuned to the needs of others
- be a good counselor
- know how to be fair and firm
- lead without appearing to dominate
- be able to share the process of planning and directing others.

Yavuz cited in Garubo and Rothstein (2010) views an instructional supervisor as one who exhibits a high concern for: developing and evaluating educational encounters, teaching styles, methods, and procedures. One common characteristic of the supervisory role is of living in two worlds and speaking two languages; the language of the teacher and the language of the administrator. Teachers and supervisors operate from different perspectives. Supervisors have been teachers previously but having been cast into a different arena, they have difficulty in understanding the problems teachers face. Another characteristic involves limitations placed on the supervisor’s authority. Supervisors are often considered as high ranked
officers rather than mere officers. The difference between the two is more muddled than clear. The human resources perspective views a supervisor as a key member at the school’s leadership team who leads without appearing to dominate. This is a normative view of supervisors that prevails in most literature. It is believed by many to be the most effective model of supervision.

*The head’s perception of his/her role*

A role is a set of responsibilities and expectations of behaviour. It is based on a situation which one encounters. Thus, a role is expected behaviour that a society places on a position. The problem that arises is: who defines the head’s role? Is it the teacher, the students, the senior administrator, the parents or the community? Each of these groups has its own expectations of the head’s supervisory role. These expectations are not often similar and cannot be fulfilled simultaneously. As a result the head suffers from a role conflict. Role conflict occurs when there is incompatibility of perceived expectations for positions or roles in a society (Millslagle & Morley, 2004).

Notably, the most potentially frustrating and detrimental source of role conflict to a supervisor is that within the supervisor himself/herself. The conflict between his/her ideal role, that which has been defined for himself/herself and his/her actual role, and that which has been defined by the educational structure. In Zimbabwe this seems to affect supervision in education. Metin and Camgoz (2011) have described this kind of role conflict as cognitive inconsistency or cognitive dissonance. Although there are various conflicting demands on the head, this study examines the particular area of conflict that affects the head’s own role definition.

*The nature of lesson observation ad supervision of records as supervisory roles*

Lawyers are familiar with the unreliability of observation by witnesses. Some people pay attention to one aspect of an observation and disregard those that may be more relevant. This is typical of supervisors’ failure to report on what they have seen occurring because they are not prepared to observe objectively. As such, rating scales can be constructed. These ratings have an effect of reducing the probability that observers act like unprepared witnesses in a court of law. They focus the attention of the supervisor or observer on specific and relevant aspects of behaviour (Treiblmaier & Filzmoser, 2009). The scales help to quantify observation and make observation reports more accurate, more objective and less biased. Driscoll (2010: 160) opines that

> Observations have led to some of the most scientific discoveries in human history… Today, social scientists, engineers, educational researchers and many others use observations as a primary research method.

However, observations can be controlled. Controlled observations compel examinees to respond to tasks they perceive as realistic but which are actually staged by the examiner. This is an example of a lesson observation or class visitation. Driscoll (2010) argues that supervisors need to distinguish between observations (recording exactly what they see) and interpretations (making assumptions and judgements of what they see). This means, during lesson observations, focus should only be on events that are directly observable.

To avoid bias in lesson observations, supervisors should separate facts (observations) from their personal feelings and judgements about the observations (facts). The supervisor should be aware of the sources of observational error such as personal values, biases and expectations. Personal values may influence what is seen and reported. For instance, a highly religious individual is more likely to perceive and accept supernatural sciences than a skeptic. Biases are highly emotional and tend to distort observations. Many supervisors are often caught in the web of bias.
The supervisor should check on the teacher’s record books and students’ exercise books. Mumo, Kimeu and Mutua (2015) found that, supervisory practices like checking on the teacher’s record book and students’ exercise books by head teachers had a significant relationship on students’ academic performance. This was manifested by a p-value of 0 which was less than 0.1. The teachers’ records relate to personal information about students. Students’ exercise books reflect the academic performance across the whole range of subjects being studied. The school supervisor should check and ensure that all these documents facilitate effective learning.

**THE RESEARCH DESIGN / METHODOLOGY**

The survey design was used because it uses descriptive methods to establish variables. It was used to establish the following variables; the inadequacies in exercise book checking, the poor supervisory practices and perceptions which attributed to the lack of knowledge on basic supervision. The nature of qualitative research is that it assumes multiple realities which are socially constructed through collective and individual perceptions in the same situation (Creswell, 2013). There is reflexivity and human actions are strongly influenced by the settings in which they occur. In qualitative research methodology, reflexivity is a central concept widely accepted (Lambert, Jomeen & McSherry, 2010). The design gives an in-depth study by showing the merits and demerits of what is under study (National Science Foundation, 2015).

**Sampling**

A random selection of day secondary schools’ population was done. All the day secondary schools were assigned numbers one up to 19 (1-19). A disk was made and numbered zero to twenty (0-20). At its centre there was a hole through which an axle was put. Its resting point was zero at the top and 20 at the bottom before it was spun. The researcher spun the disk 11 times. Each time the disk was spun the top resting number was considered and the corresponding school recorded. The use of this disk ensured that bias plays no part in the selection process. The participants in these schools were all involved in supervisory practices.

**Data collection and analysis**

Questionnaires were used to collect data. They were made up of open-ended and closed questions. According to the National Science Foundation (2015) questionnaires enable conversations between respondents and researchers. Questionnaires are also inflexible because they do not allow ideas and comments to be explored in depth. Questionnaires were distributed at various meetings through the meeting organisers.

The instrument was divided into three parts. Part one sought information on the head’s profile such as teaching experience and professional qualifications. Part two sought information based on the supervisory roles of heads like methods and follow-up visits as well as frequency of supervision. The last section, part three, was about the heads’ perception of their own supervisory roles. The last two items in part three were contingent questions meant to solicit personal views on how supervision can be improved and what problems were being encountered. In order to estimate the reliability of the measuring instrument a pilot test was done at a primary school and the other at a day secondary school.

For the analysis of data, simple tables were used. A frequency table for exercise book checking was constructed. The percentage composition of sample by age, experience and qualifications were computed. Exercise book checking by supervisors was correlated with the school pass rate.

**Reliability and Validity**

Empirical research (National Science Foundation, 2015) has shown that validity and reliability and respondent satisfaction are optimised by labelling all rating scale points with words as opposed to
numbers. This is achieved through a choice of words and phrases bearing meanings that are perceived to be uniformly spaced across the continuum, while the end points are phrased as extremely as possible. NSF suggests that disagree/agree, true/false, and explicit or implicit yes/no questions should be minimised in order to avoid ‘acquiescence bias’. The National Science Foundation (2015: 70) argued that

> Non-opinion or unsure options should never be offered (to avoid failing to measure real opinions) and that questions asking respondents to recall what they held at prior times or to explain the reasons their thoughts and actions should be avoided (because the answers people give usually lack validity).

In this study, the questionnaire was made up of closed-ended questions that were simple and unambiguous for participants to respond with ease. The rating scale points had words, not numbers. This was meant to increase reliability and validity. Further, the pre-testing during the pilot study increased the reliability as some question items were improved and adjusted. The language used was clear, simple and specific to enhance reliability. The researcher used the test-retest method to estimate reliability when the same test was administered to the sample during the pilot study and the actual study.

Validity comes in four main types namely; external validity, internal validity, construct validity and conclusion validity. It deals with generalising conclusions from a sample to a population or to other subject populations. In this case, generalising conclusions to other settings implies other districts in Zimbabwe or in other countries and/or to other time periods. In this research, external validity assumed the degree to which the conclusions would hold for other educators in other places and even at other times.

**Ethical Considerations**

In conducting meaningful and effective research, ethics are critical. Ethical behaviour of individual researchers is required in both qualitative research and quantitative research (Best & Khan, 2006). Educational researchers have to be sensitive to the integrity of institutional activities. They ought to refrain from use of undue influence to compel others to participate in research. In keeping with these norms, in this study, an assent form to participate in the research was prepared. The form included items such as, title of the study, principal investigator’s name, purpose of the research, procedures, benefits, confidentiality, consent, privacy and anonymity, signature of subject and date.

**DATA PRESENTATION, DISCUSSION AND MAIN FINDINGS**

The study set out to explore heads’ perception of their supervisory roles in selected day secondary schools in Nyanga, a district located in Manicaland province in Zimbabwe. Data analysis is done as the discussion proceeds. The discussion is central to the sub-problems of the research project. Sub-headings given represent restructured sub-problems. Data discussion ensues immediately after data presentation and in some cases precedes it, followed by main findings.

**Heads and their supervisory qualifications**

The following tables show the data with respect to heads and their supervisory qualifications.

<table>
<thead>
<tr>
<th>Professional Qualifications</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>C.E/Dip. Education</td>
<td>36</td>
<td>85.714</td>
</tr>
<tr>
<td>Grad C.E</td>
<td>2</td>
<td>4.762</td>
</tr>
</tbody>
</table>

Table 1:

Professional qualifications of subjects (N=42)
Table 1 shows that most respondents had either a Certificate in Education or a Diploma in Education. These qualifications constitute 85.7% of the total number of respondents. Nobody had a completed qualification on educational administration when the study was carried out. This means that heads relied on rudimentary knowledge of supervision acquired from teacher training colleges or in-service courses.

Fifty percent had done a course on supervision either during in-service or staff development, while the other 50% had not done anything on supervision at all.

Role conflict between teaching and supervision

Facts and figures on professional status of respondents (Table 2) show that, 31 (73.81%) respondents were either heads of departments or school heads or senior teachers. These subjects form the bulk of the supervisory team, yet they had teaching loads as well. In the same vein, Table 4 below shows that these supervisors were overburdened with administrative responsibilities, 32 (76%) out of 42.

Since administrative duties take precedence over supervision, there is not much expected to improve staff and student performance. The result is role conflict. The supervisory role, administrative duties and teaching loads create a kind of role conflict.
Table 4:
Role perception analyses \((N=42)\)

<table>
<thead>
<tr>
<th>Item</th>
<th>Positive Perception</th>
<th>Frequency</th>
<th>Negative Perception</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Supervisor</td>
<td>14</td>
<td>Teacher</td>
<td>26</td>
</tr>
<tr>
<td>O</td>
<td>Colleague</td>
<td>29</td>
<td>Subordinate</td>
<td>13</td>
</tr>
<tr>
<td>P</td>
<td>Rural day school</td>
<td>25</td>
<td>Rural boarding</td>
<td>17</td>
</tr>
<tr>
<td>Q</td>
<td>Rural school</td>
<td>29</td>
<td>Urban</td>
<td>11</td>
</tr>
<tr>
<td>R</td>
<td>Need arises</td>
<td>9</td>
<td>Always</td>
<td>35</td>
</tr>
<tr>
<td>S</td>
<td>False</td>
<td>35</td>
<td>True</td>
<td>7</td>
</tr>
<tr>
<td>T</td>
<td>Enjoy</td>
<td>18</td>
<td>Dislike</td>
<td>29</td>
</tr>
<tr>
<td>U</td>
<td>Less experienced</td>
<td>13</td>
<td>All of the above</td>
<td>29</td>
</tr>
<tr>
<td>V</td>
<td>True</td>
<td>32</td>
<td>False</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>204</td>
<td></td>
<td>177</td>
</tr>
</tbody>
</table>

Table 4 item N reveals that heads perceived themselves as more of teachers than supervisors. This is also a manifestation of role conflict. The conflict between the respondent’s ideal roles, which he/she has defined for himself/herself, the actual roles and that which has been defined by the organisational structure, creates cognitive dissonance (Metin & Camgoz, 2011). According to these findings, it seems the pervasive influence of cognitive dissonance has paralysed supervisory practices in day secondary schools.

**Students pass rate in public examinations**

The following numbers represent the number of times a supervisor appraised students’ exercise books per term.

**Figure 1:**
Frequency of students’ exercise books checking per term per respondent

<p>| | | | | | | | | | | |</p>
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<td>5</td>
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<td>2</td>
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</tr>
</tbody>
</table>

Range: 5             Mode: 2             Mean: 2.33

The mean for exercise books inspection per school term of 2.33 justifies poor performance by students. A student exercise book is an important apparatus. As such, heads should constantly check on the volume of work given to pupils, the quality of work, the comments by teachers and whether the marking is instructional. The frequency should be above three (>3) per term.
Table 5:  
Relative frequency of students’ exercise books checking (N=42)

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
<th>Relative Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2.38</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>21.43</td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>38.1</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>26.19</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>2.38</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>9.52</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 5 shows a relative frequency of 9.52 for respondents who inspected exercise books five times per term. A relative frequency of 2.38 represents those who never appraised exercise books at all and those who appraised four times per term. An average of 2.33 rate of inspection is obviously not effective if performance is to be improved.

Table 6:  
Lesson observation /class per term

<table>
<thead>
<tr>
<th>Score</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>2</td>
<td>27</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
</tr>
</tbody>
</table>

The table above shows the frequency of lesson observation by heads. The highest frequency indicates that at least each supervisor had class visits twice per term. If this is done for every teacher by all supervisors in the school, performance would improve.

As revealed by data collected only four respondents out of 42 (4/42) had ordinary level passes (school pass rate or subject pass rate) greater than 50% (>50%). One had a pass rate greater than 80% (>80%). The rest had percentage passes below 50% (<50%). A correlation analysis revealed that 32 respondents indicated that they appraised pupils’ exercise books twice or more per school term. Surprisingly these respondents indicated a low correlation with the pass rate. The pass rates remain low despite high frequencies of exercise book appraisal. Perhaps the exercise book inspections were not thoroughly and effectively done. This needs to be investigated.

Are heads well informed on the concept of supervision?
As indicated in Table 4 most heads perceived their roles as mere teachers. In this respect, they lack confidence when they engage in supervision. The exercise is perfunctorily done because the supervisors are diffident about their roles. The role perception analysis also reflects that supervisors did not know when to supervise and to some extent how to supervise. They saw supervision as an administrative function which should always be done even when it is not necessary. This is a detrimental approach to supervision as the supervisees would perceive it as being redundant and monotonous.

The information from Table 4 shows that supervisors perceived supervisees as detesting supervision. With that in mind, they fail to enter a collegial relationship before supervision begins. Thus, the gulf between...
the head and the teacher is further widened, sacrificing supervision for inspection. In reality, to say supervision is inspection is a misnomer. Perhaps, where teachers dislike supervision it may be an indicator of poor supervisory practices by the supervisors. Needs identification should direct supervisors to the untrained and less experienced teachers. These require more supervision and have no reason to dislike the practice. Maybe, it is misdirected supervision which teachers hate.

**Heads perception of their supervisory roles**

Heads’ role perception Table 7 below provides an interesting observation. Administrators did not want to be regarded as commanders. It seems this term carries a negative connotation only when referring to the army. To command is to direct with the right to be obeyed. This is an administrative role bestowed on every supervisor who is a head. The last two columns (4 and 5) show that heads were well acquainted with their role definition. The crux of the matter may lie in the ability to execute the duties and responsibilities as opposed to having a negative perception of the supervisory roles.

**Table 7:**

<table>
<thead>
<tr>
<th>Item no</th>
<th>Never 1 (Frequency)</th>
<th>Rarely 2 (Frequency)</th>
<th>Occasionally 3 (Frequency)</th>
<th>Sometimes 4 (Frequency)</th>
<th>Always 5 (Frequency)</th>
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<tbody>
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<td>2</td>
<td>11</td>
<td>13</td>
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<td>1</td>
<td>5</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>37</td>
<td>126</td>
<td>278</td>
<td>367</td>
</tr>
</tbody>
</table>
Main findings
1. Heads had a positive perception of their roles. They only failed to harmonise what they perceived and the actual supervisory role.

2. Heads were overburdened with other work besides supervision. This confirms the theory of role conflict and cognitive dissonance. The situation breeds ineffective supervision.

3. Supervision was not being effectively done because the supervisory practices were entrusted to people who were not well informed about the concept of supervision; young and inexperienced. Probably this happened because senior and seasoned teachers are reluctant to move into rural day secondary schools and prefer staying in urban day schools or boarding schools. This needs to be investigated.

4. Supervisory practices in rural day secondary schools seemed to be based on human relations theory. This places emphasis on social feelings and comfortable relationships as opposed to goal attainment.

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS
This section presents summary, conclusions and recommendations of the study.

Summary
The investigation showed that supervision of students’ work was not done adequately. Thirty seven respondents (37/42) or 88.1% had appraised students’ exercise books three times or less per term. In Zimbabwe, a school term has an average of 10 weeks for effective teaching; therefore, exercise book appraisal should be five times or more. Some students deliberately avoid writing corrections; this may often be overlooked by an overburdened teacher, let alone the supervisor. Some students do not write study notes. This can hardly be noticed by supervisors if their frequency of book appraisal is low. Consequently, it adversely affects students’ performance.

Findings show that supervisors in day secondary schools were inexperienced and young. Their supervision may not have been very effective because those supervised were almost of their age. 79% were 36 years and below (<36). Despite age, 54.76% were inexperienced. They had experience of less than two years. The foregoing inadequacies have adverse effects on supervision because the young and inexperienced lack confidence at the expense of supervision.

The investigation revealed that although rather young and inexperienced, heads had a positive perception of supervision. They were however, not well informed on the concept of supervision. Most of them were often preoccupied by either administrative duties or teaching loads. For these reasons supervision was not being effectively done.

Conclusions
The findings are presented in an expository manner. They should be interpreted tentatively because it is a preliminary study. No advanced statistical analyses have been applied either due to the design of the questionnaire or to the results. The results are therefore subject to speculation and may provide incentive for further, more sophisticated investigation.

Recommendations
• It appears that the positive perception of the supervisory role held by heads is inconsistent with the pass rate recorded in the schools. The result of this finding is alarming. It is imperative that the basis of the difference be isolated and examined.
• School authorities and the public fail to understand the head as a functionary in three social systems, the supervisor, the administrator and the teacher. The pressures of professional expectations and strains of conformity could account for the differences noted. It is the young and inexperienced head who is more affected by this clash of roles. The Ministry of Education authorities must bear a major responsibility for the existence of this condition. They must give headship responsibilities to senior and experienced teachers irrespective of location.

• Heads must acquire proven supervisory and administrative qualifications before appointment.

• A supervisor should have less administrative duties in order to concentrate more on supervision. Heads must also harmonise their supervisory roles and teaching roles.

• Heads should highlight the importance of supervision during staff development meetings and emphasise that it is not witch-hunting.

• Schools cluster supervision should be encouraged to supplement external supervision by education officers from the Ministry if any.

• Heads should be more of advisors than inspectors.

Since the study does not deal with the question of how heads in boarding and urban day secondary schools perceive their roles, the main purpose is not to formulate firm conclusions. Rather, it is to point a potentially fruitful line of enquiry in the education system.

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