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Contents

Editorial

Wayne Hugo

Teacher education is one of the key causal mechanisms that can make a difference to the development of South Africa. One good teacher over a lifespan of teaching reaches around four thousand learners (100 new learners per year x 40 years). Good teachers have a positive impact on learning and character. Effective learning leads to higher educational performance, improved educational performance lays the groundwork for increasing specialisation, specialisation of function results in a more differentiated system that can respond effectively and productively to the demands of an increasingly complex world. How are we, in South Africa, using this vital lever of development? What are we doing to ensure that our Initial Teacher Education (ITE) programmes are producing good teachers? What are we doing to ensure that a multiplier effect of 1 to 4000 is as good as she can be?
A fair amount I would say.

We have shifted teacher education away from a mostly dysfunctional college sector into a mostly functional university sector; we are offering serious bursaries to attract good candidates; we are investing in infrastructural programmes to increase institutional capabilities; and we have a teacher education policy that sets out minimum requirements for teacher education. Research on teacher education in South Africa is strong and growing, but still has a long way to go. In this edition of the *Journal of Education* we publish two articles that contribute to our understanding of ITE.

Lee Rusznyak has spent much of her professional and academic career on ITE, and it is starting to bear fruits, both in terms of her professional abilities to organise ITE programmes and research on how ITE works. In the lead article to edition 60 of JoE, Rusznyak provides a number of conceptual categories drawn from Bernstein, Muller and Maton to help us understand the dynamics of ITE programmes across South Africa. Her key insight is that there are mutually interacting and sometimes conflicting ordering principles at work across ITE programmes. Some ITE programmes define themselves against existing traditional practices in schools and teach liberating pedagogies and critical thinking that challenges the status quo. Others emphasise the

development of relevant practices that are contextually specific and adapted to given local contexts (like rural schools and multi-grade teaching). A third type of programme orders itself around personalised processes of self discovery that produce genuine and meaningful teaching practices. A fourth emphasises access to powerful knowledge structures and orders the programme around how best to access knowledge. Finally, a fifth takes a realist and pragmatic stance and inducts the students into the policies and practices currently existing within the schooling sector. Rusznyak refuses to fall into an all or nothing gambit, where one principle necessarily trumps and excludes all others. Teacher education is a complex professionalising process that demands a number of ordering principles to work together, with different principles foregrounded or backgrounded at different times. Just because one ordering principle is dominant does not mean it cannot allow for and use other principles, only that it does so in particular ways. Key to getting this right is time, time for students to develop both theoretical insight and practical implementation know how. Careful attention to the selection, sequencing and pacing of the ITE programme within and between years is key to allow the different principles to consolidate and for an integrated picture to emerge of what good teaching is, especially in our bimodal education landscape.

There is a real danger in ITE that one ordering principle swallows all the others and that this is allowed to happen across different campuses, each with a different tyrannical principle that insists on its pristine purity and all encompassing glory. For example, powerful knowledge as an all encompassing principle can argue that it has built into its functioning all the other principles, making them redundant. In South Africa, with CAPS, powerful knowledge is a key organising principle students need to be introduced to. Proponents of powerful knowledge would argue that it is liberating and results in social justice by providing access to powerful knowledge structures, obviating the need for specific social justice pedagogies that merely waste time and clutter the educational terrain with obfuscating ideologies; it lifts the students away from the trap of being caught in localised practices that lock learners into a limited world; it answers issues of bimodality by offering explicit steps to all, ensuring there are no hidden expectations that obscure the ladder climbing ever upwards. It is a principle that towers above all others, and either one must bow or fight. Other ITE programmes can insist on other principles as their sole driver – demanding a personalised self discovery path; urging a social justice pedagogy; driving the reproduction of whatever current policy is in place; forcing an immersion in local contexts. We could land up in a world of extreme ITE practices that

impoverish more as their claims to enrich become increasingly shrill and solitary. We need to learn how to respectfully negotiate the terrain of ordering principles within education and Lee Rusznyak provides some indications of how to take this difficult process forward.

The second article shifts focus to assessment practices within ITE, specifically around teaching practice. The profession of teaching requires a period of time where students go into a school and teach for a while. These lessons are observed and 'critted' by mentor teachers and academics, who write up reports that evaluate the performance of the student teacher. What do these reports look like? What criteria are used for evaluation? Given a student cannot qualify as a teacher if she (she/he) fails the teaching practicum; what evaluation instruments are used? If we had to take all the student teacher evaluation instruments from all the education schools across South Africa, what motley crew would we find and how could we make sense of them? What mirror would it lift up to the practices of teacher education? Lee Rusznyak and Carol Bertram have attempted to answer the above questions, although, unlike the evil queen of Snow White fame, they do not actually ask which of the instruments is the fairest of them all, albeit I suspect, they have their favourite. Their article *Knowledge and judgement for assessing student teaching: a cross-institutional analysis of teaching practicum assessment instruments* discusses what conceptual categories should be used for teaching practice assessment and then analyses five education institutions teaching prac forms. It is a vital engagement that sits at the core of how teacher education conducts itself.

I leave you to the substance of the article, but wish to raise an issue it left me contemplating – the absence of any sense of long term collaborative process in the forms. There was no indication of a return or reworking of a lesson to make it better and no sense of a community of practice trying to do the improvement together. In Lesson Study, for example, the same lesson is worked on with peers and practiced until it is perfected. In Instructional Design, to give another example, lessons are repeated to explore if mistakes and misunderstandings have been addressed. There was no demand, in any of the forms, for a feedback loop that went backwards to the already completed lesson with the instruction – do it again, only this time better. Am I being unfair? Is teaching practice not caught up in the pressures of daily teaching where present and pressing issues are always at the forefront at the cost of revisiting the past or envisioning the future (Lortie, 1975). Are the teaching practicum forms not summative in nature, or maybe the forms themselves do

not give an indication of the actual practices of mentorship? Probably. But there is not even a hint of any attempt to craft an excellent lesson where all the small details are thought through, where each individual step, each implication sequence, is carefully interrogated; and there is certainly no indication of this being done in a community of practice. Maybe these kinds of practices cannot be caught with these types of instruments, but if we do not develop instruments that track the long term and collaborative process of designing and teaching effective lessons, then we have little chance of breaking the stranglehold of presentist, conservative and individualised practices that characterise everyday teaching at schools.

The third article of edition 60 provides a history and current analysis of the state of the subject 'Agricultural Science' in South Africa. It used to be the infamous subject 'Gardening' in black primary schools and 'Agriculture' in high schools during apartheid times. With the transition to democracy, 'Agricultural Sciences' arose with a strong vision of 'sustainable agriculture' within the curriculum statement – the only problem was that no sustainable agriculture could be found in the actual content. Granted this was partly due to there not being much content at all, but the content there was all about industrial agriculture. The transition away from Outcomes Based Education (OBE) and learner centred pedagogies towards increased specification of content and pedagogy within the Curriculum and Assessment Policy Statement (CAPS) resulted in a stripping away of the broad vision of sustainable agriculture and replacing it with micro specification of what had to be learnt, where and when. Ironically, Moraig Peden's analysis shows that this increased specification actually provides some of the basics needed to understand how sustainable agriculture works. OBE gave the vision without the substance; CAPS gives the substance without the vision.

If Peden tracks developments in the Agricultural Sciences, then Kathy Johnson, along with Edith Dempster and Wayne Hugo, track developments in the Life Sciences curriculum. Dempster and Hugo (2006) had argued for the importance of using the highest ordering concept of Biology – evolution – as a structuring principle for school Biology. This argument was taken seriously by Penny Vinjevoldt, who asked Dempster to assist in the process of reorganising the Life Sciences curriculum. This resulted in a far more coherent and structured pathway within Life Sciences that worked towards learners coming to a full and substantive understanding of how evolution worked. Johnson, Dempster and Hugo (2011) tell the story of this change up until 2009. The current article updates the analysis of the Life Sciences to include CAPS.

Given the tumultuous changes within the Life Sciences over the past 20 years, it is with some relief that the current iteration of curriculum revision shows broad stability in terms of content. This has allowed for a more micro focus on the details of selection, sequencing and pacing, enabling more intricate engagement. The stabilisation of the Life Sciences curriculum is a vital development in our turbulent history of curriculum transformation. It allows teachers and learners to establish memory and routines. Providing a stable and worthwhile curriculum will never solve all the problems of education, but it does make the battle waged on a daily basis to provide access to powerful knowledge slightly easier.

If schools in South Africa were fulfilling their functions properly and providing a good baseline for access to powerful knowledges, then we would not have the persistently low and racially skewed completion rates in higher education. Universities have to deal with the failure of basic education to provide students who can cope, never mind thrive in higher education. Some solution has to be found, and Bruce Kloot critically explores the current Council for Higher Education's (CHE) proposal for extending the current three-year degree to four years by adding an extra 120 credits of foundational provision. The CHE is not recommending an extra foundation year at the beginning of the student's academic career, but that these 120 credits should be integrated into the academic programme in a flexible way. To be honest, when I hear the word 'flexible' attached to academic development I get very nervous. Academic development within Higher Education is a highly dedicated and focussed undertaking. To expect mainstream academics to take over this function is dangerous, especially in the current climate that rewards research over teaching. If Academic Development has a low status in our universities, then work on upgrading their funding, status and skills, not integrating their functions within the mainstream. Possibly my own experiences of foundation year programmes are contextually limited, but what I have seen are dedicated academic development staff working intensively with students who really need specific and ongoing assistance. The term 'flexible provision' in no way helps this deeply committed endeavour. But then, as Bruce Kloot points out, perhaps the bigger problem is 'embracing curriculum modification as the panacea to the ills of higher education'. It is pointless reshuffling the chairs on the deck of an ailing ship and that is what flexible foundational provision sounds like to me.

The final article of edition 60 focusses on the issue of how to enhance the employability of graduates by making sure they have competencies the labour

market needs. My own academic history is in post modernism, deconstruction, ancient and medieval philosophy, semiotics, Bernsteinian sociology of education, complexity theory, and legitimation code theory. These have all made me highly desirable out there in the labour market. Hollis-Turner provides an analysis of what knowledge and skills are key for employability in office management, almost none of which I have. She describes a key process where the University of Technology he works at has an Advisory Committee comprising of graduates and employers who provide feedback on the curriculum that focus on improving the employability of graduates. Given that our students are not all destined to become professional academics like us, taking this process of employability seriously rather than joking about it or dismissively critiquing it might be a good thing. Hollis Turner shows us one route on how to do this.

So edition 60 provides an interesting set of papers that run from teacher education to school curriculum through higher education to issues of employability, all done in ways that combine theoretical engagement and intricate empirical analysis to deepen our current struggle to use education as a force for good in our increasingly beleaguered world.

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Knowledge selection in initial teacher education programmes and its implications for curricular coherence

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Abstract

There are a multitude of concepts and techniques that could be important for teachers to learn during their initial teacher education (ITE), but indiscriminately including all of them would result in an overcrowded and fragmented curriculum. Given the limited time for ITE, rational knowledge selection choices must be made if coherent programmes are to be offered to prospective teachers. This paper explores the approaches taken to addressing the critical challenges facing education in South Africa and the principles from knowledge selection that arise from these approaches. Different conceptions about how best to address these challenges offer directed priorities to guide knowledge selection decisions for ITE curricula. Examples of knowledge selection principles that variously promote conceptual or contextual coherence are presented and analysed, and tradeoffs associated with each one are considered. Although some recontextualising principles are mutually incompatiable, others have the potential to coexist. In a four-year qualification, where sequencing choices can be made, there exists the possibility of introducing different principles at different times without unduly compromising internal coherence. A challenge for those who design ITE curricula is to design conceptually coherent and/or contextually responsive curricula fully aware of the affordances and limitations offered by different recontextualising principles.

Introduction

There are a myriad of views about what should be prioritised in initial teacher education (ITE) curricula. The knowledge selection for compulsory courses is especially contentious because it is deemed to represent what a university regards as the core knowledge that is essential for all prospective teachers, irrespective of their subject and/or phase specialisations. It might be tempting to give student teachers fleeting exposure to a multitude of theories, tips, techniques, concepts, skills and practices that may be regarded as important for all teachers to learn. However, this approach would result in overcrowded and fragmented, incoherent curricula, which would do little to support the developing practices of teachers. When student teachers do not understand the

overarching framework/s that informs the internal logic of their ITE curriculum, they find it difficult to make sense of the relation between the different courses they do (Hoban, 2005). It is the task of curriculum designers to devise a coherent structure that enables teacher educators to select knowledge from the disciplinary field in which it is created, or from the field of practice, and then *recontextualise* it into a form that can be acquired by prospective teachers during their ITE programme (Bernstein, 2000). Curricular coherence can be enhanced by the intentional use of *recontextualising principles* that guide decisions about "what [knowledge] gets selected, how it is sequenced, paced and evaluated" (Shay, 2013, p.4). ITE programme and course designers have the responsibility to "be aware of such [knowledge selection and sequencing] choices and should account for those that they do make" (Winch, 2014, p.59). Recontextualising principles provide the basis on which some concepts are brought to the fore as explicit objects of study, while other concepts are included but backgrounded, and inevitably, some learning is left for on-the-job acquisition. In addition, recontextualising principles provide the basis on which the internal logic, and relative strengths, weakness and gaps in an ITE curriculum can be identified, and comparisons over curricula can be made. While other recent papers on teacher knowledge in South African ITE programmes (e.g. Bertram and Christiansen, 2012; Reeves and Robinson, 2014) explore how different approaches to ITE are based upon different assumed relationships between theoretical knowledge and practice, this paper explores how choices of recontextualising principles brings particular kinds of teacher knowledges to the fore in parts of formal university-based coursework. The main claim of this paper is that recontextualising principles enhance the internal coherence of ITE programmes, and offer a gainful approach to addressing the challenges experienced in the South African education system. However, because they bring particular kinds of teacher knowledge to the forefront of teacher development, other kinds of teacher knowledge are inevitably backgrounded. The potential trade-offs associated with each recontextualising principle need to be better understood for the sector to make deliberate and informed choices when selecting knowledge for ITE currcula.

Initial teacher education in South Africa: a brief overview

The nature of ITE curricula offered to prospective teachers is increasingly under the scrutiny, both in terms of analysing the role that inadequate teacher training played in contributing to the current crisis of education in South Africa, and the provision of quality ITE programmes as a potential means to addressing that same crisis (Osman, 2010; Reeves and Robinson, 2014; Taylor, Van der Berg and Mabogoane, 2013). The recently revised policy governing the provision of teacher education, the Minimum Requirements for Teacher Education Qualifications (henceforth, MRTEQ) identifies several "critical challenges" facing education in South Africa: the "poor content and conceptual knowledge found amongst teachers, as well as the legacies of apartheid" (Department of Higher Education and Training [DHET]), 2015, p.11).[1] This is not surprising given that during apartheid, in the worst cases, some teacher training colleges offered prospective teachers a rudimentary level of content knowledge, a collection of classroom survival tips and very little conceptual understanding of education, schooling, teaching and learning (Welch, 2002). Since 2002, when the provision of teacher education was moved into the higher education sector, qualifying teachers are required to hold a bachelors degree and/or a professional qualification. This may comprise either a 3-year academic degree with a one year post-graduate professional qualification, or a four-year professional Bachelor of Education (BEd) degree.

To emphasise the importance of producing knowledgeable and responsive teachers for the South African context, MRTEQ explicitly rejects the technicist approach that characterised much of the teacher training offered during apartheid. MRTEQ adopts a knowledge-based approach and requires that all ITE curricula should include specified proportions of *disciplinary learning* (which includes educational theoretical knowledge, as well as subject content knowledge and its associated skills), *pedagogical learning* (including general pedagogical knowledge and pedagogical content knowledge), *practical learning* (knowledge acquired from observing, analysing and reflecting on one's own teaching and the teaching of others),

[1] This differs from other studies that identify the challenge as being teachers' weak content and pedagogic knowledge (e.g. NEEDU study).

situational learning (learning about the diverse contexts in which education exists) and *foundational learning* (the generic knowledge and competences that are not teacher-specific, but might be useful in the day-to-day work that teachers do).[2] Despite its assertion that MRTEQ "brings the importance of interconnectedness between different types of knowledge and practices into the foreground" (p.10), the five types of teacher learning are listed by the policy as distinct and separate entities. ITE curricula could very well be policy-compliant but still offer unnecessarily fragmented and incoherent learning programmes to prospective teachers if each type of knowledge is developed within stand-alone modules without an overall organising framework.

The nature of theoretical and practical knowledge for education

The relationships between these different types of knowledge listed by MRTEQ cannot be derived from policy, nor are they self-evident. I now draw on the semantic dimension of Maton's (2007) Legitimation Code Theory to analyse how types of teacher learning as required by MRTEQ (DHET, 2015) differ in the respective strengths of their semantic densities and semantic gravities. *Semantic density* is the extent to which meaning is conveyed through abstracted concepts emerging from outside the field of practice, and expressed in a specialist, symbolic language. *Semantic gravity*, by contrast, is the extent to which meaning is fundamentally linked to the context in which the knowledge was created. The discussion that follows is summarised in Table 1 below:

[2] The first four of these categories constitute a specialist knowledge base for prospective teachers, and are thus of relevance in this paper. Generic (Foundational) knowledge has a weak semantic gravity (SG-) and a weak semantic density (SD-), and corresponds to what MRTEQ (2011) refers to as foundational learning.

Table 1: Table showing the types of teacher learning required of MRTEQ (2015), the associated knowledges and the semantic densities and gravities associated with each one

Types of teacher learning MRTEQ (2015)	Knowledge to be included in ITE curricula	Semantic density and Semantic gravity
Disciplinary learning	Education and its theoretical foundations • Philosophy of education • Psychology of education • Politics of education • Sociology of education • Economics of education • History of education • Professional ethics • Professional relationships	SD+ SG-
	Subject matter knowledge	
Pedagogical learning	Pedagogical content knowledge Inclusive education	SD+ SG+
	General pedagogical knowledge: • Learners • Learning • Curriculum • General instructional strategies • Assessment strategies • Inclusive education	SD- SG+
Practical learning	Learning from practice: • Craft knowledge from observing, reflecting on lessons of others	SD- SG+
	Learning in practice: • Tacit knowledge from preparing, teaching, reflecting on lessons	SD- SG+
Situational learning	• Learning situations, contexts, environments • Prevailing policy, political, organisational contexts	SG+
Foundational learning	• Communicative competence in additional language/s • Information Computer Technologies • Academic literacy	SD- SG-

The nature of disciplinary knowledge

The MRTEQ category of disciplinary learning encompasses theoretical knowledge that has a very strong semantic density (SD+) because of its reliance on conceptual and symbolic ideas. It has a weak semantic gravity (SG-) because it provides generalisable principles that transcend contextual specificities. MRTEQ specifies two forms of theoretical knowledge that can underpin rational judgement in practice (Shalem, 2014): disciplinary knowledge associated with the study of education, and the subject knowledge that gives rise to school subjects. Acquisition of theoretical knowledge requires an understanding of the boundaries and structure of the discipline in which it is produced, the ability to locate concepts in their sub-field within the discipline, and the ability to infer relationships between concepts within that discipline (Guile, 2014). Theoretical ideas about education cannot be accessed through the personal experiences of student teachers, and are recontextualised into ITE curricula from disciplines including psychology, sociology and philosophy. Theoretical knowledge is crucial if prospective teachers are to develop systematic, analytical and powerful ways of thinking about schooling, education, teaching and learning (Slonimsky and Shalem, 2006). Although the insights offered cannot be directly applied in practice, they do provide the conceptual tools to think of possibilities beyond the present contextual structures..

In order for teachers to introduce learners to the knowledge practices of the subjects they teach, they need to understand the *big ideas* that provide organising insights (Wiggins and McTighe, 2005), they need to be able to locate concepts within the knowledge structures of the subject, see relations between concepts, and understand the methods of inquiry through which that knowledge is created and validated (Winch, 2014). Shalem (2014) insists that subject knowledge, like education theory, provides a legitimate epistemic basis for the professional acumen of teachers. Subject knowledge dictates the most conceptually appropriate pedagogic choices (Ball, Thames and Phelps, 2008; Morrow, 2007). Teachers of mathematics, teachers of early literacy, teachers of history or of science draw on different reservoirs of pedagogical knowledge that is specific to their discipline, and to the needs of learners in the contexts in which they teach. The application of pedagogy in practice is therefore logically dependent on content knowledge, and cannot be derived from general principles about teaching. Pedagogical content knowledge

(PCK) is therefore regarded as a specialist professional knowledge (Shulman, 1987), with a strong semantic density *and* a strong semantic gravity (SD+ SG+).

The nature of practical and pedagogical knowledge

Practical knowledge is derived from the cumulative experience of 'what works' by those who participate in the practice. Practical knowledge is therefore produced by teachers (and other practitioners) working within classroom environments (not outside of it, like theoretical knowledge). It is characterised by a strong semantic gravity (SG+) because it finds meaning in the contexts of practice. It has a much weaker semantic density (SD-) than theoretical knowledge as it relies less on symbolic language and concepts (Maton, 2007; Shay, 2013). While formalised practical knowledge (what MRTEQ calls General pedagogical knowledge) may possibly be acquired by student teachers through reflections on their classroom experiences, the *ad hoc* nature of learning in practice means that this is an unreliable way of ensuring intended learning (Gamble, 2006). Principles governing practice that have been codified and shared between practitioners can more efficiently and systematically be learnt in formal university-based coursework, in what MRTEQ refers to as Pedagogical learning, and through carefully constructed opportunities to learn from the analysis of exemplary practice. Practical learning can thus be acquired formally as General pedagogical knowledge through university-based coursework, or acquired more tacitly from personal experience and the craft knowledge that is transmitted between teachers *in situ*. The potential for the systematisation of practical knowledge is greatest when acquisition is formalised into university-based coursework, and most contingent when acquired *in situ* as and when the need arises.

The nature of situational knowledge

Situational knowledge, by its nature, has a strong semantic gravity (SG+), but unlike practical knowledge, it is neither decontextualised theoretical knowledge nor does it arise out of the practices of teachers in the field. It is largely descriptive in nature, although aspects of it may be disciplinary, if a historical framework is used to analyse the way in which the present context came to be. In the context of South Africa, situational knowledge is considered important

partly because the legacy of apartheid has left education in marginalised communities in a state of extreme crisis (Gardiner, 2008), and partly because of the considerable diversity of schooling that characterises the South African education system (Fleisch, 2007).

Enhancing curriculum coherence in ITE

Coherent ITE curricula are difficult to design because potentially relevant and legitimate knowledge can be selected from vastly different knowledge sources. For example, knowledge can variously be drawn from theoretical disciplines that offer educationally relevant insights; the innovative and shared practices of expert teachers; the perceived needs of teachers in a range of contexts; and the personal classroom experiences of those who teach the teachers (Guile, 2014). While theoretical and practical knowledge can both be related through professional practices, they have distinct epistemic roots, and neither one can be derived from the other (Muller, 2009; Shay, 2013). Although MRTEQ expects that the different kinds of knowledge should come together in an integrated way in the moment of practice, the teacher education literature suggests that that integration of knowledge bases in practice is something that occurs neither easily nor automatically (Bertram and Christiansen, 2012; Hammerness, Darling-Hammond, Bransford, Berliner, Cochran-Smith, McDonald and Zeichner, 2005; Hoban, 2005).

Muller (2009) offers two main routes of promoting coherence in curricula designed to support professional practices: through contextually-driven coherence and through conceptually-driven coherence. Contextually-driven ITE curricula provide prospective teachers with a set of contingent skills and knowledges directly relevant to meeting the demands of classroom life and the realities of the contexts in which they will practice. Conceptually-driven coherence in ITE curricula enables prospective teachers to acquire a systemitised body of theoretical knowledge which they can draw principles from for informing rational judgement in their practice. While some recontextualising principles for coherent ITE curriculum design will enhance the contextual coherence of the programme, others will lead to a stronger degree of conceptual coherence. In both cases, they provide ways of connecting different courses within an ITE programme into a relational 'whole'. However, because recontextualising principles bring to the fore certain kinds of teacher knowledge, the conceptualisation of coursework

follows the logic of that knowledge. Other kinds of knowledge may be selected for learning in support of that recontextualising principle, but may not necessarily be presented as coherent bodies of knowledge in their own right.

The disciplines that inform education theory, according to Bernstein (2000), have horizontal knowledge structures: knowledge of educational theory grows by understanding the insights offered by different theoretical frameworks rather than seeking increasing levels of abstraction. The fact that concepts arising from education theory have a strong semantic density but a weak semantic gravity make it possible to attain some degree of conceptual coherence in ITE curriculum design, despite its predominantly horizontal knowledge structure. Recontextualising principles suggest different approaches to addressing the challenges in the South African education system which essentially demands a consideration of responsiveness to contextual factors. Some approaches are led by knowledge that has strong semantic density and others by knowledge that has strong semantic gravity. In reality, it is not always possible neatly to align different programmes (or the courses within them) with contextual or conceptual coherence, because as Shay (2013) points out, curricula that support professional practices need to equip prospective teachers with knowledge that has a strong semantic density and a strong semantic gravity. Both are needed for the development of conceptually informed practice. However, the distinction that Muller (2009) makes serves as a useful heuristic device that enables an analysis of how particular principles guide knowledge selection and sequencing to support the overall intention of an ITE programme.

Principles for coherent knowledge selection

In this section, I draw on some of the literature about teacher education in South Africa to extract examples of recontextualising principles that could potentially inform the design of coherent ITE curricula. Each principle suggests a different approach to addressing some of the ‘critical challenges’ facing education in South Africa, and would bring particular kinds of teacher knowledge to the fore in an ITE curriculum. While by no means exhaustive, the potential gains and drawbacks of five examples of recontextualising principles will be considered in this section.

Table 2: Summary showing examples of recontextualising principles and their implications for curricular coherence and teacher knowledge

	Teacher knowledge that would be foregrounded	Teacher knowledge that is present but would be backgrounded	Basis for curricular coherence
Teachers develop relevant teaching practices when they are prepared for particular kinds of South African schools.	Situational knowledge	Theoretical knowledge, subject matter knowledge	Tends towards contextual coherence
Teachers develop meaningful teaching practices through a personalised process of self-discovery and reflective practice.	Personal practical knowledge	Theoretical knowledge, subject matter knowledge	Tends towards contextual coherence
Teachers develop realistic teaching practices when they are well prepared for the demands of classroom life.	General pedagogical knowledge, situational knowledge	Theoretical knowledge, subject matter knowledge	Tends towards contextual coherence
Teachers develop more socially just teaching practices when they can resist the constraints of present practices that compromise teaching and learning imperatives.	Theoretical knowledge; Pedagogical knowledge	Personal practical knowledge	Tends towards conceptual coherence
Teachers develop effective teaching practices when they are able to provide all learners access to powerful knowledge across diverse contexts.	Theoretical knowledge, pedagogical knowledge	Personal practical knowledge	Tends towards conceptual coherence

1. *Teachers develop relevant teaching practices when they are prepared for particular kinds of South African schools.*

This recontextualising principle is located in a wider philosophical position that insists that teaching is so contextually embedded that it cannot be studied and developed outside of the context in which it happens (Carr, 2006). It suggests that ITE programmes should be contextually specific. An ITE curriculum that prepares teachers for rural schools is assumed to need substantially different set of knowledge and skills to that which prepares teachers to teach in urban schools, for example. Advocates of this position argue that there are strong urban biases in many ITE curricula, and these

compromise teachers' ability to be relevant within non-urban school contexts. In response to the critical challenges in South African education, this recontextualising principle would seek to prepare prospective teachers with particular local knowledge and the specific set of skills they need for teaching learners, within particular contexts (e.g. Balfour, Mitchell and Moletsane, 2008; Gardiner, 2008; Mukeredzi and Mandrona, 2013). A programme that seeks to address the critical challenges using this knowledge selection principle would seek strong contextual coherence, and would foreground the importance of situational knowledge, which would in turn stress the importance of identifying the local knowledge and skills that would enable prospective teachers to teach in ways relevant to local contexts. What constitutes an appropriate pedagogic choice would have more to do with the contextual possibilities than what is best served by the subject matter to be learnt.

Critics of contextually-specific approaches to the design of ITE curricula argue that the particularities of local contextual knowledge can be acquired relatively quickly *in situ*, but the non-intuitive insights that decontextualised education theory provides cannot easily be acquired outside formal mediation. Curricula designed around this recontextualising principle are likely to underestimate the power that abstracted theoretical knowledge has in providing insights over diverse contexts (Morrow, 2007). Good teaching, it is argued, by its very nature, is responsive to learner and contextual diversity. According to this view, attempts to prepare teachers for specific contexts are more likely to entrench rather than alleviate inequalities, as the emphasis is on contextual relevance and not the powerful knowledge that enables teachers (and their learners) to participate in nationally important conversations that transcend local contexts (Wheelahan, 2010; Young, 2008).

2. *Teachers develop meaningful teaching practices through a personalised process of self-discovery and reflective practice.*

This approach to addressing the critical challenges in education seeks to bridge a disconnect between the students' personal identity and cultural context, and the decontextualised ideals of schooling. This recontextualising principle privileges the personal development of teachers, and considers their identity, beliefs and motivation to be fundamental parts of their learning to teach (Korthagen, 2004; Samuel, 2002, 2008). A curriculum designed around this recontextualising principle seeks to enable student teachers to articulate their personal mission and philosophies of teaching, as well as develop their

professional identities and their teaching competences, so they can make sense of their behaviours in classroom environments. This approach has its roots within a constructivist view of teaching and learning. Learning to teach is thus conceptualised as a process of self-discovery that consolidates and builds on students' personal knowledge and previous educational experiences. It happens to a large extent through guided introspection, accumulated experience and reflection. It seeks to produce teachers who are 'reflective practitioners', who learn through trial-and-error, and who depend on their personal practical knowledge to learn to make wise judgements in practice (Schön, 1987). The ability to teach is thus primarily legitimised by *who teachers are*, rather than *what they know and can do with that knowledge* independent of their personalities and their personally constructed mission for teaching (Maton, 2007).

This recontextualising principle foregrounds the construction of personalised practical knowledge that can be acquired through personal experiences (of observing, analysing the teaching of others, or through planning, teaching and reflecting on lessons). Personalised practical knowledge is by its nature contingent (and therefore not systematic), and contextually bound (and therefore not generally transferable). Samuel (2009) argues that ITE curricula that do not consider the influence of cultural, racial and gender identities and lived experiences of prospective teachers offer inappropriate models of teaching that do not hold traction when the students return to their communities. Education theory is thus not offered as a means to develop a systemitised understanding of the field, but as a means of enabling students to undertake processes of guided introspection and formulate their own philosophies of teaching.

While some (e.g. Samuel, 2008) advocate the ability of conscious reflection on teaching experience to develop teachers' practice, this approach is criticised on the grounds that it does little to offer prospective teachers the conceptual tools to take them beyond a common-sense approach to their teaching (Shalem, 2014; Shalem and Slonimsky, 2013) The relativist underpinnings provide a weak epistemological basis for teachers to make rational professional judgements in practice.

3. *Teachers develop realistic teaching practices when they are well prepared for the demands of classroom life.*

This principle seeks to address a concern that many newly qualified teachers seem to leave teaching within a few years of graduating. In this view, a major reason for the attrition of newly qualified teachers is the disconnect between their expectations of teaching and the realties of classroom life. This recontextualising principle demands a highly relevant ITE curriculum where the anecdotal experiences of practitioners and their everyday experiences of classroom life provide the grounds for the selection of knowledge. Typically, a range of issues, dilemmas and concerns that arise from students' experience in practice, or from critical incidents from practicing teachers, form a point of departure (e.g. Gravett, Merseth and De Beer, 2013; Petersen and Henning, 2010). Early exposure to settings of practice is necessary and a thematic approach is used to explore theoretical implications and/or practical solutions to these issues, critical incidents or problems. Prospective teachers therefore become equipped with a set of contingent concepts and strategies that together could enable them to be adaptive to the possibilities, limitations and challenges of the context/s in which they will teach. This recontextualising principle foregrounds general pedagogical knowledge and personally-acquired practical knowledge and tends towards contextual coherence.

While ITE curricula may be directly relevant to classroom life, this approach is criticised on the basis of its anti-intellectualism because it comprises student teachers' acquisition of a systematic and coherent body of educational knowledge (Shalem and Slonimsky, 2013; Young and Muller, 2014). Education theory, while present, is drawn on in a contingent manner in service of concerns that arise in practice. This approach may provide immediate coping skills to newly-qualified teachers, but it is unlikely to provide them with the conceptual tools to respond in theoretically-informed ways to limitations and structural constraints associated with prevalent practices.

4. *Teachers develop more socially just teaching practices when they can resist the constraints of present practices that compromise teaching and learning imperatives.*

This recontextualising principle is based on the premise that many South African student teachers have come through (and upon qualification, return to) largely dysfunctional schooling systems, where pervasive practices that

constrain teaching and learning have often become normalised (Fleisch, 2007; Taylor *et al.*, 2013). Such practices include, for example, experiences related to learner exclusion and/or marginalisation, insufficient engagement with conceptual knowledge, limited opportunities for extended reading/writing classwork tasks, and the continuing use of corporal punishment. If newly-qualified teachers return to schools and continue these prevalent but counter-productive practices, they will merely perpetuate the challenges facing the South African education system. One task of ITE programmes is to distantiate prospective teachers from their experientially-acquired norms of teaching, to equip them with the conceptual tools to analyse (and where necessary, to revise and/or deepen) their assumptions about what constitutes effective teaching and learning. According to this view, ITE curricula should be structured around studies that provide prospective teachers with access to threshold concepts that open up "a new and previously inaccessible way of thinking about something" (Meyer and Land, 2003, p.1). They do not merely involve cognitive shifts, but a repositioning of the self in relation to the object of study and enable more sophisticated ways of thinking (Land, Cousin, Meyer, and Davies, 2005). Studies in education theory have the potential to provide access to such concepts, and therefore set potential conditions for student teachers to develop counter-intuitive insights in practice (Craib, 1992).

In taking a leading role in curricular coherence, a systematised body of education theory establishes conditions necessary for prospective teachers to draw on conceptually-informed insights when making professional decisions in practice. A theoretically-led approach to ITE curricula argues for less time spent building practical learning in classrooms. Learning in practice should wait until student teachers have sufficiently distantiated themselves from their assumptions about teaching and have developed a theoretical lens through which to understand the ways in which structural and classroom practices may constrain as well as enhance learning.

Such programnmes are routinely criticised on the basis that they are contextually remote and that they set up an unrealistic set of expectations and do not prepare newly-qualified teachers sufficiently for the realities of classroom life (Gravett, Henning, and Eiselen, 2011; Whitelaw, De Beer, and Henning, 2008). Their under preparedness leads to a 'shock' for newly-qualified teachers at the beginning of their careers, something that Gravett *et al*. (2011) suggest is a possible reason why numerous teachers leave teaching within five years of qualifying. Hoban (2005) contests this, arguing that newly-

qualified teachers get overwhelmed when they don't have the conceptual tools to understand the complexity of their practice.

5. *Teachers develop effective teaching practices when they are able to provide all learners access to powerful knowledge across diverse contexts*.

The imperative to prepare teachers to work productively across diverse contexts provides the next recontextualisation principle. An abstracted concept of teaching which is contextually responsive but not contextually bound is used to consider the essential work that teachers do (Alexander, 2000; Morrow, 2007). The fundamental purpose of teaching is understood to be making epistemological access to powerful knowledge that resides within organised bodies of knowledge available to the learners in one's class (Wheelahan, 2010; Young, 2008). This imperative would not change across contexts, but the way in which teaching is operationalised varies from one context to another. Having a strong conception of teaching with a strong semantic density but a weak semantic gravity allows teachers to distinguish between the *formal elements of teaching* (which operate in all instances of teaching and are therefore context-independent), and the *material elements* which "are necessarily rooted in specific contexts" (Morrow, 2007, p.98). The key question for those learning to teach then becomes "How can I organise systematic learning in *this context* and [under] *these [material] conditions*?" (Morrow, 2007, p.105, italics my emphasis). Understanding the distinction between material and formal elements of teaching enables student teachers to analyse how structural factors may limit or enable the practice of teaching without trapping them into a notion that teaching can only take place under an ideal set of material conditions.

A common critique of teacher education programmes that have a strong theoretical orientation is that because teachers work under conditions of change, unpredictability and complexity, formalised educational theory is too removed from the contexts of practice to be helpful in guiding teaching (Flores, 2006; Hirst and Carr, 2005; Knight, 2002; Schön, 1987; Wenger, 1998). Far from being irrelevant to practice, Hugo (2013) demonstrates how insights obtained from educational theory are crucial for informing the professional knowledge-based decisions that teachers make in their practice: whether to incorporate or exclude learners' everyday knowledge from a learning process; the grounds upon which subject/topic boundaries are closed or opened to integration; and the epistemic grounds on which teachers make

knowledge and pedagogic choices (knowledge selection, sequencing and pacing) in the topics/subjects they teach.

Implications of recontextualising principles for the sequencing of knowledge in curricula

The regional nature of education (which involves both disciplinary knowledge and the field of practice) presents unavoidable challenges for the design of coherent teacher education programmes (Bernstein, 2000). In the view of some (e.g. Cochran-Smith and Lytle, 1999; Levine, 2006) ITE curricula constructed to support the acquisition of theoretical *teacher knowledge-for-practice* demand a very different structure to those that promote the acquistion of contextually-bound *teacher knowledge-in-practice.* In this view, curricula that support the acquisition of different kinds of teacher knowledge are fundamentally incompatible. Others (e.g. Bertram and Christiansen, 2012; Grossman, 1990; Morrow, 2007) argue that decontextualised theoretical knowledge for education and contextually-bound practical knowledge make different contributions to support the development of teaching as a professional practice, however neither by itself constitutes a sufficient knowledge base for the development of professional teaching practice. The internal contradictions and inconsistencies that arise in curriculum design are therefore regarded as inevitable within curricula that seek to prepare prospective teachers. Recontextualising principles are important because they address these inconsistencies by bringing theoretical knowledge and practical knowledge into relation with one another in particular ways.

While some of the recontexualising principles may serve to complement or extend one another, others demand fundamentally incompatiable approaches. For example, preparing students with decontextualised knowledge that offers generalised insights over diverse contexts is fundamentally incompatiable with equipping student teachers with localised knowledge and skills to teach in specific contexts. The former works with an abstraction of the concept of teaching that transcends contextual particularities (and therefore has a strong semantic density), whereas the latter constructs teaching as a practice that is deeply embedded in contextual particularities (and therefore has a strong semantic gravity). Preparing teachers by consolidating and building on their personal experiences of schooling is fundamentally incompatible with an

approach that seeks to distantiate students from their assumptions about teaching and then use concepts to help them think about existing and potential teaching practices in new ways. The first constructs further knowledge on teaching based on the everyday knowledge gained during students' own experiences of schooling and therefore sets up a process of teacher learning through assimilation. The latter, in constrast, analyses and problematises students' assumptions about teaching, and therefore sets teacher learning up as a process of accommodation (Piaget, 1976).

The process of learning to teach is a complex one, and it is unlikely that only one recontextualising principle will be sufficient. In some cases, it may be possible to minimise the internal inconsistencies that potentially arise from different recontextualising principles by bringing them into the foreground in a carefully considered sequence. In an extended professional qualification, like the four-year Bachelor of Education degree, there exists the possibility of introducing learning associated with different recontextualising principles at different points in time. A South African study by Amin and Ramrathan (2009) provides an interesting example of the gains and losses of sequencing choices. In this study, a teaching practicum for first-year student teachers was structured around a principle of contextual relevance (Recontextualising principle 1). Students observed teaching within contrasting contexts, and then were required to adapt a lesson plan for use in those contexts. The specifics of each context provided the basis for making appropriate pedagogic choices. However, without conceptual foundations provided by subject and pedagogic knowledge, student teachers translated their contextual awareness in mechanical and superficial ways in the lessons and resources they planned. Their limited reservoir of content and pedagogic knowledge effectively constrained the potential opportunities for deep and meaningful engagement with the intended recontextualising principle. The sequencing possibilities offered by an extended professional qualification allows for student teachers first to be introduced to teaching as a decontextualised, knowledge-based practice in which appropriate pedagogic decisions are made in relation to both the demands of the content and in response to the diverse needs of learners. Once students have acquired more of the conceptual tools for making appropriate pedagogic choices, the organising principle could then switch to one that foregrounds understanding the construction of diversity both historically and sociologically, and students could explore what it means to be pedagogically responsive to that diversity. In a similar vein, when student teachers are introduced upfront to the potential learning barriers that learners experience, it may be intended to prepare them to cope with learner diversity

and inclusion from the outset. But without access to the subject and pedagogic knowledge to construct conceptually strong learning experiences, such an early introduction may inadvertently promote the technical application of superficial mechanical interventions, rather than a deep consideration of appropriate pedagogic options to support meaningful learning.

Conclusion

When teacher learning is organised around principles that foreground situational and practical knowledge, curricula tend to offer contextually relevant insights, and/or induct new teachers into existing practices; however, the acquisition of a systemitised body of theoretical knowledge is compromised. Education knowledge, while present, is selected in a contingent manner. Contextually coherent ITE curricula are designed around the kind of teacher learning that is most relevant in enabling newly qualified teachers to cope during the first few years of teaching. On the other hand, recontextualising principles that foreground theoretical knowledge offer more possibilities for ITE programmes to be conceptually coherent. To this end, the powerful knowledge that is least likely to be acquired through practical experience and personal reflection is privileged in formal university-based coursework. While these kinds of curricula enable prospective teachers to use insights from education theory to make rational pedagogical choices in practice, they may underprepare teachers for the immediate classroom-based realities. It is therefore quite likely that newly-qualified teachers would need to learn some of the more technical and administrative aspects of being a teacher on the job.

ITE programmes cannot on their own address the full range of challenges facing the South African education system. It is the responsibility for teacher educators to decide which of the many critical challenges their programmes should address and offer internally coherent programmes to that end. The knowledge selection principles discussed in this paper suggest approaches that offer particular ways of addressing the challenges, each with its own set of affordances and limitations. A fundamental challenge for those who design ITE curricula is to select recontextualising principles that offer the most purchase for powerful teacher learning in the limited time available.

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Knowledge and judgement for assessing student teaching: a cross-institutional analysis of teaching practicum assessment instruments

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Abstract

Teaching practicum (TP) assessment instruments provide insight into the nature of the knowledge that the university expects university-appointed tutors and school-based supervising teachers to have in order to make fair judgements about a student's teaching competence. This paper presents a comparative analysis of the TP assessment instruments used during 2012 by five South African universities offering initial teacher education. It describes the grounds upon which the comparative analysis was done, and offers a qualitative analysis of the knowledge base that the assessors of student teaching are assumed to have. We find that the structure and criteria of some TP assessment instruments tend to construct the assessment of student teaching as straight-forward exercise in verifying that certain technical requirements are met. In contrast, we show how others use structure and criteria potentially to enable a more professionally based judgement of the competence of student teaching.

Introduction

South African universities offering teacher education have the responsibility of verifying that qualifying teachers are sufficiently competent to assume responsibility for teaching a class of learners. It is on the basis of completing their initial teacher education qualification that teachers may register with the South African Council of Educators (SACE) and obtain a professional licence to teach. To this end, legislation requires that student teaching is 'formally **supervised** and **assessed**' during school-based teaching practicum sessions (Department of Higher Education and Training [DHET], 2011, p.23).[1] Ideally, the university tutors and supervising teachers who observe student teaching are expected to understand the logic of the choices a student teacher makes

[1] Emphasis in the original

during the planning and delivery stages: how she has chosen to represent knowledge in particular ways, engage with learners and respond accordingly, as the lesson unfolds in sometimes unpredictable ways. In order to do this, the assessors also draw on their subject and pedagogic knowledge to verify the competence of a student's teaching prior to her graduation. Teaching practicum (TP) assessment instruments purport to provide school-based mentor teachers and university-appointed staff (henceforth called supervising teachers and university tutors respectively, or assessors jointly) with a set of assessment criteria which reflect the knowledge and skills expected of student teachers during their practicum sessions. These criteria generally intersect with a rating scale which is used by the assessors to signify the level of competence a student's teaching as attained. These instruments intend to support assessors reach a clear, transparent and standardised decision regarding the level of competence a student's teaching has attained so that the university has confidence in the result decision (Rusznyak, 2011).

Although there have been several studies of the nature of the practicum across South African institutions offering initial teacher education (e.g. Chief-Directorate: Teaching and Learning Development, 2010; Parker and Deacon, 2005; Reddy, Menkveld and Bitzer, 2008), these have focused primarily on the structure of the practicum and logistics of student placement, with little attention to *what* is assessed and *how* assessment decisions are made. A national review of South African initial teacher education programmes identified a pervasive "lack of a sectoral consensus" regarding what counts as quality in relation to the teaching practicum, manifesting in a "lack of common understanding of . . . [teaching practicum] assessment rubrics". It is not only in South Africa that the assessment of student teaching is regarded as "contentious" and "complex" (Reddy, Menkveld and Bitzer, 2008, p.146). In the United States, Raths and Lyman (2003) argue that many incompetent students graduate, because "it is difficult to make a high-stakes judgement about an individual student armed only with vague decision rules" (p.208). They thus suggest that it is important to define what constitutes *incompetence* in student teaching. Another study in New Zealand found that some practicum assessors disregarded formally articulated criteria to make decisions about the teaching performances of student teachers in relation to "what they personally believed to be the important elements of a performance against standards they personally deemed appropriate" (Hawe, 2002, p.103). Hawe (2002) insists that there is a significant difference between making an assessment judgement of the competence of student teaching based on whimsical, personal preference and a professionally-based judgement that is informed by evidence

and has a rational basis. As gatekeepers to the profession, teaching practicum assessors need to have clearly articulated and principled reasons for why they deem student teaching to be as competent or not. It is not surprising then that the assessment of student teaching has been described as "one of the major challenges facing practicum supervisors and teacher educators in general" (Reddy *et al*., 2008, p.155).

In this paper we analyse the TP assessment instruments used by five South African universities in 2012. Our study rests on an assumption that the criteria and rating scales of these assessment instruments provides insight into knowledge that assessors are expected to use when they make judgements about students' teaching competence. We use two concepts as the lenses through which to analyse the five TP assessment instruments. The first concept is that of *teacher knowledge*, which we analyse as either general (that is, general pedagogic knowledge that is applicable across all phases, content subjects and school contexts) or specialised (that is, pedagogic content knowledge that is specialised to particular subjects, phases and learners). An engagement with knowledge for teaching is important because reasoned and intelligent action rests on a knowledge base (Muller, 2012; Winch, 2014). The second concept that we will use is that of *judgement*. We analyse the extent to which it is sufficient for assessors to verify that students are able to implement a set of 'tips for teachers' in a technical way or whether the TP assessment instruments demand that the assessment of student teaching considers the extent to which they use their teacher knowledge to make contextually appropriate judgements.

The first section of the paper reviews the literature on the nature of professional knowledge for teachers and different ways in which the links between knowledge and judgement are understood in initial teacher education programmes. We then engage with the challenges of assessing student teaching within the South African context. We describe the methods we used to analyse the teaching practice assessment instruments and present the findings using the concepts of knowledge and judgement to structure the presentation of the analysis of the data.

Knowledge base for teachers

Debate about the nature of the knowledge that teachers need was brought to the fore by the work of Lee Shulman who formulated his highly influential categories of the knowledge bases for teaching in 1986 (Shulman, 1986; Shulman, 1987). Since Shulman's seminal work, research in the field of teacher knowledge has developed steadily (Ball, Thames and Phelps, 2008; Banks, Leach and Moon, 2005; Gess-Newsome and Carlson, 2013; Verloop, Van Driel and Meijer, 2001). Grossman (1990) reduced Shulman's original seven categories of teacher knowledge to four domains, namely contextual knowledge, content knowledge, general pedagogic knowledge (GPK) and pedagogic content knowledge (PCK). In Grossman's model, *knowledge of context* refers to the teacher's knowledge of the milieu in which she teaches, including the curriculum to be covered, the school policies and environment, and the learners' contexts. The second domain, *Content Knowledge,* comprises both the propositional knowledge and the procedural knowledge that the teacher has of the subject she is teaching. The domain of *General Pedagogic Knowledge* (GPK) refers to a teacher's knowledge of a range of lesson planning, classroom organisation and assessment strategies, as well as her ability to use these strategies effectively. GPK is the general classroom knowledge that is shared by teachers irrespective of their subject or phase specialisations. The fourth domain, *Pedagogic Content Knowledge* (PCK), is understood as the teacher's knowledge of how to teach specific content by using conceptually sound explanations, analogies, models or activities that are both accessible to learners and address their common misunderstandings about the topic.

In the South Africa teacher education sector, there is much contestation about the relative importance that these four knowledge domains should play in preparing competent teachers. We identify three main orientations, namely programmes that foreground the importance of general pedagogic knowledge; those that foreground specialised content and pedagogic knowledge, and those that emphasise the importance of contextual knowledge for teaching. We consider each of these in turn. First, programmes that focus more on the development of teachers' general pedagogic knowledge support the idea that pedagogical knowledge and skills are applicable across all contexts, phases and subject domains place strong emphasis in developing students' general pedagogic knowledge (GPK) (Reeves and Robinson, 2014). In university-based coursework, prospective teachers are presented with a range of

pedagogical theories, principles and approaches that they select from according to their school context and subject. Textbooks, like *Getting Practical* (Gultig and Stielau, 2009), embody this approach, presenting strategies for whole class teaching (such as explanations, demonstration, questioning and discussion) and strategies for small group teaching (such as problem-based learning, projects, role-play and simulations). A general approach may also require students to adopt a privileged form of pedagogy or theory of learning, such as a constructivist and learner-centred approaches (Reeves and Robinson, 2014, p.246) without interrogating whether or not this approach is appropriate for the concept and subject being taught.

Second, those who advocate for a specialised knowledge approach to teacher learning criticise generally focused initial teacher education programmes because they "pay insufficient attention to *what* is to be taught, to construe teaching and learning as generic activities, with scant reference to the *content* of what is being taught or learned" (Morrow, 2007, p.82). The key assumption is that the practice of teaching draws on conceptual knowledge that is specialised to the subject/phase that is being taught. Thus teachers of mathematics, teachers of early literacy, teachers of history or of science need to draw on different reservoirs of pedagogical knowledge that is specific to their discipline. Theorists in this tradition (e.g. Craib, 1992; Shalem, 2014; Winch, 2014) also emphasise the importance of a theoretical educational knowledge that enables a practitioner to develop non-intuitive, organising insights in interpreting and responding professionally to practice-based contexts. According to them, it is educational propositional knowledge (and not only accumulated experience) that enables rational professional judgement over a range of diverse contexts (Shalem and Slonimsky, 2013). In this way, teaching is conceptualised as a complex, principled practice requiring specialised disciplinary-based knowledge that enables professional judgement.

In turn, the emphasis on specialised knowledge in South African teacher education programmes is criticised for being too decontextualised, urban-centric, and not sufficiently preparing student teachers to teach in underprivileged or rural contexts (Balfour, Mitchell and Moletsane, 2008; Gardiner, 2008). Proponents of the third orientation argue that knowledge of contexts and individual personal development of prospective teachers in those contexts should be the driving force of initial teacher programmes. This position insists that teaching is so contextually embedded that it cannot be understood outside of its context (Carr, 2006), and therefore decontextualised

initial teacher education programmes do not generally prepare teachers to link general concepts within the curricula to locally specific issues and concerns. From this perspective, student teachers should be encouraged to construct personal theories and/or philosophies from their contextually-specific practical teaching experiences, usually through conscious self-reflection and experience of community engagement.

Because these approaches to initial teacher education place emphasis on different knowledge domains, the assumed basis for professional judgement is also constructed differently. In the case of the first approach, judgement is made in relation to principles arising from practice and/or one's experiences from practice. In terms of the second, judgement is made in relation to specialised theoretical constructs, and in the third, judgement is individual and contextually embedded. These three approaches have enormous implications for how assessors might be expected to use their own knowledge and judgement when assessing the competence of student teaching.

Assessing the competence of student teaching within the South African context

There is contestation in South Africa teacher education sector about the relative importance of different knowledge domains and the relationship (Reeves and Robinson, 2014). It cannot be assumed that all supervising teachers and/or university tutors have a shared set of internalised criteria of what constitutes effective teaching. Many of the present university tutors and supervising teachers undertook their initial teacher education during the Apartheid era, when the provision of initial teacher education was fragmented over 19 different government departments. It is not surprising then that the quality of initial teacher education programmes varied. At worst, teacher training programmes offered students little more than technical skills for coping with classroom life and a rudimentary level of content knowledge (Welch, 2002). Even in the more rigorous teacher training programmes, a dominant theoretical discourse was the inherently authoritarian *Fundamental Pedagogics* which actively discouraged critical reflection, analysis and the development of innovative teaching strategies (Enslin, 1990). Many teachers were "[actively discouraged] from engaging in any form of dialogue about why they were doing what they were doing, what the alternatives might be in their teaching and how their interactions with learners and colleagues might

be different" (Robinson, 2000, p.214). Classroom practice in the majority of South African classrooms continues to be dominated by teacher talk; a low level of learner participation; rote learning; a lack of meaningful questioning; a lack of lesson structure; an absence of engaging learning activities; little meaningful interaction between learners; and few tasks requiring reading/writing (Hoadley, 2013; Taylor and Vinjevold, 1999). Given this historical context, it is not sufficient for school-based and university-based assessors to draw only on their personal experience of teaching to make judgements about what constitutes effective teaching.

Context of this study

In an attempt to consolidate the sector, initial teacher education became relocated into the higher education system in 2002. It was hoped that a single policy would help unite the sector and increase the content and pedagogical knowledge of qualifying South African teachers. The first post-apartheid teacher education policy, the Norms and Standards for Educators (NSE) (Department of Education, 2000) claimed to be premised on an integrated, holistic understanding of teaching, but the implementation of this policy was generally atomistic and technical (DHET, 2011). The focus was more on the outcomes (roles) that teachers needed to demonstrate, than on an acquisition of a coherent and systematic body of professional knowledge needed by teachers. Many teacher educators who moved from the college sector into the higher education sector located their legitimacy to contribute to the professional preparation of new teachers in their practical expertise and previous classroom-based experiences (Robinson and MacMillan, 2006). We argue that relying exclusively on one's practical experiences as grounds for understanding what constitutes competence in teaching in the context of a post-apartheid South Africa is not unproblematic.

A revised policy, the Minimum Requirements for Teacher Education Qualifications (henceforth, MRTEQ) (2011) urges all teacher education programmes explicitly to "address critical challenges facing education in South Africa today – especially the poor content and conceptual knowledge found amongst teachers, and the legacies of apartheid" (p.9). It rejects a "purely skills-based approach [that relies on]. . . evidence of demonstrable outcomes as measures of success, without paying attention as to how knowledge must underpin these skills for them to impact effectively on

learning" (DHET, 2011, p.7). According to MRTEQ, for example, beginner teachers are expected to possess "sound subject *knowledge*"; "*know* how to teach their subject(s) and how to select, determine the sequence and pace content in accordance with both subject and learner needs", and they must "*know* who their learners are and how they learn" (DHET, 2011, p.53) (authors' emphasis). This emphasis on ensuring that student teachers develop theoretical, practical and professional knowledge bases for teaching stands in stark contrast to the skills-based approach which characterised much of teacher training during and immediately after the Apartheid era.

In light of curricular changes to initial teacher education programmes in response to these policy shifts, it is an opportune time for teacher educators to re-examine the assumptions about teaching embedded within their TP assessment rubrics and the implication of these for student teachers and for assessors. This paper hopes to make a contribution in informing this important sectoral discussion.

Methodology

This paper emanates from a qualitative documentary analysis of the TP assessment instruments used during 2012 (before curriculum changes required by MRTEQ) by five South African universities that offer initial teacher education programmes. This paper is a small part of a comparative study into the initial teacher education programmes offered by five higher education institutions.[2]

Institutions offering teacher education differ according to geography (urban/rural), language of instruction (Afrikaans/ English), merger history (some experienced mergers of former teacher training colleges or technikons with universities) as well as resourcing. The five universities were purposively selected in order to characterise the complex range of histories, mergers and contexts of HEIs in South Africa, but with the understanding that

[2] The broader study is managed by JET Education Services, and conducted with the support of the Department of Basic Education, Department of Higher Education and Training, and the Education Deans' Forum.

the data cannot be generalised beyond the institution itself. In this paper, the participating universities will be referred to as follows:

Table 1: Descriptions of participating universities

University A	Formerly advantaged English-speaking university, located in urban context. Initial teacher education is offered in full time contact mode.
University B	University offering teacher education on multiple campus sites. Teacher education programme under review is located in a formerly advantaged Afrikaans speaking campus. Initial teacher education is offered through partial distance learning and full time contact modes.
University C	University offering teacher education to students through distance learning. Initial teacher education is offered through distance learning.
University D	Formerly disadvantaged university located in a rural context. Initial teacher education is offered in full time contact mode.
University E	Technical university offering teacher education, on multiple campus sites. Initial teacher education is offered in full time contact mode.

In order to analyse what TP assessment instruments from different institutions expect of supervising teachers/university tutors, we developed a set of 22 questions to deductively guide our analysis and comparison of the five TP assessment instruments (see Appendix). We analysed both the *structure* of the TP assessment instruments and the *criteria* for effective teaching they present.

Guided by these 22 questions, each TP assessment instrument was described and analysed in detail with frequent inter-rater checks to increase reliability of the analysis. The draft analysis was sent to each participating university for comment to ensure the accuracy of our analysis. We identified similarities and differences between the structure and criteria of the five TP assessment instruments. We then applied the conceptual lens of professional knowledge and professional judgement to consider expectations of how supervising teachers and university tutors draw on their knowledge of teaching to make judgements about the competence of the student teaching they assess. In presenting our findings, we examine the implications of how the design and criteria of TP assessment rubrics establish conditions for university tutors and/or supervising teachers to make *judgements* in relation to a set of given criteria when they assess the competence of student teaching.

Limitations and possibilities of this study

The purpose of this paper is not to yield generalisations about TP assessment instruments in South Africa. Rather, we seek to illustrate design features that establish the potential for more and less professionally based assessment decisions about the competence of student teaching. The scope of this study is limited to consider what assumptions TP assessment instruments convey about what knowledge is required for assessing student teaching and grounds upon which assessment decisions are made. The analysis is based solely on what is stated in the 'official' TP assessment instrumentation used by university tutors and/or supervising teachers in assessing student teaching. We did not access concepts in coursework used to prepare student teachers for the practicum sessions, and the access of university tutors to that coursework. We are mindful, too of the logistical constraints experienced by institutions of higher learning in terms of allocating university staff to observe and assess every student teacher. For all these reasons, our findings are necessarily partial and our interpretation is provisional.

Findings

In this section we present the findings according to particular themes that emerged as we compared the five sets of documents. We draw examples from the various TP assessment instruments to illustrate our analysis.

Who holds the knowledge required to assess the competence of student teaching?

From the instruments analysed, we find three structural ways in which the input from university tutors and supervising teachers differs: first, where the assessment is done exclusively by school mentors or by university assessors; second, where the school and university staff complete different sections of an assessment; and third, where a joint assessment is done collaboratively between university and school staff.

In contexts where student numbers are very high, or their distance from campus is too far, individual practicum supervision of each student teacher by a university staff member is unfeasible (e.g. Universities C and D). Supervising teachers, their Heads of Department and/or principals are

required to complete all assessment relating to student teaching. When this structural feature of these TP assessment instruments is logistically (not pedagogically) determined and as such we cannot draw inferences about knowledge for assessing students from this structural arrangement. However, this arrangement might also be a pedagogic choice of programmes that prioritise contextual knowledge for teaching.

Where supervising teachers and university tutors are asked to complete different sections of an assessment (e.g. University B), supervising teachers are not expected to share a common language of practice with university tutors. University B requires that supervising teachers assess students' extra mural involvement, inter-personal relationships, and general professionalism over an extended period of time. University tutors, on the other hand, observe lessons and assess the extent to which a student teacher draws on her university coursework in her planning and execution of lessons. Supervising teachers are not assumed to have access to the preferred methodologies student teachers learn in their university-based coursework.

When joint assessments of student teaching competence are required by the institution (e.g. Universities A and E), university tutors and supervising teachers are expected to be in contact with one another during the practicum. There is an expectation that they should seek consensus, and bring their particular perspectives together to enhance the overall assessment (such as the extended time that the supervising teacher spends with a student and the more global view of student teaching that the university tutor brings to bear on the assessment).[3] The consensus model of joint school-based /university assessment assumes that effective teaching (as embodied in the stipulated criteria) should ideally be evident to both university lecturers and teacher mentor. Furthermore, such an arrangement suggests that they either share common understanding of the grounds upon which competence is recognised, or if not, that such principles are made explicit in the TP assessment instrument.

3 In the case of University A, provision is made for separate assessments to be submitted in cases where a consensus assessment between the supervising teacher and university tutor cannot be reached.

What knowledge bases for teaching do supervising teachers/ university tutors need to assess through the practicum?

In this section, we consider what TP assessment instruments convey about the professional knowledge and judgement that university tutors and supervising teachers are expected to recognise, support and assess when ascertaining a student's teaching competence. Drawing on Grossman's (1990) four domains of teacher knowledge, we consider in particular categories relating to students understanding of the subject matter knowledge they teach; general pedagogic knowledge; PCK and contextual knowledge. We find significant differences in the way that the importance of content knowledge and pedagogic knowledge are prioritised in the instruments. This has important implications for the knowledge that assessors are assumed to have.

All TP assessment instruments carry criteria that required student teachers to devise and teach lessons that move a class of learners through stages of an intentionally structured learning process. Without exception, all TP assessment instruments analysed include criteria that relate to students' understanding of the subject/content knowledge; teaching and learning strategies used; learning and teaching support materials; assessment; language and communication; consideration of learner diversity; professionalism and relationship with learners. Although there is much commonality of the kinds of criteria listed, what is demanded of student teachers in relation to those criteria is highly variable between institutions. Although no participating institution used specialised TP assessment instruments for particular content subjects, some institutions (Universities A, C and E) provide different instruments for pre-primary and/or Foundation Phase students, and only one provides a different assessment instrument for Intermediate and Senior phases (University E).

Student's understanding of content knowledge

Some instruments required that students possess 'sound', 'sufficient and accurate' content knowledge (Universities B and C), whereas others specify what student teachers are expected to do with that knowledge. For example, comprehensive and well-organised conceptual knowledge enables students to 'foreground main ideas' in their explanations (University A), use appropriate examples from the 'real world' (University D), and inform their pedagogical choices (University A).

A key issue emerging from our analysis is the differing importance that content knowledge plays in the perceived effectiveness of student teaching across institutions. For Universities A and E, students' understanding of content knowledge is considered a non-negotiable, where misunderstanding of content knowledge constitutes justifiable grounds for a 'no credit' result. At least one of the assessors would need to have either a subject specialisation or a working knowledge of the demands of different subjects and their pedagogic implications. In comparison, a sound grasp of content knowledge is one of many criteria that contribute a portion to a students' overall mark in Universities B, C and D. The weighting of students' understanding of the content they teach ranges from 5–8% of the total mark allocated. It is conceivable then that in such assessments, students could misunderstand thecontent they teach but still obtain a credit for their teaching practicum on the strength of other dimensions of their teaching.

General pedagogic knowledge and pedagogic content knowledge

In relation to subject and phase specialisations, we distinguish between criteria that are expressed as general components of teaching over all subjects and phases, and those that require specialist subject and/or phase specific knowledge. We present a summary of how the same criterion can be phrased differently to present teaching as a practice underpinned by general pedagogic knowledge (GPK), or a specialist one where pedagogic content knowledge (PCK) demands a simultaneous consideration of the demands of the content knowledge and the learning needs of children.

Table 2: Examples that show how criteria for effective teaching are constructed in terms of a GPK and PCK knowledge base.

Component of teaching	Teaching informed by General Pedagogic Knowledge	Teaching informed by Pedagogical Content Knowledge *(italics shows focus on knowledge specialised to subject or phase)*
Language and communication	Appropriate language level to explain, instruct and question (A, D, E)	Uses and develops learners' ability to use *subject discourse* (A)
Teaching/Learning strategies	Uses a variety of teaching strategies effectively (B)	Thoughtfully selects and effectively uses teaching and learning strategies *appropriate to both content and learners* (A); Lesson introductions [should] have an *appropriate contextualisation* and include relevant activities (B)
Learning/Teaching support materials (LTSM)	Effective use of LTSM to enhance lesson presentation (A; B)	Relevant LTSM are used to develop learners' *understanding of key concepts* (D)
Assessment	Student monitors and probes learner understanding (A; B)	Act on the assessment data to remediate *conceptual misunderstandings* (D; E)
Classroom Management	Creates positive/safe environment in which children can learn (A; E)	No examples in the data
Inclusivity	Be responsive to diverse learner needs (A; B; E)	No examples in the data

From Table 2, it can be seen that a non-specialist assessor would be more easily able to work broadly with general criteria, but they may very well miss the nuances of deliberate teaching decisions that a student teacher may or may not have taken informed by their developing PCK. The more specialist phase or content knowledge is emphasised in the TP assessment rubric as a core part of the knowledge that informs teaching competence, the more crucial it becomes for at least one of the teacher mentor and/or university lecturers who are assessing student teachers to be phase/subject specialists. This is particularly for high stakes decisions (e.g. the final assessment of student teaching competence prior to qualifying).

Situational/contextual knowledge

In all the TP instruments, criteria that made reference to contextual knowledge considered the extent to which the student teacher works productively within a particular school environment; her ability to recognise aspects of learner diversity within that context, and be responsive to the diverse learning needs of children in her class/es. The TP assessment instruments analysed reflect different understandings of the term 'diversity'. University D's TP assessment instrument associates diversity with ethnicity and gender. Similarly, University C requires that student teachers have an 'accommodating attitude' towards learners who are different to themselves. University A and E made explicit reference to the pedagogical implications of diversity within a class – such as making pedagogical choices that considered potential differences in learners' prior knowledge, vocabulary, reading competence, attention spans and so on.

Notwithstanding the arguments by those who advocate for a contextually driven teacher education, the five institutions' TP assessment documentation made very little provision for the way in which student teachers respond to the limitations, challenge and opportunities within the context of their school placement. This observation may be because university based lecturers (and the designers of the TP assessment instruments) may have a less nuanced understanding of the contextual limitations and possibilities that school-based mentors would presumably have. Our analysis identifies this as a significant oversight in the criteria for assessing competent teaching, especially for students who undertake their practicum sessions in particularly challenging contexts.

To what extent are assessors required to evaluate the appropriateness of the professional judgements students make in their teaching?

Certain criteria express an expectation that the students should employ a preferred approach, teaching strategy, or type of resource. These normative expectations are exemplified in the second column of Table 3. The importance of students' developing professional judgement is minimised in such criteria and expectations are expressed as technical application of particular principles/strategies. The assumption here is that the assessor would

have knowledge of these preferred techniques, and be able to judge their correct application.

In contrast, other criteria require consideration of the ways in which content knowledge and pedagogy intersect to enable students to make of conceptually-informed pedagogically appropriate choices. Recognising the role of professional judgement phrasing of criteria indicate that certain choices are better than others, as can be seen from the examples in the third column of Table 3. While words such as 'appropriate', 'relevant' and 'selects' imply that a deliberate pedagogical choice has been made, an observer would only have access to the grounds for such a choice if the lesson preparation contains an articulated rationale for the lesson design in ways that show their deep conceptual understanding of the content they are teaching, as well as their understanding of the learners' levels of understanding and social contexts (Rusznyak and Walton, 2011). The assumption underpinning these criteria is that the assessor/s would have sufficient content and pedagogic knowledge to recognise where in/appropriate pedagogic choices have been made by the student teacher.

Table 3: Examples that show how criteria for effective teaching are constructed in terms of a technical application of a preferred technique or an application of a reasoned judgement.

Component of teaching	Technical application	Reasoned judgement
Teaching/Learning Strategies	Apply principles of cooperative learning (E) Linking with prior knowledge (C)	Thoughtfully selects and effectively uses teaching and learning strategies appropriate to both content and learners (A)
Learning/Teaching support materials (LTSM)	Use media correctly (E); Lessons have quality handouts (C)	Relevant LTSM are selected and used to develop learners' understanding of key concepts (D)
Assessment	Use of formative and summative assessment strategies; marking of learning tasks (C)	Student is able to act on assessment data to remediate conceptual misunderstandings (D; E)

To what extent do assessors need to rely on an internalised sense of competence in making assessment decisions?

In this section, we consider the extent to which the rating scales and level descriptors given in the TP assessment rubric are made explicit to assessors. In four of the TP assessment documentation (Universities B, C, D and E), student teaching is assessed on a four or five point rating scale. Levels of competence range from *Excellent/Outstanding/Highly Developed* on one side of a rating scale, to *Not achieved/Unsatisfactory/Poor* at the other. Without detailed descriptors of what constitutes excellence, satisfactory or inadequacy against each criterion, the assessors of student teaching (either supervising teachers or university staff) are assumed to have an internalised sense of what constitutes competence at the specified levels of competence. While the use of a checklist of criteria along with a simple rating scale may seem like a user-friendly way to structure the assessment of student teaching, it relies on all supervising teachers and a large number of university tutors being able to interpret each criterion at different levels of competence. Given the concerns articulated about the fragmented history of initial teacher education in South Africa, and the dismal quality of many initial teacher training programmes, the use of a simple rating scale may not adequately provide many university tutors and supervising teachers with the necessary support to make informed assessment judgements. Thus these assessors can only rely on their own experience of what 'good teaching' is to make a judgement.

Furthermore, given the extreme diversity within the South African schooling system, simple rating scales do not allow consideration of the different (and often profoundly uneven) school contexts in which students teachers are encouraged to undertake a practicum session. The standardisation of student assessments using simple rating scales over different contexts is thus compromised.

The excerpt below shows how the supervisors for University C will need to rely on their own personal experience to assess whether the criteria are achieved or not, since the instrument does not provide explicit descriptors.

Rating scale: 1 – Not achieved; 2 – Partly achieved; 3 – Average; 4 – Above average; 5 – Excellent

Category	Criterion	Mark	Student's mark	%	Comments
Planning and writing out of lesson	Situation analysis (relevant and effective) Lesson outcomes (clear and achievable) Lesson phases (all phases accounted for)	5 4 3 2 1 5 4 3 2 1 5 4 3 2 1	/15		
Lesson presentation (learners must be brought into contact with new outcomes and content)	Beginning of lesson Linking with prior knowledge Authentic examples	5 4 3 2 1 5 4 3 2 1 5 4 3 2 1	/15		
Middle phase	Revealing new content (effectiveness) Teaching and learning activities (appropriateness) Formative assessment	5 4 3 2 1 5 4 3 2 1 5 4 3 2 1	/15		
Etc.					

Figure 1: Excerpt from University C instrument: *Assessment of student performance by supervisor*

In contrast to the others, University A provides highly explicit descriptors to define what constitutes each level of four levels of competence against every criterion, ranging from what a student's teaching would look if he/she was 'Not yet coping' to 'Thoughtful and insightful teaching competence'in terms of each criterion listed. It relies less on assessors using their tacit understanding to interpret what constitutes competence in student teaching at each level and against each criterion. For example, four levels of students' understanding of content knowledge is described as follows:

	Not yet coping	Emerging teaching competence	Developing skilled teaching competence	Thoughtful insightful teaching competence
Knowledge and understanding of content	Inaccurate content or misunderstands concepts frequently	Knowledge often limited to what learners need to know	Research evident, demonstrates sound understanding of topics beyond what learners need to know	Comprehensive, well organised knowledge of topics; foregrounds main ideas; networked examples
Formulation of purpose	Limited consideration or understanding of lesson's purpose	Purpose of the lesson is unclear or vaguely formulated	Clear purpose in terms of key questions; skills; attitudes and values	Purpose is subject specific, reflecting the knowledge, skills and dispositions of the subject discipline
Conceptualisa-tion of lessions	Incoherent lesson steps not aligned with purpose	Lesson steps often disjointed without links between steps	Lesson steps coherent but not always thoughtfully scaffolded	Thoughtfully conceptualised and scaffolded lesson steps
Etc.				

Figure 2: Extract from University A instrument: *Formative assessment for teaching experience*

In this example, each criterion is unpacked explicitly, and in so doing, provides a language of description for assessing teaching practice in ways that a straightforward five-point rating scale cannot.

The extent to which judgement of competent teaching requires assessors to undertake a holistic assessment of student teaching

In all cases, *teaching practice*[4] is a compulsory university course for which student teachers must register and thereby requires a course mark for promotion. While University A required a numerical mark only for the final practicum session before qualifying, other universities require that assessors

4 Also termed work-place learning; teaching experience.

provide a numerical mark, either for every lesson observed or for each teaching practicum session. This section considers the extent to which assessors are prompted to consider components of teaching as separate competences or as an integrated whole in order to arrive at an assessment decision/course mark. Three TP assessment instruments analysed present a list of criteria which are each awarded a mark or rating, whose arithmetical sum then reflects the overall mark awarded to the student (Universities B, C and D). This structure transmits a notion that the practice of teaching is reducible to a list of discrete observable competences. The integrated nature of teaching as a coherent practice is largely hidden as a consideration during the assessment. The excerpt in Figure 3 below shows how an assessor allocates a mark from 0–5 for each criterion and then adds up the marks to achieve a mark out of 100.

		5	4	3	2	1	0
A	**Lesson introduction**						
1	Ability to introduce topic, learning outcomes and lesson outcomes to be achieved at the end of the lesson intelligently						
2	Effectiveness in motivating and arousing interest in learners						
3	Efficient use of learners' previous knowledge to achieve assessment standards						
4	Linking lesson contents with reality for meaningful learning						
B	**Lesson development**						
B1	*Communication skills*						
B1.2	Ability to use voice, gestures and eye contact and movement to enhance teaching effectiveness						
B1.2	Ability to use main language of instruction to explain, describe and discuss key concepts						
B1.3	Ability to mediate learning in a manner that shows awareness of the cognitive development of learners						
B1.4	Create and maintain learning environments that are interesting, challenging , orderly, safe, purposeful and supportive.						
B2	*Classroom management*						
B2.1	Ability to facilitate occasions where learners are taught in groups, pairs and individuals						
B2.2	Ability to use a variety of discipline strategies well matched to the situation and the learner						
B2.3	Ability to create a positive learning environment for student learning and involvement						
B2.4	Abiltity to demonstrate openness to student challenges about information and ideas						
B2.5	Ability to manage time (for him/herself and learners) and maintain lesson momentum						
	Etc.						

HD = Highly developed/very satisfactory 75–100%
D = Developing/Almost satisfactory 50–59%
C = Competent/satisfactory 60–75%
E = Experiencing difficulties/Unsatisfactory 01-49%

Figure 3: Excerpt from University D instrument: BEd/PGCE summative classroom observation and evaluation form

By way of contrast, our analysis of the data shows three ways in which two TP assessment instruments (Universities A and E) encourage a more holistic assessment of student teaching. Firstly, we notice a network of relationships between different criteria. For example, in the TP assessment instrument of University E the 'quality of learning' is considered in terms of 'learner participation', 'learner understanding of lesson's concepts', an 'emphasis on content knowledge', and the 'achievement of outcomes'. In this example, a criterion is expressed in terms of a relationship with others, so that the internal connections between criteria are made explicit. However, the potential of assessment rubrics to transmit a view of teaching as a networked, integrated practice can be undermined by the linear structure of the rubric that requires that a mark is awarded against each criterion. When a student's mark is calculated by adding together the discrete marks awarded, the view of teaching as a coherent whole is compromised. Although in several cases, 'coherence of teaching' is listed as one out of many criteria, the structure of the TP assessment rubric suggests that it is not.

A second way in which holistic assessment is undertaken is through assessors awarding students a global impression mark, after rating their teaching performance on a checklist. This method might work if all assessors had strongly internalised criteria of what constitutes competence in student teaching. Although there is no direct relationship between the checklist profile and the mark awarded, the grounds for the awarded mark are highly subjective, and this method would be difficult to standardise across large numbers of university tutors and supervising teachers.

A third way in which holistic assessment of student teaching is enabled is through a TP assessment instrument designed as a two dimensional grid that plots a student teacher's knowledge, understanding and thinking against the effectiveness of her classroom performance (University A). This structure conveys to students and assessors alike that effective teaching involves both a cognitive and a performance dimension, and that if one component is weak, the effectiveness of a student's teaching as a whole is compromised (Rusznyak, 2012).

Implications of findings

Recent research in the field of teacher education supports a more holistic understanding of teaching as an integrated knowledge-based professional practice (Darling-Hammond and Bransford, 2005; Hoban, 2005). The MRTEQ policy (DHET, 2011) follows this trend, explicitly rejecting an exclusively skills-based approach in initial teacher education, and in its recognition of specialised pedagogic and content knowledge that informs effective teaching. There are several implications for the assessment of student teaching, which we now discuss.

First, if university-based coursework presents teaching as an integrated, complex practice but student teaching is assessed as a collection of discrete skills or general competencies, then internal coherence within the teacher education programme is unduly compromised. The use of TE assessment instruments that do not adequately support student teacher professional development in planning conceptually strong and well-executed lessons not only misses an opportunity to support students' professional development, it may also perpetuate the prevalence of technicist guidance provided to them during their practicum sessions.

Second, if theoretical developments and policy shifts both support the idea that teaching requires a specialist knowledge base and the development of professional judgement, then the use of general criteria that do not recognise the importance of a specialist knowledge base is problematic. However, expressing criteria in terms of a specialised knowledge base requires that at least one of the supervising teacher and university tutor has access to that specialist knowledge base, and understands its use to make appropriate pedagogic choices. While recognising the logistical constraints of placing large numbers of student teachers under the mentorship of specialist supervising teachers, and the enormous demands placed on specialist university tutors, this may be one area where institutions and government allocate additional funding resources to ensure that specialist mentoring and assessment of student teaching is not compromised by logistical and budgetary constraints.

Third, supervising teachers in schools may potentially work with student teachers from different institutions at different times over a year. The high variability over expectations contained in TP assessment instruments may

undermine the potential for the teacher education sector as a whole to introduce a coherent language of practice into school communities. The lack of sector consensus presents a challenge to the teacher education sector to interrogate itself and understand more clearly the tensions that lead to variability and contestations that characterise conceptions of effective teaching within the sector.

Conclusion

Internationally recognition of the importance of content knowledge for making appropriate pedagogical choices and the role of PCK in informing subject-based pedagogy has prompted policies and teacher education programmes to shift from a technological orientation to an academic one, and from conceptualising teaching as a generic practice to a specialised one. However, it does not make for coherent initial teacher education programmes if these shifts are made in university-based coursework but are not carried into the practicum and how competence in student teaching is assessed. As significant players in influencing the discourse of how the nature of teaching is portrayed to the wider profession, it is an urgent imperative for teacher educator robustly and critically to analyse the conceptions of teaching embedded and transmitted by the TP assessment instruments.

We distinguish between design features in the TP assessment instruments analysed that encourage a more technical approach to verifying the competence of student teaching, and those that promote more of a professional judgement. Our analysis suggests that a technical approach to assessing teaching is fostered when assessors simply need to verify that students have complied with a list of specified requirements as they teach. Such criteria are expressed as a normative application of particular preferred strategies or expectations. Because a collection of techniques need not add up to a coherent practice, this approach tends to determine the competence of a student's teaching by the sum of criteria each one verified in an atomistic manner. In contrast, a more academic approach to the assessment of student teaching is encouraged where criteria are explicit in how students are required to use their content and/or pedagogic knowledge to make appropriate choices and decisions in their planning and teaching, and provide a rationale for these choices. A professional approach also demands that teaching constitutes a coherent practice, and would require a holistic assessment of teaching where

the judgement is based on principled grounds, rather than a global impression mark based on an assessor's personal sense of a student's teaching competence.

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Appendix: Questions guiding the analysis of TP assessment instruments

Structure of TP assessment instrument/s

1. Who completes the overall TP assessment instrument at the end of a TP session?

2. Is there one overall assessment instrument used for all students?

If no…

- Are there differences in the assessment instrument used for *junior* students/*senior* students? If so, what are these differences?
- Are there differences in the way students in *different phases* are assessed? If so, what are these differences?
- Are there differences in the way students specialising in *different subjects* are assessed? If so, what are these differences?

3. What *levels, descriptors or rating scales* of teaching competence are used by the assessment instrument? How explicitly or implicitly are these competence levels defined? What explanation does the documentation provide about what is meant by each level of competence?

4. Is assessment of the students' *documentation* (e.g. preparation file/ lesson planning/journal etc.) included in the assessment instrument, or is this done separately? Is the supporting documentation assessed by the same person who observed the students' teaching?

5. Are criteria listed or clustered into groups? If so, how are the criteria clustered?

6. What is the logic informing the *sequencing* of the criteria?

Formative and summative assessment of student teaching

7. What *formative feedback* about their developing practice could students obtain from the assessment document/s? (Ie. what they are doing well, what they are struggling with and what they need to do to improve their TP)?

8. When are marks for TP awarded? How are the *marks* determined? How are criteria weighted?

9. Are the grounds for a *distinctive performance* in TP implicitly or explicitly conveyed by the TP assessment Rubric? If so, please elaborate.

10. Are the grounds for a *fail in TP* implicitly or explicitly conveyed by the TP assessment rubric/s? If so, please elaborate.

11. How *user-friendly* is the TP assessment document for teacher (outside of the university staff) find difficult to use the form? What might a supervising teacher find easy to complete/understand? What might a supervising teacher find difficult to complete/understand?

12. To what extent does the documentation encourage articulation between the lesson observations reports and the formative/summative assessment of students' TP?

Domains of Teacher Knowledge

13. What does the assessment instrument convey to students about the importance of their *content knowledge*?

14. What does the assessment instrument convey to students about *general pedagogical knowledge*?

- Classroom management/organisation
- Inclusion, diverse learner needs
- Teaching strategies
- Teaching resources
- Language competence
- Relationship with learners
- Other?

15. What does the assessment instrument convey to students about working with *curricular documentation*?

16. How does the instrument promote an assessment of students' *pedagogical content knowledge*?

17. What is privileged about how students are expected to plan their lessons?

18. What does the assessment instrument convey to students about what is important in *assessing learners' understanding*?

Professional reasoning and judgement

19. How does the assessment instrument prompt teachers/tutors to consider the students' ability to make justifiable *pedagogical choices*?

20. How does the assessment instrument prompt teachers/tutors to consider the students' ability to *reflect in* and *on action*?

21. What does the assessment instrument/s convey to students about what constitutes '*teacher professionalism'?*

22. To what extent does the TP assessment instrument/s consider the way in which students' lessons are internally coherent?

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Education for sustainable agriculture: the old and new curricula for agricultural sciences in South African schools

Moraig Peden

Abstract

This article explores the support given to Education for Sustainable Agriculture (ESA) by the South African Agricultural Sciences school curricula. It compares two post-apartheid curricula: the current Curriculum Assessment Policy Statements (CAPS) and the phased-out National Curriculum Statement (NCS) for Agricultural Sciences in terms of content, knowledge requirements, cognitive processes and philosophies of education for sustainable agriculture, as well as the role of assessment and the stated purpose of the curricula. While the NCS had a vision of sustainable agriculture and of a progressive curriculum, these aims were not supported in the detail of the curriculum. The CAPS presents a shift back to more traditional, discipline-based agriculture, with a detailed curriculum, which provides more support for ESA in terms of fundamental ecological knowledge as well as sustainable agriculture strategies. However, the CAPS, has fewer requirements for practical agriculture, higher order learning and engagement with broad socio-economic issues. The paper concludes with recommendations for supporting ESA, through teacher education and amendments to the assessment requirements.

Introduction

Environmentally sustainable agriculture is crucial for both future production as well as for the broader environment. The twenty-first century faces threats to global food supplies (*New Agriculturist*, 2008) linked to environmental degradation (Food and Agriculture Organisation of the United Nations [FAO], 2011, 2012). Industrial agriculture, based on fossil fuels has contributed significantly to climate change (Sachs, 2010; International Assessment of Agricultural Knowledge, Science and Technology for Development [IAASTD], 2009), water and soil pollution, the lowering of water-tables, salinization of land (Halweil, 2002) and the loss of biodiversity (Halweil, 2002; The World Bank, 2008; IAASTD, 2009). These costs have been externalised in the drive for high yields, profit and low food prices (Miller, 2000; Halweil, 2002;). 'Business as usual' i.e. industrial agricultural

damages the resource base on which it depends. In South Africa, industrial agriculture is the default approach, of the state Department of Agriculture (DOA) (National Planning Commission [NPC], 2011). With 82% of the land classified agricultural in 2009 (Index Mundi, undated), environmental degradation such as habitat loss and water pollution is being caused by agricultural intensification (Department of Environmental Affairs [DEAT], 2006).

This paper explores whether the South African school curriculum is engaging with Education for Sustainable Agriculture (ESA) as we enter our third decade of democracy.

In order to probe the question further, I analyse and compare the two post-apartheid Agricultural Sciences curricula: the current Curriculum Assessment Policy Statements (CAPS) (Department of Basic Education [DBE], 2011b) and the phased-out National Curriculum Statement (NCS) (Department of Education [DOE], 2003; 2008a; 2008b) for Agricultural Sciences in terms of the content, knowledge requirements and cognitive processes, philosophies of education for sustainable agriculture and the role of assessment and the stated purpose of the curricula.

I ask the following questions:

1. To what extent does the content of the NCS (DOE, 2003; 2008a; 2008b) and the CAPS (DBE, 2011b) support sustainable agriculture as opposed to industrial agriculture?

2. To what extent are the knowledge and cognitive processes in the NCS (DOE, 2003; 2008A; 2008B) and the CAPS (DBE, 2011b) aligned to the philosophies underpinning ESA?

3. To what extent are the stated purposes and assessment of the NCS (DOE, 2003; 2008A; 2008B) and the CAPS (DBE, 2011B) aligned to sustainable agriculture and the philosophies underpinning ESA?

I find that the NCS (DOE, 2003; 2008a; 2008b) had a vision of sustainable agriculture and a progressive curriculum (learner-centred and experiential), which aligned it to philosophies of ESA, but these aims were not supported in the details of the curriculum. The CAPS (DBE, 2011b) presents a shift back to a more traditional, teacher-centred curriculum with a focus on knowledge

transmission within traditional agricultural disciplines. However the CAPS (DBE, 2011b) curriculum is more detailed, providing fundamental ecological knowledge as well as sustainable agriculture strategies which support ESA. On the other hand, the CAPS (DBE, 2011b) has fewer requirements for both practical agriculture and higher order learning (based on progressive pedagogies) and less engagement with broad socio-economic issues. The paper concludes that the CAPS (DBE, 2011b) allows for progressive education for sustainable agriculture although it does not require it. This leads to recommendations for supporting ESA through teacher education and amendments to the assessment requirements.

Sustainable agriculture: a response to industrial agriculture

Industrial agriculture aims for the highest economic yields and maximum profit. It's underlying principles are simplification of ecosystems and large scale production in order to achieve greater efficiency. The farmer is not held responsible for social and environmental impacts beyond the farm boundary. High inputs are required, including mechanisation, petrochemical-based fertilisers and pesticides and hybrid or genetically modified seed. Strategies include intensive animal production and monoculture (Dumanski, Peiretti, Benites, McGarry and Pieri, 2006; Scherr and McNeely, 2008).

Sustainable agriculture emerged in the 1980s in response to concerns about industrial agriculture. The concept is contested. It ranges from weak to strong sustainable agriculture depending on the level of challenge to industrial agriculture. Strong sustainable agriculture aims to transform the broad agri-food system while weak sustainable agriculture attempts to modify but not replace industrial agriculture. Objectives include minimising agricultural pollution and resource depletion, reducing energy use and conservation of soil, water and biodiversity including natural habitats (Reganold, Papendick and Parr, 1990; Pretty, 1995) as well as engaging in an interdisciplinary way with alternatives to the global capitalist food system (Francis, 2005; Wezel, Bellon, Dore, Francis, Vallod and David, 2009).

Sustainable agriculture methods could increase production at the same time as protecting natural resources (IAASTD, 2009; Tirado, 2009). With 82% of land classified agricultural in South Africa in 2009 (Index Mundi, undated),

farmers could play a significant role in conserving the environment through sustainable practices (McNeely and Scherr, 2003; The World Bank, 2008; IAASTD, 2009). National policies in South Africa (DOA, 2008b, 2005a, (Department of Agriculture, Forestry and Fisheries [DAFF], 2011; NPC, 2011) recognise the need to move towards sustainable agriculture within a low carbon-economy. Education is critical in this process (Department of Environmental Affairs [DEA], 2010; NPC, 2011).

Agriculture and sustainability in South Africa

South African agriculture is characterised by 'two agricultures', a legacy of apartheid. White commercial agriculture was strongly supported by the state with research, subsidies, markets and education. Black subsistence agriculture, where farmers produce for their own household needs only, was practised on crowded, marginal land with little support and low productivity (Van Rooyen, Barnard and Van Zyl, 1996). Little has changed under democratic rule. In 2007 commercial farms produced 95% of agricultural output, occupying 87% of agricultural land but comprising only 20% of farmers (DOA, 2008b). Four million subsistence farmers move in and out of agriculture as other income sources fluctuate (Aliber and Hart, 2009).

In recent decades declining farmer numbers have caused declining per capita production and South Africa has become a net importer of food (Dugmore, 2008; Baiphethi and Jacobs, 2009). The National Planning Commission (NPC) of 2011 sees economic growth potential in the agricultural sector and proposes improved support and training for commercial and subsistence farmers.

Land-use practice is a key driver of environmental degradation. In South Africa industrial agriculture is a major water user as well as contributing to water pollution through chemical and effluent run-off. These issues affect river, estuarine and marine ecosystems. Nearly 20% of the natural habitat has been destroyed, mainly for crops and 65% of wetlands are endangered or vulnerable (DEAT, 2006; South African National Biodiversity Institute (SANBI), 2013).

Support for sustainable agriculture comes mainly from the private sector with programmes such as the SusFarMS (Sustainable Sugarcane Farm

Management System) and the Biodiversity and Wine Initiative. State support for sustainable agriculture has been weak. The Biodiversity Stewardship South Africa programme run by the state was initiated by NGOs (KZN Wildlife, n.d.). South Africa has no legal Organic Standards (SAOSO, 2014) and no subsidies for organic farmers (Barrow, 2006).

A history of agricultural schooling in SA

Agricultural schooling evolved from rudimentary gardening for blacks in mission schools in the 1800s to colonial schools producing labourers in the 1900s. In the apartheid era 'Gardening' was taught in black primary schools and 'Agriculture' for the black school leavers' certificate. With homeland development, 'Agriculture' became the training for extension officers working in homeland areas (Paterson, 2004).

In 1994, schooling was deracialised and became the domain of one national department. The National Curriculum Statement (NCS) (DOE, 2003; 2008a; 2008b)) was developed by the Department of Education (DOE). Subsequently, its successor, the Department of Basic Education (DBE) developed the Curriculum Assessment Policy Statement (CAPS) (DBE, 2011b) for all school subjects including Agricultural Sciences. From 1994 onwards, the NCS (DOE, 2003; 2008a; 2008b) Agricultural Sciences was only offered in the final three years of school. The subject is mainly offered in rural, state, black secondary schools (Paterson, 2004; DOA 2008a) where learners take Agricultural Sciences as one subject amongst six other non-agricultural subjects. It is also offered in forty-three specialised agricultural schools which also offer two additional agricultural subjects to both black and white learners. The specialised agricultural schools aim to produce commercial farmers and are better-resourced than the state secondary schools. However they comprise only 0.7% of state secondary schools (DBE, 2015; DOA, 2008a) and enrolments are limited by high fees.

There is a lack of consensus around the purpose of Agricultural Sciences in schools both within and between the state departments of Education and Agriculture. The purposes includes "generalist and formative rather than vocational" (DOA, 2008a, p.7), preparing learners for tertiary education, careers in agriculture and self-employment (DAFF, 2011) and the development of practical skills (DOE, 2008a). There is a tension between

learning *about* agriculture and learning to *engage in* agriculture. In 2013 Agricultural Sciences was in the top eleven most popular National Senior Certificate subjects (DBE, 2013). However, it tends to be selected for its perceived easiness rather than students' interest in farming (DOA, 2008a, Paterson, 2004).

The pedagogy of Agricultural Sciences continues to be based on knowledge transmission with little practical work or problem-solving (Paterson, 2004). The lack of resources and skilled educators has not improved in the democratic era (DOA, 2005; South African Agricultural Teaching Association, 2007; DOA, 2008a; DBE, 2009). Agricultural Sciences continues to be associated with a second class apartheid curriculum, exacerbated by the use of agricultural work as punishment (Paterson, 2004). However, in recent years it has gained greater currency in tertiary education with some diploma and degree programmes accepting Agricultural Sciences as an alternative to Life Sciences as an entry requirement (Western Cape Government, 2014; Mangosuthu University of Technoloy (MUT), undated; University of KwaZulu-Natal (UKZN), undated).

In the next section I describe the two post-apartheid curricula: the National Curriculum Statement (NCS) (DOE, 2003; 2008a; 2008b)) and the Curriculum Assessment Policy Statements (CAPS) (DBE, 2011b).

The NCS (National Curriculum Statement)

A new post-apartheid curriculum (Curriculum 2005) for Grades R–9 was introduced in 1998. Driven by a political rather than an educational agenda, it had to clearly reject the apartheid curriculum (Harley and Wedekind, 2004). 'Content' was replaced with 'Outcomes' (skills, knowledge and values) based on constructivist methods (Mattson and Harley, 1999) which rejected memorisation (DBE, 2009). Academic and everyday knowledge were integrated to make the curriculum relevant to learners (Harley and Wedekind, 2004; Le Grange, 2008). It was criticised for being incomprehensible and lacking content and structured progression. This led to the 2000 Curriculum Review process which recommended substantial changes. A revised National Curriculum Statement (RNCS) for GET (Grades R–9) was implemented in 2002. It contained a stronger content focus but the key characteristics of C2005 (outcomes-based, integrated knowledge and learner-centredness)

remained in place. This led to concerns that it was unsuitable for poorly-resourced schools. It's broad vision neglected realities on the ground (Harley and Wedekind, 2004). The RNCS provided the basis of the new FET (Grade 10–12) curriculum, which was introduced incrementally into schools from 2006 to 2008. Agricultural Sciences was now only offered at FET level and no longer provided at primary schools.

In 2008, the first cohort of matriculants completed the NCS (DOE, 2003; 2008a; 2008b) in Agricultural Sciences. Poor results and the lack of agricultural skills development raised concerns (Parliamentary Monitoring Group, 2009; Province of the Eastern Cape Education, 2008). In 2008 all subjects in the NCS (DOE, 2003; 2008a; 2008b) were expanded with two further documents: The Learning Programme Guidelines (DOE, 2008a) and the Subject Assessment Guidelines (DOE, 2008b). Criticisms continued, focusing on poorly specified academic content, concepts and skills and a lengthy, confusing and vague curriculum (Harley and Wedekind, 2004). In 2009 a review of the NCS (DBE, 2009) led to the proposal of a new simplified curriculum.

The National Curriculum and Assessment Policy Statement (CAPS)

The NCS (DOE, 2003; 2008a; 2008b) was revised and renamed the Curriculum and Assessment Policy Statement (CAPS) (DBE, 2011b) and introduced incrementally from 2012 to 2014. The Learning Outcomes and Assessment Standards of the NCS (DOE, 2003; 2008A; 2008B) were discarded. Text books are seen as an essential tool for implementation of the curriculum (DBE, 2009; DBE, 2011b). The CAPS (DBE, 2011b) emphasises detailed foundational knowledge, structured progression and simplified assessment.

In the CAPS (DBE, 2011b) for Agricultural Sciences, the assessment requires a reduction in research projects. A range of assessment approaches are included in addition to tests and examinations. The CAPS has a stated aim to develop research, problem-solving and critical thinking skills (DBE, 2011b; DBE, 2009). The CAPS (DBE, 2011b) still emphasises applied meaningful knowledge in order to enable learners to move from school to the work

environment (DBE, 2011b). This creates expectations of a vocational component in the Agricultural Sciences curriculum.

Conceptual framework

In order to address the three research questions, the NCS (DOE, 2003; 2008a; 2008b) and CAPS (DBE, 2011b) are analysed in terms of the content, knowledge levels and cognitive processes, philosophies of education for sustainable agriculture and the role of assessment and the stated purpose of the curricula.

The content is analysed in terms of whether it supports industrial agriculture (also described as production, chemical and high-input agriculture) or sustainable agriculture. The knowledge dimensions and cognitive processes are analysed using Bloom's Revised Taxonomy (Krathwohl, 2010). The taxonomy is a hierarchy which moves from simple, concrete knowledge to greater levels of abstraction and complexity. Generally curricula tend to rely on the lower end of the taxonomy (facts and memorisation) although higher cognitive processes are important in the learning process. Curricula are analysed in the two dimensional table below.

Table 1: Blooms Revised Taxonomy of Knowledge

	The Cognitive Process Dimension					
The Knowledge Dimension	1. Remember	2. Understand	3. Apply	4. Analyse	5. Evaluate	6. Create
A. Factual Knowledge						
B. Conceptual Knowledge						
C. Procedural Knowledge						
D. Meta-cognitive Knowledge						
Totals						

In the vertical dimension, factual knowledge includes basic terminology and elements of a discipline. Conceptual knowledge includes relationships between elements, classification, principles, theories and models. Procedural knowledge concerns how to do things. Metacognitive knowledge concerns knowledge of cognition including one's own. The horizontal dimension consists of six cognitive processes:

1. Remember: retrieving relevant knowledge.
2. Understand: determining the meaning of knowledge.
3. Apply: carrying out a procedure.
4. Analyse: breaking knowledge into components and identifying relationships and overall structure.
5. Evaluate: making judgements based on criteria.
6. Create: putting elements together to form something new.

Each statement can have more than one knowledge dimension, but higher levels of the cognitive processes subsume the lower levels.

Education for sustainable agriculture

I contrast the philosophies underlying education for sustainable agriculture with those underlying industrial agriculture education. The description below provides the criteria for content analysis of the curricula.

Education for industrial agriculture fits predominantly within behaviourist and liberal philosophies of education. Behaviourist philosophy aims to transfer a body of knowledge and skills to learners (Francis, 2005; Parr, Trexler, Khanna and Battisti, 2007). Learners are assessed through evidence-based tasks, with examinations providing reward or sanction (Walter, 2009). Liberal agricultural education, focuses on agricultural disciplines such as soil science, agronomy and animal science which contrasts with the more systemic approaches of sustainable agriculture (Bawden, 1995; Francis, 2005, Walter, 2009). The emphasis is on individual learning and the aim is to respond to global economic demands (Clover, Jayme, Hall and Follen, 2013). Behaviourist and liberal education also supports weak sustainable agriculture, which aims to modify industrial agriculture. Based on his work with working-class British learners, Bernstein (in Guthrie, 2013) argues that the traditional forms of education, which are teacher rather than learner-centred are more appropriate for disadvantaged learners. Bernsteinian arguments for "powerful knowledge" (Young in Hoadley, 2011) based on a strongly specified curriculum entered the education debate in South Africa with the NCS (DOE, 2003; 2008a; 2008b) Review Report in 2009 which led to the development of the CAPS (DBE, 2011b).

Education for strong sustainable agriculture engages with progressive forms of education. It advocates humanist and progressive philosophies of education with some streams using radical philosophies. Progressive philosophy integrates the principles and application of science with hands-on agriculture (Bawden, 1995). It includes ecocentric approaches with humans viewed as part of natural systems (Walter, 2009). The educator is a learner-centred facilitator who encourages experiential outdoor learning, experimentation, scientific methods, practical problem-solving, teamwork, internships, democratic thinking and environmental ethics. Assessment takes place through

demonstration of knowledge and not only through tests and exams (Walter, 2009).

Humanist philosophy focuses on personal transformation, self-actualisation and happiness (Walter, 2009) and promotes systems-based curricula integrating natural and social sciences (Parr *et al.*, 2007). It values the connections between humans and nature. It underpins strong sustainable agriculture's focus on the global food system, which requires interdisciplinarity and systemic approaches (Francis, Lieblein, Gliessman, Breland, Creamer, Harwood, Salomonsson, Helenius, Rickert, Salvador, Wiedenhoeft, Simmons, Allen, Altieri, Flora and Poincelot, 2003; Parr *et al.*, 2007).

Some strong forms of ESA are aligned to radical philosophy where there is no externally imposed curriculum and learning occurs through participation, action research, debate, analysis and reflection (Pretty, 1995; Parr *et al.*, 2007) in addition to practical knowledge (Perez, Parr and Beckett, 2010). This entails a shift to situated non-formal learning such as farmer groups rather than formal courses (Knight, 2002) such as school Agricultural Sciences. Radical pedagogy, based on Freirean ideas has its origins in adult education. The appropriateness of this pedagogy for school learners is contested (Hugo and Wedekind, 2013).This pedagogy requires specific teaching skills, which are lacking in the South African context, and contributed to the recent demise of the progressive NCS (DOE, 2003; 2008a; 2008b) .

Table 2: A typology of paradigms and philosophies for agricultural education (Adapted from Clover *et al*., 2013; Walter, 2009; Guthrie, 2013)

Philosophy	Purpose	Instructor role	Learning approaches	Assessment
Behaviourist	Knowledge and skills transfer: in order to ensure survival	Teacher as leader Clear boundaries between teacher and learner	Knowledge revealed by teachers Structured external incentives and disincentives (marks, passing/failing)	Measurable outcomes, evidence-based, examinations
Liberal	Intellectual, spiritual, aesthetic, moral development	Teacher has expertise in discipline	Discipline-based scaffolded knowledge; book-centred	Subject matter exams, essays, recitation
Progressive	Development of democracy, social reform and the individual	Teacher as guide and facilitator Boundaries between teacher and learner are weakened	Knowledge discovered by learners Learner-centred, hands-on, outdoor, experiential, problem-based learning. experimentation,intern-ships, scientific method Co-operation, community building and ecocentric approaches	Observation and demonstration
Humanistic	Self-actualisation: social, emotional, spiritual and intellectual development	Teacher as facilitator, promotes personal growth	Holistic, subjective learning; problem-centred; group work, learner takes responsibility, includes social sciences	Self-evaluation, individual learning contracts
Radical	Liberation from social, economic and political oppression; social transformation	Teacher as facilitator, co-investigator, organiser, activist	Conscientisation through dialogue, reflection, action, problem-posing	Increased critical consciousness, political action, visible social change

The role of assessment

Assessment requirements have a powerful influence on how curricula are used, as teachers will teach in order to achieve maximum pass rates. If assessment requirements are predominantly based on memorisation for examinations, progressive teaching which underpins strong ESA is unlikely to gain a foothold. Progressive education uses assessment as a learning tool, rather than just to evaluate final student performance (Chappuis and Stiggins, 2002). Using practical demonstrations, experiments and self-reflection, progressive assessment prepares learners to practice agriculture rather than merely providing generalist grounding in agriculture (Chappuis and Stiggins, 2002;Walter, 2009).

However, although the curriculum may encourage or permit progressive assessment, it is unlikely to be adopted if it is not mandatory. It is more difficult to apply than traditional assessment and thus teachers are likely to avoid engaging with it (Barnes, Clarke and Stevens, 2000; Stevenson, 2007).

Methodology

I analyse the NCS (DOE, 2003; 2008a; 2008b) and CAPS (DBE, 2011b) by focusing on the three research questions.

Coding the documents

I use a qualitative, interpretive methodology to classify sentences or topics in the curricula. I use the sentence as the unit of analysis as well as topics from lists that occur in the curricula. I code each statement (sentences or listed topic) on an Excel spreadsheet. The methodology generates quantitative data, as I count the number of statements in each category and calculate them as a percentage of the total number of statements counted.

I consider all chapters and sections that are specific to the Agricultural Sciences curricula but omit generic sections that apply to all subjects. I exclude tables of contents and glossaries as these are repetitions of information in the curricula. I code repetitions of sections only once, for example the Learning Outcomes in the NCS (DOE, 2003; 2008a; 2008b). I

only code statements that are relevant to the research questions. For question 1, I code statements that refer to or imply a type of agriculture. For question 2, I code statements that refer to knowledge or cognitive processes required in the curricula. For question 3, I code statements about assessment or purpose that refer to sustainable agriculture or ESA.

Question 1: To what extent does the content support sustainable agriculture as opposed to industrial agriculture?

To answer this question I code each statement that makes specific reference to a type of agriculture either as industrial agriculture (IA) or sustainable agriculture (SA). In both curricula, industrial agriculture is the default approach, which is promoted nationally by the Department of Agriculture. I code statements about agriculture which do not indicate the approach, as industrial agriculture. I then code these statements at a second level, indicating whether they provide a broad statement of vision or a detailed statement.

The frequent mention of the word 'sustainable', particularly in the NCS (DOE, 2003; 2008a; 2008b) is not coded as sustainable agriculture unless the context specifically indicates that it refers to environmental sustainability.

The concept is operationalised in Appendix A.

Question 2: To what extent are the knowledge and cognitive processes aligned to philosophies underpinning ESA?

I use Bloom's Revised Taxonomy of Knowledge to code each statement that refers to knowledge or cognitive processes required in the curricula. In the NCS (DOE, 2003; 2008a; 2008b) documents this includes the definitions, learning outcomes, assessment standards, content and context. Statements can have more than one knowledge dimension, but only one cognitive process, as higher levels subsume lower levels.

Where statements provide content with little information on cognitive processes, I code as the lowest level, 'remember', as there is no requirement to go beyond this. The knowledge requirements and cognitive processes are used as a basis for a discussion on the education philosophies underlying the curricula.

The concept is operationalised in Appendix A.

Question 3: To what extent are the stated purposes and assessment aligned to sustainable agriculture and philosophies underpinning ESA?

In addition to coding statements and topics in the curricula, I use the coding process in Question 1 and 2, to code the purpose and assessment requirements of each curriculum.

Findings

Question 1: To what extent does the curriculum promote sustainable agriculture as opposed to industrial agriculture?

Although both curricula are aligned to the default mode of industrial agriculture they also engage with sustainable agriculture. The NCS (DOE, 2003; 2008a; 2008b) provided a vision of sustainable agriculture that was poorly supported with details. The CAPS (DBE, 2011b) provides little vision of sustainable agriculture but provides more depth and detail on ecological systems and sustainable agriculture methods. Opportunities for critical thinking and engagement with socio-economic issues were contained within vision statements of the NCS (DOE, 2003; 2008a; 2008b) but there was a lack of detailed support. The CAPS (DBE, 2011b), with it's focus on traditional agricultural disciplines, has almost no engagement with these aspects.

These findings are elaborated below:

The NCS (DOE, 2003; 2008a; 2008b) provided a strong vision for sustainable agriculture (40% of statements) compared to the CAPS (DBE, 2011b) (6%), but the NCS (DOE, 2003; 2008a; 2008b) has a lower percentage of detailed statements (26%) on sustainable agriculture compared to the CAPS (36%) (DBE, 2011b), suggesting the concept remains an ideal. The CAPS (DBE, 2011b) has a detailed discipline-based focus on sustainable agriculture (soil science, plant science, agro-ecology, animal science) which contribute to ecological literacy, which is foundational for sustainable agriculture. The CAPS (DBE, 2011b) includes sustainable agriculture methods such as free range, organic, biological, integrated, small-scale and backyard agriculture.

The content of the CAPS (DBE, 2011b) provides more support for sustainable agriculture than that of the NCS (DOE, 2003; 2008a; 2008b) .

In both curricula, industrial agriculture is the default approach, promoted nationally by the Department of Agriculture. Many statements containing agricultural content do not indicate the agricultural approach. Unless specified, the dominant mode of industrial agriculture applies. The statement: "*Poultry: Broiler production; and Egg Production: Basic requirements for successful production (housing, management, breeding and nutrition*" (DBE, 2011a:25), refers to the dominant intensive production systems. Sustainable agriculture systems such as free-range or organic would have to be specified.

The detailed support for sustainable agriculture in the NCS (DOE, 2003; 2008a; 2008b) focused on water and soil conservation (7%) which is most commonly aligned to industrial agriculture. There was some detailed support for strong sustainable agriculture such as organic agriculture (7%). The topic 'Organic fertilisers' illustrates an important difference between the NCS (DOE, 2003; 2008a; 2008b) and the CAPS (DBE, 2011b). While the NCS (DOE, 2003; 2008a; 2008b) contained one statement: "*Mineral nutrition: organic and inorganic fertilisers*" (DOE, 2003, p.28), the CAPS (DBE, 2011b) provides four statements detailing different kinds of organic fertilisers such as green manure, farm manure and compost (DBE, 2011a).

Table 3: Percentage of statements coded by type of agriculture

	Vision statements		**Detailed content or strategies**	
	NCS (n=57)	**CAPS (n=89)**	**NCS (n=57)**	**CAPS (n=89)**
Type of agriculture	Percentage of all statements			
Industrial agriculture (IA)	9	1	25	57
Sustainable agriculture (SA)	40	6	26	36

Neither the NCS (DOE, 2003; 2008a; 2008b) nor the CAPS (DBE, 2011b) fundamentally challenge the industrial food system and tend towards weak sustainable agriculture. While the NCS (DOE, 2003; 2008a; 2008b) created

some opportunities for critical thinking, e.g. an exemplar assessment task to compare traditional and industrial agriculture, there are few supporting guidelines. Many of the sustainable agriculture strategies in the NCS (DOE, 2003; 2008a; 2008b) were compatible add-ons to industrial agriculture e.g. organic fertilisers and integrated pest management (IPM). A controversial topic, such as concentrated animal feeding operations (CAFOs) is addressed in the CAPS (DBE, 2011b) with information on animal diseases and management as well as alternative production systems but it does not make use of the opportunity to explicitly critique the industrial food system.

Socio-economic issues are an important part of strong sustainable agriculture. The NCS (DOE, 2003; 2008a; 2008b) contained socio-economic vision statements (14%) such as: "Learners need to be sensitive towards their natural environment and understand the effects of human decisions resulting from socio-economic and political conditions which have an impact on the environment and on sustainable agricultural production" (DOE, 2003, p.13), but these were poorly supported with detailed statements (8%) which include a socioeconomic component within sustainable agriculture. The CAPS (DBE, 2011b) has little focus on socio-economic issues within sustainable agriculture at either the level of vision or in detailed statements.

The lack of critique of industrial agriculture in the CAPS (DBE, 2011b) reflects the tension underlying the shift from NCS (DOE, 2003; 2008a; 2008b) to CAPS (DBE, 2011b), where the transmission of discipline knowledge has replaced an earlier and largely unsuccessful ideal of holistic, critical engagement.

Table 4: Sustainable agriculture statements with a socio-economic focus as a percentage of the total number of statements

Socio-economic vision statements		Socio-economic detailed statements	
NCS n=57	CAPS n=89	NCS n=57	CAPS n=89
14%	2%	8%	2%

Question 2: To what extent are the knowledge and cognitive processes aligned to the philosophies of ESA?

The knowledge requirements in the NCS (DOE, 2003; 2008a; 2008b) were spread over Bloom's Revised Taxonomy with a heavier weighting towards the middle and lower end. In contrast to this, the CAPS (DBE, 2011b) shows a noticeable shift down the hierarchy, with almost double the percentage of knowledge statements at the lowest level cognitive process 'remember' compared to the NCS (DOE, 2003; 2008a; 2008b). In the CAPS (DBE, 2011b) there is substantially less spread into the higher levels of the taxonomy. These findings are elaborated on below.

The spread of knowledge requirements in the NCS (DOE, 2003; 2008a; 2008b) showed heavier weighting towards the middle and lower end of the Taxonomy. The largest proportion of knowledge statements (30%) required no more than remembering factual knowledge. This was followed by understanding conceptual knowledge (23%) and applying procedural knowledge (21%). There were some requirements to work at top three cognitive levels (16%). Metacognitive knowledge (knowledge of one's own learning processes) barely occured in the NCS (DOE, 2003; 2008a; 2008b).

Table 5: Percentage of statements assigned to each category of Bloom's Revised Taxonomy of Knowledge for NCS (DOE, 2003; 2008a; 2008b) for Agricultural Sciences 2003 and 2008 (n = 411 statements)

	The Cognitive Process Dimension					
The Knowledge Dimension	1. Remember	2. Understand	3. Apply	4. Analyse	5. Evaluate	6. Create
A. Factual Knowledge	30	1	0.2	0.2		
B. Conceptual Knowledge	14	23	1.7	6	6	2
C. Procedural Knowledge	0.2	5	21	1	1	0.2
D. Metacognitive Knowledge		0.2				
Totals	44.2	29.2	22.9	7.2	7	2.2

In contrast, the CAPS (DBE, 2011b) shows a clear shift down the taxonomy, with 87% of knowledge statements in the CAPS (DBE, 2011b) at the lowest level cognitive process 'remember' compared to 44% in the NCS (DOE, 2003; 2008a; 2008b). Fifty-five pecent of statements require no more than remembering factual knowledge. Twenty-four require remembering Conceptual Knowledge and 8% require remembering Procedural Knowledge. The CAPS (DBE, 2011b) substantially decreases the emphasis on the cognitive process of 'understanding' with only 2% of statements falling in this category. The application of Procedural Knowledge declines from 21% in the NCS (DOE, 2003; 2008a; 2008b) to 8% in the CAPS (DBE, 2011b). There is substantially less spread into the three highest cognitive processes (2%). Metacognitive knowledge in the CAPS (DBE, 2011b) is at an even lower level than in the NCS (DOE, 2003; 2008a; 2008b).

Table 6: Percentage of statements assisgned to each category of Bloom's Revised Taxonomy of Knowledge for the CAPS (DBE, 2011B) for Agricultural Sciences (n = 1068 statements)

	The Cognitive Process Dimension					
The Knowledge Dimension	1. Remember	2. Understand	3. Apply	4. Analyse	5. Evaluate	6. Create
A. Factual Knowledge	55	0.1	0.0	0.0	0	
B. Conceptual Knowledge	24	2	2.8	0.5	0.2	0.1
C. Procedural Knowledge	8	0.1	6	1.1	0.1	0.3
D. Metacognitive Knowledge	0	0.1	0.0	0.0	0.1	
Totals	87	2.3	8.8	1.6	0.4	0.4

The relationship between the knowledge and cognitive processes and philosophies of ESA is explored in 'Discussion and Implications'.

Question 3: To what extent are the stated purposes and assessment aligned to sustainable agriculture and philosophies underpinning ESA?

Neither curriculum provides a clear statement of purpose. Both include a list of complex statements supporting a vision of sustainable agriculture including socio-economic issues. However, the dominant knowledge requirements in these statements align both curricula with traditional formalistic education rather than the progressive philosophies of ESA. The learning outcomes, found in the NCS (DOE, 2003; 2008a; 2008b), (but not included in the CAPS (DBE, 2011b) played a more important role than the stated purpose as they were linked to assessment standards and content. These contained higher knowledge requirements consistent with ESA but remained at the level of vision.

The NCS (DOE, 2003; 2008a; 2008b) provided nine detailed statements of purpose. Four statements addressed sustainable agriculture issues including ethics, environmental care and humane animal treatment; two statements addressed industrial agriculture and seven statements addressed socio-economic issues (DoE, 2003). Knowledge requirements were at a low level with six statements requiring the lower cognitive process of 'understanding' ; two statements requiring agricultural production skills ('application') and one statement focusing on scientific skills (apply, analyse, evaluate). The CAPS (DBE, 2011b) contains five simplified versions of the NCS (DOE, 2003; 2008a; 2008b) statements of purpose with a similar emphasis.

Table 8: Statements of purpose

NCS (DOE, 2003; 2008a; 2008b): Through the study of Agricultural Sciences, learners will:	CAPS (DBE, 2011b): In Agricultural Sciences learners
• develop awareness of national priorities such as food security, sustainable livelihoods and the alleviation of poverty, considering both subsistence and commercial farming practices, as well as cultural, aesthetic and ethical issues within plant and animal production	
• develop an awareness of the management and care of the environment, natural resources and the humane treatment of animals through application of science and related appropriate technology, with responsibility towards the environment and for the health and well-being of all in South Africa;	Develop an awareness of the management and care of the environment, natural resources and the humane treatment of animals through application of science and related technology;
• develop problem-solving mechanisms within the contexts of agricultural production, processing and marketing practices;	Develop problem-solving mechanisms within the contexts of agricultural production, processing & marketing practices;
• be aware of the social and economic development of the society at large through personal development in commercial and subsistence farming enterprises by communicating, by working effectively in groups, and by being creative and innovative;	Be aware of the social and economic development of the society at large through personal development in commercial and subsistence farming enterprises;
• become informed and responsible citizens (knowledge and skills) in the production of agricultural commodities (while managing natural resources), caring for the environment (attitudes and values) and addressing social justice issues;	Become informed and responsible citizens in the production of agricultural commodities, caring for the environment and addressing social justice issues; and
• be aware of agricultural indigenous knowledge and practices through understanding agricultural science in historical and social contexts;	Be aware of agricultural indigenous knowledge and practices through understanding agricultural sciences in historical and social contexts.
• develop an awareness of gender inequity and other imbalances that exist in the agricultural industry, encouraging meaningful participation of female learners and learners with special educational needs;	
• develop social and personal skills through understanding ethical and responsible agricultural practices in the production and processing of food and fibre and caring for crops and animals; and	
• acquire value through having access and the opportunity to succeed in lifelong education and training.	

The NCS (DOE, 2003; 2008a; 2008b) also contained four learning outcomes which were the framework around which the curriculum was structured. Assessment standards and content were based on the learning outcomes which thus carried more weight than the statements of purpose. All four outcomes included a vision of sustainable agriculture and there was some focus on social issues. They had higher knowledge requirements than the statements of purpose, with all four requiring the cognitive process of 'Understanding', three requiring agricultural skills development ('Apply') and three requiring learners to 'Analyse'. However, while the learning outcomes appeared to be more strongly aligned to ESA, they remained at the level of vision, and were not translated into detailed statements.

The stated purpose of assessment in the NCS (DOE, 2003; 2008a; 2008b) focused on whether learners understood "the application of technology" in agricultural production (DOE, 2008b, p.7) and indicated a low cognitive demand not consistent with strong ESA. The CAPS (DBE, 2011b) does not state a purpose for assessment.

The formal assessment requirements ultimately guide the teaching process. The annual assessment requirements are similar in both curricula but are more detailed in the CAPS (DBE, 2011b) (see Table 9). Both curricula derive the year mark from school based assessment (SBA) (25%) and final examinations (75%). Although the CAPS (DBE, 2011b) describes progressive approaches for formal assessment tasks: "science investigative skills. . . hands-on activities or hypothesis testing. . . practical investigations in groups, individually or as a teacher/learner demonstration" (DBE, 2011a, p. 65), it must be noted that only 15% of the SBA in the CAPS (DBE, 2011b) is based on practical tasks, as opposed to tests or examinations. The NCS (DOE, 2003; 2008a; 2008b) did not specify what percentage of the SBA should be practical tasks. The NCS (DOE, 2003; 2008a; 2008b) specified a mandatory 'Performance Assessment Task' focused on the application of agricultural skills and knowledge outside the classroom. SBA tasks are more strongly specified in the CAPS (DBE, 2011b) and include a mandatory practical scientific investigation, but there is no requirement for any agricultural field practicals. All tasks in the CAPS (DBE, 2011b) may take place in the classroom, laboratory or in the community. In the NCS (DOE, 2003; 2008a; 2008b) there was a mandatory requirement for a practical agriculture task as part of the SBA. Developing skills in practical agriculture, plays an important role in ESA, particularly at the strong end of the continuum.

Table 9: Assessment requirements in NCS (DOE, 2003; 2008a; 2008b) and CAPS (DBE, 2011b)

NCS 2003/8 Assessment requirements		CAPS Assessment requirements	
Grade 10/11	Grade 12	Grade 10/11	Grade 12
School based Assessment (25%) 2 tests 1 examination 3 tasks (projects, practical investigations, simulations or research projects)	**School based Assessment** (25%) 2 tests 2 examinations 3 tasks (assignment, project, research task) Tasks include a practical agriculture Performance Assessment Task	**School based Assessment** (25%) 2 tests 1 examination (10%) 3 tasks: practical, assignment and research project (15%) Tasks include a compulsory practical scientific investigation	**School based Assessment** (25%) 3 tasks: 2 practicals and 1 assignment (15%) 2 Tests (2.5%) 2 exams (7.5%) Tasks include a compulsory practical scientific investigation
Final Assessment (75%): End of year examination	External examination (75%)	**Final Assessment** (75%) End of year examination	External examination (75%)

Suggestions for practical assessment tasks in the NCS (DOE, 2003; 2008a; 2008b) included a survey of eating habits, a debate on land distribution and creating a food garden to research abiotic factors. There were tasks to explore sustainable agriculture issues e.g. comparing traditional and industrial agriculture. The CAPS (DBE, 2011b) task suggestions include exploring climate change and agriculture. Both curricula suggest outdoor agricultural activities such as food gardens and farm visits in the NCS (DOE, 2003; 2008a; 2008b). The CAPS (DBE, 2011b) suggests a grass collection, making compost and identifying soil horizons. Both curricula include scientific practicals such as microscope work in the NCS (DOE, 2003; 2008a; 2008b) and animal dissection and soil sample analysis in the CAPS (DBE, 2011b). Daily assessment in the NCS (DOE, 2003; 2008a; 2008b) showed commitment to scientific skills development, requiring learners to "master their scientific inquiry, problem-solving, critical thinking and application of knowledge competencies" and to conduct practical scientific experiments (DOE, 2008b, p.7). Daily assessment in the CAPS (DBE, 2011b) includes "observations, discussions, practical demonstrations, learner-teacher

conferences, informal classroom interactions" (DBE, 2011a, p.64). However, these are suggestions not requirements as the daily assessment is informal and does not count towards the final mark in either curriculum.

Discussion and implications of the findings

The lack of consensus around the purpose of Agricultural Sciences in South African schools is reflected in the NCS (DOE, 2003; 2008a; 2008b) and the CAPS (DBE, 2011b). Different perspectives from the Departments of Agriculture and Education include preparation for tertiary education, agricultural careers, self-employment on one side and a generalist education on the other. The lack of clear purpose leads to tension within both curricula. Both curricula show a mismatch between statements of purpose strongly supporting sustainable agriculture, in its broader socio-economic context and the lack of critique of industrial agriculture as well as few requirements for hands-on learning.

In 2001, 91% of schools offering Agricultural Sciences were previously black secondary schools, mostly in the rural former homelands (Paterson, 2004). These schools do not have an agricultural focus, agricultural resources and have few teachers with agricultural skills. Specialised agricultural schools are available for very few learners. For some students, Agricultural Sciences provides a generalist education as preparation for tertiary education. However, a large proportion of matriculants are unlikely to find full employment or a place in further education. The challenge for the curriculum is, how, in the face of the constraints described above, to awaken in learners an interest in and love of agriculture, leading to the development of useful skills in small-scale agriculture, in order to supplement their livelihoods.

Although the CAPS (DBE, 2011b) does not insist on the inclusion of practical agriculture, the assessment component suggests, supports and provides space for practical hands-on learning using higher cognitive processes aligned to ESA. However, it is possible for the CAPS (DBE, 2011b) Agricultural Sciences to be taught entirely within the classroom with no hands-on engagement with agriculture, if the teacher is so inclined. The concern here is that unless teachers are either highly motivated or compelled to do practical agriculture, they are likely to favour easier forms of teaching towards the type of assessment required in the final examinations.

Neither curriculum explicitly supports industrial agriculture, but this is the default approach underlying both curricula. The NCS (DOE, 2003; 2008a; 2008b) vision of sustainable agriculture was poorly supported with detailed content or strategies. The strength of the CAPS (DBE, 2011b) is that while it has little vision of sustainable agriculture it provides more depth and detail on foundational ecological knowledge and sustainable agriculture methods than the NCS (DOE, 2003; 2008a; 2008b). This supports critiques of the NCS (DOE, 2003; 2008a; 2008b) that it was visionary but not located in reality. The CAPS (DBE, 2011b) makes fewer unrealistic claims and has a more detailed, structured approach to factual knowledge, indicating a shift from the political and rhetorical nature of the NCS (DOE, 2003; 2008a; 2008b).

Text books and teaching based on the CAPS (DBE, 2011b) are likely to focus strongly on traditional agriculture disciplines including some sustainable agriculture strategies, but are not likely to provide a holistic critique of the industrial agriculture system including socio-economic aspects. Aspects of this critique were included in the NCS (DOE, 2003; 2008a; 2008b) but were weakly supported with detailed content.

The educational philosophies (progressive and humanist, radical) underlying strong ESA require higher levels of knowledge and cognitive processes in order to generate both the practice and development of sustainable agriculture. The shift down the hierarchy of knowledge and cognitive processes in the CAPS (DBE, 2011b) compared to the NCS (DOE, 2003; 2008a; 2008b) indicates a shift away from the education philosophies underlying strong ESA. Conceptual knowledge is required to engage with systems thinking and critique e.g. *understanding human actions within natural ecosystems; understanding the global food system*. Procedural knowledge is required for practical agriculture and scientific experimentation and metacognitive knowledge to engage meaningfully with environmental ethics and for personal growth and positioning. Higher order cognitive processes such as apply, analyse and evaluate are required for scientific and experimentation skills, while problem-solving can require the highest cognitive process of creating new knowledge. Radical philosophy shifts away from an established curriculum and knowledge transfer and engages with multiple perspectives, critical reflection and the need for new, personalised knowledge. It draws on the highest knowledge levels: metacognition and analyse, evaluate and create.

The CAPS (DBE, 2011b) does not *require* teachers to move beyond formalist transmission teaching. While the use of higher order cognitive processes is desirable in school education (Krathwohl, 2010) there are arguments, that formalist pedagogy based on discipline knowledge, is more effective for disadvantaged learners than progressive pedagogy in the hands of unskilled teachers (Guthrie, 2013). The CAPS (DBE, 2011b) presents a shift away from the progressivism of the NCS (DOE, 2003; 2008a; 2008b) which proved difficult to implement with many teachers left floundering. Given the shortage of skilled Agricultural Science teachers, the CAPS (DBE, 2011b) offers more detailed support than the NCS (DOE, 2003; 2008a; 2008b) by providing fundamental knowledge required for sustainable agriculture.

Conclusion and recommendations

In many ways the CAPS (DBE, 2011b) provides a stronger foundation for sustainable agriculture, than the more visionary NCS (DOE, 2003; 2008a; 2008b). The focus on traditional agricultural disciplines in the CAPS (DBE, 2011b) provides basic ecological knowledge as well as some sustainable agriculture strategies. It is more strongly grounded in details than the NCS (DOE, 2003; 2008a; 2008b) which struggled to put the vision of education for sustainable agriculture into practice. The assessment in the CAPS (DBE, 2011B) B provides and describes opportunities for higher order cognitive processes found in practical work, experimentation and discussions.

Without further curriculum change, in-service and pre-service teacher education would be the best point of leverage, for supporting sustainable agriculture in the CAPS (DBE, 2011b). The goal should be to develop the discipline knowledge, and pedagogic and agricultural skills of Agriculture Sciences teachers.

The Agricultural Sciences CAPS (DBE, 2011b) could help improve the livelihoods of the many learners who will not study further or find full time employment by including practical agriculture. Low cost, sustainable agricultural skills can be taught to both pre-service and in-service teachers, by tapping into the expertise found in numerous NGOs and NPOs, who have been practicing these approaches for decades, rather than government agricultural departments. It would require agricultural training and demonstration centres where such agriculture can be practised and taught. This

learning could be combined with a holistic focus which engages broadly with the socio-economic aspects of industrial and sustainable agriculture in order to empower teachers to engage critically with global food systems.

Ideally teachers need to promote higher order learning amongst learners. Teachers need to personally experience such progressive pedagogies where they themselves are required to question, reflect, problem-solve and learn independently. Teacher education needs to practice and teach such approaches. Such learning has greater potential to generate the emotional engagement and critical thinking that would enable teachers to teach the CAPS (DBE, 2011b) curriculum in a more meaningful way. This would require no deviation from the content, but would elevate the cognitive processes beyond the lowest level of 'remember.'

If curriculum changes are a possibility, a single mandatory practical agricultural task should be included alongside the mandatory science task. This adjustment should go hand in hand with teacher development in small-scale agriculture. Mandatory assessment requirements for practical agriculture will work backwards to ensure that practical agriculture is included in teaching.

The CAPS (DBE, 2011b) for Agricultural Sciences has the potential to support education for sustainable agriculture and make a meaningful contribution to rural livelihoods and food security. The future lies in building up the teachers, not in changes to the curriculum.

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Appendix A

Operationalising coding for Question 1: sustainable or industrial agriculture?

Level 1: A statement provides a broad vision of industrial or sustainable agriculture.

Level 2: A statement provides a specific strategy or detailed content for industrial or sustainable agriculture.

Table 10: Levels of coding for type of agriculture

Level 1	Industrial Agriculture		Sustainable agriculture	
Level 2	Vision statement	Detailed statement	Vision statement	Detailed statement

Criteria for industrial agriculture

Industrial agriculture is driven by profit and high yields through efficiency, the simplification of ecological systems, mechanisation and synthetic inputs. Environmental and social impacts are viewed as externalities, outside the responsibility of the farmer.

For example:

Industrial Agriculture (vision statement)

"Agricultural Sciences aims to expose learners to the various principles in the production of food whether for subsistence or profit" (DOE 2008a, p.8)

Level 1: The word 'profit' indicates that the statement refers to industrial agriculture.

Note: subsistence agriculture should not be equated with sustainable agriculture.

Level 2: The statement provides specific detail or strategies rather than. A broad vision

Industrial Agriculture (detailed statement)

"Factors to increase animal production under intensive farming (broiler production): Nutrition/feeding; (DBE, 2011a: 49).

This statement refers to intensive animal production, a strategy of industrial agriculture and provides detailed content.

Criteria for sustainable agriculture

Sustainable agriulture refers to alternatives to industrial agriculture. It includes the incorporation of conservation strategies into industrial agriculture and attempts to transform the global food system using alternative methods of agriculture, processing and marketing.

Sustainable agriculture (vision statement)

"Understand and analyse the relationship between human rights, inclusivity, a healthy environment and social justice in sustainable agricultural production" (DOE, 2003, p.25).

Level 1: This statement refers to the concept of sustainable agriculture.

Level 2: The statement provides a broad vision rather than specific detail.

Sustainable agriculture (detailed statement)

"conservation of agricultural resources (soil, water and natural vegetation) and management of the environment" (DOE, 2003, p. 10).

Level 1: This is coded as 'sustainable agriculture'

Level 2: This statement is coded as a detailed statement.

Operationalising coding for Question 2: knowledge dimensions and cognitive processes

The knowledge dimension is identified from the noun or noun phrase. The cognitive process is identified from the verbs that qualify the knowledge dimension (Krathwohl, 2010).

For example:

"The subject Agricultural Sciences should equip individuals with the knowledge and necessary skills to enable them to make sound decisions based on the principles of sustainable agriculture and living". (DOE, 2008a, p.8)

I consider the noun phrase 'knowledge and necessary skills' in order to determine the knowledge dimension. I classify these as factual knowledge (knowledge) and procedural knowledge (skills).

I consider the verbs used in relation to the knowledge dimension: "equip individuals to enable them to make sound decisions". I classify these verb phrases as 'Understanding' (determining the meaning of communication) and 'Applying' (carrying out a procedure). The higher cognitive process of 'apply' subsumes the lower process of 'understanding'.

These are coded in the table below:

Table 11: Blooms Revised Taxonomy of Knowledge

	1. Remember	2. Understand	3. Apply	4. Analyse	5. Evaluate	6. Create
The Knowledge Dimension						
A. Factual Knowledge			x			
B. Conceptual Knowledge						
C. Procedural Knowledge			x			
D. Metacognitive Knowledge						

When statements contain procedural knowledge without indicating whether learners should perform the process or simply memorise it, I code it as 'Remember' rather than 'Apply'. For example:

"Ways to determine, calculate and interpret the bulk density of a soil" (DBE, 2011a, p.34) is classified as 'Remember" because there is no requirement for learners to apply the process. However: "A practical identification of topsoil and subsoil horizons" (DBE, 2011a, p. 35) indicates that the learners are required to apply a procedure and I code this as 'Apply'.

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Exploring the recontextualisation of biology in the CAPS for Life Sciences

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Abstract

This study is concerned with the recontextualisation of biology in the most recent version of the South African Life Sciences curriculum, the CAPS (Curriculum and Assessment Policy Statements). The following aspects of the curriculum were assessed: the balance of canonical and humanistic material, the inclusion and weighting of the core concepts of biology, and the overall curriculum coherence. The results were compared with those for earlier versions of the curriculum, and the implications for South African students are considered. The study reveals that, according to these criteria, the content material of the CAPS faithfully reflects the hierarchical nature of its parent discipline biology.

Introduction

Since 1994, researchers, policy makers and practitioners have been grappling with how best to transform the education system in South Africa in order to realise the goal of social justice. Outcomes-based education, exemplified by Curriculum 2005, was initially touted as the means to this end and was a deliberate move away from the positivist nature of apartheid curricula. The disastrous consequences of this approach in terms of learner performance led to a series of curricular reviews, resulting in several versions of the National Curriculum Statement, the most recent being the Curriculum and Assessment Policy Statements (CAPS). The subject of this study is the CAPS for Life Sciences.

As someone whose life's work was driven by a deep concern for social justice, Basil Bernstein developed a sociology which has informed educational research in many contexts worldwide (e.g. Moore, Arnot, Beck and Daniels, 2006; Neves and Morais, 2001), as well as in post-apartheid South Africa (e.g. Bertram, 2008, 2009, 2012; Green and Naidoo, 2006; Hoadley, 2005; Johnson, 2009; Nsubuga, 2008). Bernstein's concepts of the

recontextualisation of knowledge in the pedagogic device, knowledge classification and hierarchical knowledge structures provide the framework for this study, while Schmidt, Wang and McKnight's (2005) concept of curriculum coherence suggested a method for applying some these concepts to the curriculum. In the context of their application to the SA curriculum, these concepts have been elaborated on in some detail elsewhere (Johnson, Dempster and Hugo, 2011) and will be described only briefly here.

Conceptual framework

The recontextualisation of knowledge in the pedagogic device relates to the movement of knowledge from the field of production in tertiary academic institutions to the field of reproduction in schools, via the official recontextualising field of the curriculum (Bernstein, 1990). Knowledge is transformed as it moves through these fields of practice and is subject to the influence of the ideologies of agents of and stakeholders in curriculum construction; as a result, a school subject is different from its parent discipline. If the differences are too great, the ability of schools to reproduce specialised knowledge will be undermined, and learners – particularly those from disadvantaged backgrounds – will not be inducted successfully into the formal knowledge of the discipline (Muller, 2007).

Knowledge classification refers to the strength of the boundary between such formal disciplinary knowledge and everyday knowledge (Bernstein, 1996). In strongly classified knowledge systems the differences between formal and everyday knowledge are made explicit, and knowledge progresses from concrete examples to more abstract general principles or core concepts. According to Bernstein, strongly classified knowledge is more highly valued by society and thus empowers those learners who are inducted into its realms (Hasan, 2004).

This is particularly regarded as true for what Bernstein referred to as hierarchical knowledge structures, exemplified by the natural sciences including biology (Bernstein, 1996, 1999). Hierarchical knowledge structures are shaped by an internal logic (Christie, 2007) towards increasingly general theories or propositions which serve to integrate the knowledge of the discipline. Within biology, for example, the theory of evolution is widely

regarded as the principle which integrates and makes sense of all other aspects of the discipline (e.g. Dobzhansky, 1973; Gould, 2002; Mayr, 2001)

Curriculum coherence was a concept utilised by Schmidt, Wang and McKnight (2005) to assess science content standards in the United States. The authors argued that in order to facilitate students' understanding of the subject matter of a hierarchical knowledge structure such as science, the curriculum must be coherent. By this they mean that foundational knowledge should be laid down before new topics are introduced, that the knowledge content must progress from particulars to deeper structures or from more concrete to more abstract knowledge, not simply be repeated from grade to grade, and that sensible connections should be made between topics both within and between grades. These principles can serve as criteria for assessing how faithfully hierarchical knowledge structures are recontextualised in a curriculum.

Science curriculum revision

Arguably one of the most revised curricular areas (Donnelly, 2006), science as a school subject (incorporating biology/life sciences) has tended to shift in emphasis over time and place between its more 'pure' and 'applied' forms, variously expressed as a pendulum swing between a 'science of life' versus a 'science for living' (Rosenthal and Bybee, 1987), 'science for future scientists' versus 'science for all' (Bennett, 2003) or a 'traditional/canonical' versus 'humanistic' approach (Aikenhead, 2006; Johnson, 2009). The traditional/canonical approach could be seen to equate to a strongly classified knowledge system *sensu* Bernstein (1996), while the humanistic approach would equate to a weakly classified knowledge system.

Shifts between the two emphases have typically reflected both the dominant educational ideology of the day (Rosenthal and Bybee, 1987), as well as the priorities of the agents of and stakeholders in curriculum construction (e.g. Barberá, Zanón and Pérez-Plá, 1999). Consensus has not been reached as to which emphasis better serves the needs of the learner and the cause of social justice, with Aikenhead (2006) for example arguing in favour of a more humanistic approach, and Donnelly (2006) arguing for a more traditional approach.

The Biology/Life Sciences curriculum in post-apartheid South Africa

The biology curriculum in post-apartheid South Africa (i.e. for Grades 10–12, known as Life Sciences since 2006) has been subjected to a series of revisions (Dempster and Hugo, 2006; Doidge, Dempster, Crowe and Naidoo, 2008; Johnson *et al*., 2011). The Interim Core Syllabus of 1996 (KwaZulu-Natal Department of Education and Culture, n.d.) was replaced by the National Curriculum Statement (now known as the NCS 1; DoE, 2003) in 2006, and the NCS content specifications (for Life Sciences only) were reworked and promulgated as a 'new curriculum framework' (now known as the NCS 2) in 2007 (DoE, 2007). Johnson (2009; see also Johnson *et al*., 2011) performed a comparative analysis of the content specifications of these three versions through the lenses of Bernstein's concepts of hierarchical knowledge structures and the recontextualisation of knowledge in the pedagogic device, the balance of canonical versus humanistic biology, and the degree of coherence within the subject matter. The analysis was used to try to assess whether each successive revision represented an improvement on the previous version in terms of how faithfully the curriculum reflected its parent knowledge structure. The conclusion was reached that of the three versions, the NCS 2 had achieved this most successfully.

The NCS 2 was short-lived; however. In July 2009, the new Minister of Basic Education appointed a panel of experts to investigate the many complaints regarding shortcomings in the implementation of the NCS (DoE, 2009; Umalusi, 2014). One of the main areas of concern was the proliferation of curriculum policy and guideline documents. The result of this process was the development of the Curriculum and Assessment Policy Statements (the CAPS; DBE, 2011), which were intended to replace the multiplicity of curriculum documents with a single document per subject to guide teaching and assessment. The CAPS were implemented in Grade 10 in 2012, and were examined in the National Senior Certificate for the first time in 2014.

The CAPS for Life Sciences has already been subjected to scrutiny. Mnguni (2013) investigated the Grade 11 Life Sciences curriculum according to Schiro's (2008) four categories of curriculum ideology. Umalusi (the Council for Quality Assurance in General and Further Education and Training) undertook an in-depth study of the entire curriculum in order to establish its strengths, weaknesses and overall quality, and to make recommendations for

its improvement to the Department of Basic Education and Training (Umalusi, 2014). The specific intention of the present study is to examine the relationship between the content specifications in the CAPS for Life Sciences and the parent knowledge structure of biology, according to the criteria established in Johnson's (2009) study, namely the balance of canonical versus humanistic biology, the inclusion and weighting of biology's core concepts, and the coherence of the subject matter. These results are placed in context by comparing them with those found for the three previous versions, namely the ICS, NCS 1 and NCS 2, in order to assess whether the CAPS represents a further improvement on the NCS 2 in terms of how biology as a hierarchical knowledge structure has been recontextualised in this latest version of the Life Sciences curriculum.

Methods

The material analysed was the content specifications of all three grades in the Curriculum and Assessment Policy Statement Grades 10–12: Life Sciences (hereafter known as the CAPS) (DBE, 2011; pp.10–65). In the curriculum these are listed grade by grade, using four 'knowledge strands' (*Life at the molecular, cellular and tissue level*, *Life processes in plants and animals*, *Environmental studies*, and *Diversity, change and continuity*) as organising devices. Within each knowledge strand, the content appears under the column headings *Time*, *Topic, Content, Investigations* and *Resources*. For the purposes of this study, only the text in the *Topic, Content* and *Investigations* columns was analysed. The methods used to analyse the CAPS were the same as those used in the previous study in order for valid comparisons to be made between the curricula (Johnson *et al*., 2011) and will be described below.

The text in the *Content* and *Investigations* columns was divided into 'statements' – one or more sentences, phrases or words which deal with a unit of information – and imported into separate rows in an Excel spreadsheet. The statements were then assigned to two sets of predetermined categories using a numerical code. The initial analysis coded the statements as being either 'canonical' (pertaining to canonical biological knowledge, or the development of skills which could be regarded as being specifically related to science) or 'humanistic' (pertaining to the development of more generic skills, or to applications, attitudes and values, and science as a human enterprise). Appendix 1 elaborates on criteria used to assign statements to either canonical

or humanistic biology, and provides examples of how various statements in the curricula were coded.

A second analysis coded the canonical statements according to seven broad themes in biology, namely *Life at the molecular and cellular level*, *Inheritance*, *Evolution*, *Diversity*, *Plant structure and functioning*, *Animal structure and functioning* and *Ecology*. These themes were previously established as basic categories which represent core concepts in biology in the field of knowledge production (see Johnson, 2009 or Johnson *et al*, 2011). Appendix 2 lists topics which may be incorporated within each theme. The weighting of each theme was determined by calculating the number of statements related to each theme as a percentage of the total number of canonical biology codings. In this analysis, only the statements regarded as canonical knowledge were included, and not those relating to the development of scientific skills.

In order to assess the coherence of the subject matter, the text was then mapped grade by grade (after the draft concept maps of Project 2061's *Atlas of Science Literacy,* 2006), with the four Knowledge Areas forming columns on the maps. This serves to provide a clear visual representation of conceptual progression, the extent to which topics are connected, and whether or not there is repetition of material from grade to grade. Topics (i.e. those listed in the *Topic* column in the curriculum) were placed into individual boxes, which were joined by solid lines if connections between them are explicitly stated in the curriculum (for example, 'link to tissues', p 25). If, according to our judgment, the topics are connected but this connection is not explicitly stated, the boxes were joined by broken lines.

Results

In the case of the first two analyses, the results obtained for the CAPS are given alongside those previously obtained for the ICS, NCS 1 and NCS 2 (Johnson *et al*., 2011) in order to facilitate comparisons between the curricula. In the case of the conceptual progression map, only that for the CAPS is included here. The maps for the other three curricula can be found in Johnson *et al.* (2011).

Balance of canonical and humanistic biology

Four hundred and twenty-two statements were identified in the CAPS. Of these, 296 (70.1%) were coded as *canonical* and 126 (29.9%) as *humanistic*.

If this result is compared with those previously obtained for the ICS, NCS 1 and NCS 2 (Johnson, 2009), the following trend is revealed (see Figure 1):

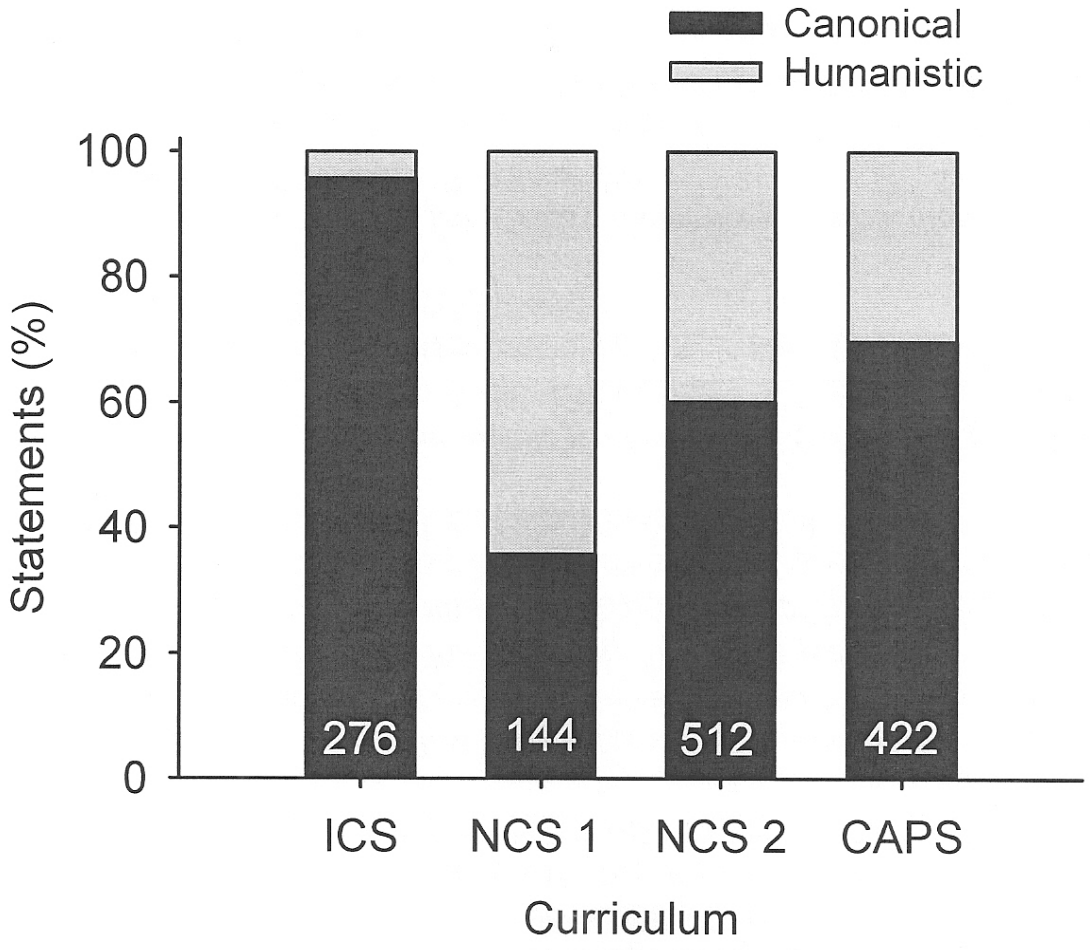

Figure 1: Relative percentages of canonical and humanistic biology statements in four consecutive versions of the South African Life Sciences curriculum. The number at the base of each bar represents the number of statements coded in each curriculum. (Results for the ICS, NCS 1 and NCS 2 from Johnson *et al.*, 2011).

Weighting of core themes in biology

Table 1 below shows the weighting of the seven core themes in biology within the text identified as 'canonical'. In this analysis, only the statements regarded

as canonical knowledge were included and not those relating to the development of scientific skills. This explains why the number of statements coded (245) in the case of the CAPS is less than that for all canonical statements (296).

Table 1: Weighting (%) of canonical biology themes in four consecutive versions of the South African Life Sciences curriculum (n = number of canonical statements coded)

Theme	ICS (n = 265)	NCS 1 (n = 52)	NCS 2 (n = 310)	CAPS (n = 245)
Life at the molecular and cellular level	13	13.3	16.2	23.7
Inheritance	7.6	6.7	7.2	8.6
Evolution	0	20	9.6	13.5
Diversity	29.8	4.4	13.4	10.6
Plant structure and functioning	5.9	6.7	10.3	6.9
Animal structure and functioning	34.9	20	33.3	25.3
Ecology	8.8	28.9	10	11.4

Curriculum coherence

Figure 2 shows the result of the mapping of the content topics in the CAPS. Note that only the text under the column heading *Topic* in the CAPS was included on the map due to space constraints. Solid lines connecting the topics boxes mean that connections are explicitly referred to in the curriculum: the directive "link to. . ." (for example "link to nutrition and Grade 9", p.23) is given over 40 times in the content specifications. Broken lines connecting topic boxes indicate that, even though no specific directives have been given, the topics are connected according to our judgment. For example, we have connected *DNA: the code of life* to the topic *Meiosis* which in turn we have connected to *Genetics and Inheritance*, as the former two topics provide the foundational knowledge required for the latter two.

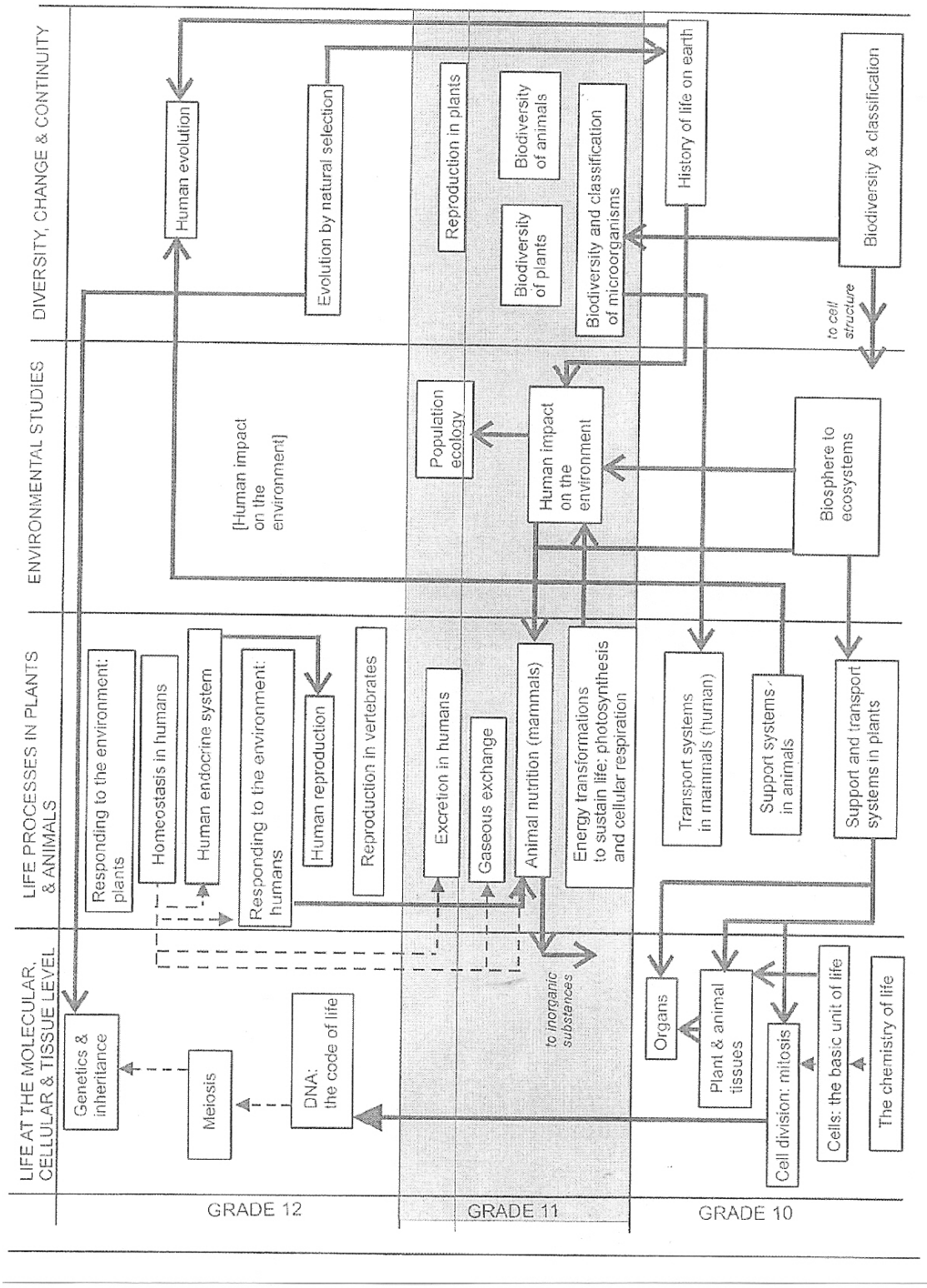

Figure 2: Coherence of canonical content material in the CAPS for Life Sciences

Discussion

This study has examined the content specifications of the CAPS for Life Sciences according to three criteria – the balance of canonical versus humanistic biology, the inclusion and weighting of seven core themes in biology, and the coherence of the curriculum. These criteria were employed as tools for assessing the relationship between biology as the parent knowledge structure and the knowledge in the official recontextualising field, represented by the CAPS. The results were compared with those found for the three previous versions of the Life Sciences curriculum implemented in South Africa since 1994 (Johnson *et al.*, 2011).

The balance of canonical versus humanistic biology (Figure 1) provides an indication of the strength of the boundary between formal and everyday knowledge in the curriculum. The ICS, based as it was on the 'Christian National Education'-inspired, 'white' South African biology curriculum, showed extremely strong knowledge classification in containing almost no humanistic content (4%). Curriculum 2005, governed by the philosophy of outcomes-based education (OBE), deliberately collapsed the boundaries between formal and everyday knowledge on the premise that this would best serve the social justice imperative; however, it was shown that this had the opposite effect in increasing rather decreasing inequalities in terms of educational performance between advantaged and disadvantaged students (Chisholm, 2000; Muller, 2000). Nevertheless, the NCS 1, implemented in 2006, was still governed by the principles of OBE and contained only 36.1% canonical biology content, indicating that the knowledge it contained was weakly classified.

The revision of the content in the NCS 2, and now the CAPS, has shown a trend back towards a more strongly classified knowledge system. The NCS 2 practically reversed the canonical/humanistic ratio of the NCS 1 by increasing the canonical content to 60.5%, while the present analysis reveals that the proportion of canonical content material has been increased even further in the CAPS, to 70.1%. This was also noted by Mnguni (2013) in his study on the balance of curriculum ideologies in the CAPS for Life Sciences, Grade 11. He found that a multi-curriculum ideology has been adopted in the CAPS, with *scholar academic* (roughly equivalent to canonical in the terminology of this study, though relating more to teaching and learning) and *student-centered* (more closely aligned to humanistic, but relating more to methods of

teaching and learning than content) ideologies dominating and the *social reconstruction* ideology (strongly humanistic) the least in evidence.

The assessment of the weighting of core themes in biology (Table 1) provides a means of comparing knowledge in the curriculum with that in the parent discipline, as the themes were originally derived from sources in the field of production (the writings of biological philosopher Ernst Mayr, interviews with two biology professors and an analysis of two tertiary level textbooks; see Johnson, 2009 for details). In the CAPS *Animal structure and functioning* is weighted the most, but has decreased from one third (33.3%) of the material in the NCS 2 to just over one quarter (25.3%) of the material in the CAPS. The theme *Life at the molecular and cellular level* has increased from 16.2% in the NCS 2 to 23.7% in the CAPS. All other themes in the CAPS have not deviated by more than 4% above or below their levels in the NCS 2. *Plant structure and functioning*, at just 6.9% of the content matter, remains underrepresented. In general these results suggest that in the CAPS there has been an attempt to balance the core themes more equally than in previous curricula, especially the ICS and the NCS 1. There had been some dramatic swings in emphasis of the core themes between the ICS and the NCS 1; this was particularly notable in the themes *Evolution* (0% to 20%), *Diversity* (29.8% to 4.4%), *Ecology* (8.8% to 28.9%), and to a lesser extent *Animal structure and functioning* (34.9% to 20%).

The map of the content topics (Figure 2) reveals that the CAPS largely conforms to Schmidt, Wang and McKnight's (2005) concept of curricular coherence. The material prescribed for Grade 10 is mostly foundational; this is particularly evident in the knowledge strand *Life at the molecular, cellular and tissue level* where the material is hierarchical, starting with organic chemistry and continuing to cells, tissues and organs. In the knowledge strand *Diversity, change and continuity* the foundational principles of biodiversity and classification are laid down in Grade 10 and are followed by biodiversity and classification in microorganisms and then of plants and animals in Grade 11. Similarly, the topic history of life on earth in Grade 10 leads to the study of evolution in Grade 12. The CAPS has de-emphasized the concept of body plans that was a vital component in the NCS 2 for laying down the foundations for understanding the theory of evolution in Grade 12. In the knowledge strand *Life processes in plants and animals* the more abstract and hence cognitively demanding topics of photosynthesis and cellular respiration, which had appeared in Grade 10 in the NCS 2, have been moved to Grade 11, swapped with the more 'concrete' topics of support and transport

systems in plants and animals which have moved from Grade 11 in the NCS 2 to Grade 10 in the CAPS.

Conceptual progression rather than simple repetition of topics is another component of curriculum coherence to which the CAPS appears to have complied, unlike the NCS 1 where topics were repeated from grade to grade, particularly in the knowledge areas of *Environmental studies* and *Diversity, change and continuity* (Johnson *et al*., 2011). One apparent exception to this is in the repetition of the topic of human impact on the environment which appears in both Grades 11 and 12, though in fact this is intended to be taught in Grade 11 but re-examined in the final Grade 12 examination. Whereas the NCS 2 taught and examined the canonical knowledge of community and population ecology in Grade 12, the CAPS examines the Grade 11 humanistic topic of human impact on the environment in Grade 12.

The predominance of solid connecting lines between the topic boxes reveals that the architects of the CAPS were concerned to make the links between and within the knowledge strands and grades explicit; this is another of Schmidt *et al.*'s (2005) criteria for a coherent curriculum. This is also in keeping with the nature of disciplinary biological knowledge which, according to Campbell and Reece (2005, p.ix), "is more like a web of related concepts without a fixed starting point or a prescribed path".

Conclusions and implications

Using the criteria established by the conceptual framework of this study, our study suggests that in terms of knowledge classification, the inclusion and balance of biology's core themes, and the coherence of the curriculum, the CAPS for Life Sciences does reflect the hierarchical knowledge structure of its parent discipline biology.

What are the implications of these findings? Following the logic of Bernstein and others (e.g. Maton and Muller, 2007), this should have positive consequences for South African students, inducting them successfully into the powerful knowledge of the discipline of biology. But whether a more canonical or more humanistic approach is more empowering for students remains a matter for debate. Aikenhead (2006) held that a humanistic approach is the best means to foster student self-identity, achievement and empowerment, while Mnguni's (2013) findings led him to conclude that the

Grade 11 CAPS for Life Sciences would serve to advance the discipline, but not empower students in relation to current social challenges.

Assessing these more abstract consequences of a curriculum would be valuable, though challenging. A more direct (though arguably flawed) measure, is to consider student academic performance. In terms of matric results, for example, Table 2 below reveals an interesting trend.

Table 2: Percentage of students who passed the final matric examination with over 40% in four consecutive South African Biology/Life Sciences curricula

Curriculum	Year of matric examination	Percentage of sudents who passed above 40%	Source
ICS Biology	2007 (last year examined)	68	DoE, 2007
NCS 1 Life Sciences	2008 (first year examined)	39	DoE, 2008
NCS 2 Life Sciences	2011 (first year examined)	46.2	DBE, 2014
CAPS Life Sciences	2014 (first year examined)	48.9	DBE, 2014

Numerous factors obviously account for student performance in matric examinations, and direct causation is not intended to be implied here. Nevertheless, it is still interesting to note that the percentage of students who passed with over 40% was highest for the curriculum in which knowledge was the most strongly classified i.e. the ICS, and fell to just 39% in the weakly classified NCS 1. This figure rose to 46.2% for the first year of examination of the NCS 2 and again to 48.9% for the CAPS, in which the proportion of canonical material increased, core concepts were included in reasonably balanced proportions, and curriculum coherence is in evidence. In terms of future study and career opportunities for students, good matric results are certainly empowering, and though a pass rate of only 48.9% is hardly a

cause for celebration, the increasing pass rate for Life Sciences is encouraging.

This is not to conclude that this latest version of the Life Sciences curriculum has reached the end of its revision trajectory, however. While our study has revealed improvements on previous versions according to the criteria we selected, it was conducted at a fairly broad scale. An examination of the content in greater detail (Dempster, Johnson and Griffiths, in prep.; Umalusi, unpublished report) has revealed several problematic aspects in the section on evolution, biology's most integrating proposition and one which still proves challenging for South African teachers (Stears, Clément, James and Dempster, 2014). This section will require attention in future versions of the curriculum.

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APPENDIX 1: Criteria used in categorising statements as being either canonical or humanistic

Category	Elaborations	Examples from the CAPS
Canonical (scientific knowledge and skills)	– scientific facts, concepts, principles, hypotheses, theories and laws – skills, abilities, methods, techniques and processes specifically concerned with the study of science and doing scientific investigations, such as observation, hypothesis formation, data collection and processing, laboratory procedures, and the communication of scientific findings – preparation for future studies and careers in the sciences.	**Grade 10:** • Carbohydrates - monosaccharaides (single sugars), e.g., glucose and fructose (p.24) • Explain and demonstrate how a light microscope works (p.25) **Grade 11:** • Hormonal control of blood sugar levels (p.43) • Composition of inspired air vs. expired air – analyse data (p.47) **Grade 12:** • DNA – location in the cell; chromosomes, genes and extranuclear DNA (p.54) • Perform a simple process to extract DNA and examine the threads (p.54)
Humanistic (generic skills; applications of science to everyday life and society; attitudes and values; science as a human enterprise)	– generic skills such as critical thinking, problem solving, communication and co-operation. – understanding and solving problems regarding the scientific or technological apects of daily life; science as a means for solving problems in society and the environment, as well as the limits of science in solving problems, and the potential for the applications of science and technology to harm the individual and the environment. – attitudes and values such as objectivity, respect for evidence, critical thinking, openness, honesty; the fostering of positive attitudes towards science; satisfying curiosity; promoting appreciation and respect for nature; ethics. – the nature of science; the history of science and scientific discoveries	**Grade 10:** • The nature of science: science involves contested knowledge, and non-dogmatic inferences based on evidence and peer review (p.10) • Analyse nutritional content indicated on food packaging: vitamins, minerals and other nutritional content (p.23) **Grade 11:** • The number of people affected by diabetes in recent years (p.43) • Draw up a public survey form to test the public opinion about culling (p.49) **Grade 12:** • Discovery of the structure of DNA by Watson, Crick, Franklin and Wilkins (p.54) • DNA fingerprinting/profiling (case study only) (p.54)

APPENDIX 2: Seven broad themes in biology with some of the topics incorporated in each (after Johnson, 2009)

Theme	Topics incorporated
1. Life at the molecular and cellular level	• the chemistry of life (biological compounds and nutrients) • the microscope; cell structure and function • diffusion and osmosis • mitosis • cellular respiration • photosynthesis
2. Inheritance	• meiosis • DNA, RNA and protein synthesis • genetics
3. Evolution	• basic principles of evolution (Lamarck; Darwin; sources of variation; • adaptation; speciation; natural selection) • biogeography • the geological time scale • the fossil record • extinctions • human evolution
4. Diversity	• concept of biodiversity • classification as a system of organisation in biology • viruses, bacteria, protists and fungi • plant and animal diversity (examples and basic features of major groups)
5. Plant (angiosperm) structure and functioning	• tissues and organs • structural support • movement of water through the plant, from uptake to transpiration • translocation of manufactured food • responses to the environment • gaseous exchange • reproduction
6. Animal (mammalian – human) structure and functioning	• tissues • structural support (skeleton, joints and muscles) • transport (heart, blood and lymph) • responses/ co-ordination (nervous and endocrine systems) • nutrition • gaseous exchange • excretion • reproduction • immunity
7. Ecology	• basic ecology (biosphere, biomes and ecosystems; biotic and abiotic factors; trophic relationships; energy flow; nutrient cycling) • population studies (population parameters; estimates of population size; population regulation) • community interactions (competition; predation; parasitism; mutualism; commensalism)

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Curriculum reform as a driver for change in higher education: the case of South Africa

Bruce Kloot

Abstract

A recent proposal by the Council for Higher Education (CHE) outlines a solution to the persistently low and racially skewed completion rates in South African higher education. This involves lengthening the curricula of all qualifications through the insertion of 120 credits of 'foundational provision'. This article provides a critique of this strategy by exploring its origins and placing South African efforts at improving student access and success in the international context. It draws on the narratives of two academics, one a top research professor and the other a foundation programme lecturer, employing the theoretical lens of Pierre Bourdieu to examine higher education as a social space or *field*. This analysis suggests that the power structure of higher education itself is likely to constrain the effectiveness of the CHE's proposal and ultimately fail to shift the low and racially skewed completion rates that plague South African higher education.

Introduction

Higher education has experienced remarkable growth in the last half-century. Across the globe, the proportion of school-leavers attending higher education institutions has increased fivefold since 1970 while the population has but doubled (Unterhalter and Carpentier, 2010). According to Schofer and Meyer (2005, p.918) increased democratisation, the scientization of society and the rise of national development logics have brought about what is today a "highly expanded, and essentially global, system of higher education". This has eroded the autonomy of higher education institutions. On the one hand a post-Fordist work order has resulted in a call for the development of "high skills" (Finegold and Soskice, 1988) in the economically active members of the population, placing demands on higher education to produce "knowledge workers" (Bell, 1975) for the global economy. On the other hand, in the wake of increased democratic participation and the expansion of human rights, the state is pressing higher education more than ever to deal with issues of equity. The call to improve access or to 'widen participation' for students from

'non-traditional' groups has become an important thrust of education policy, especially in the UK, Europe and the United States.

Unfortunately, greater access has not translated into more equitable outcomes; while participation rates have improved, retention rates have been more difficult to shift. A recent study conducted for the Higher Education Funding Council for England (HEFCE) that examined the effectiveness of widening participation initiatives in six nations revealed that, in general, students from "target groups are less likely to complete their studies" than students from traditional groups (2013, p.33). This contributes to a body of literature exploring the effectiveness of efforts to improve the performance of non-traditional or 'minority' students (Tinto, 1975; Clewell and Ficklen, 1986; Banks and Banks, 1993; Rollnick, 2010). While there is no clear solution to the problem of high attrition among non-traditional students, there is consensus that "systemic/structural change within the universities themselves" (Morey, 2000) is required if the equity agenda is to be taken seriously.

The difficulties associated with bringing about systemic change are no better demonstrated than in the case of South Africa, one of the countries included in the HEFCE study referred to above. Compared to Australia, the United States and three European nations, South Africa is singled out as having "considerably lower" completion rates (2013, p.33). The South African report notes that drop-out rates "remain a huge concern with approximately 50% of students (undergraduates and postgraduates) not completing their qualifications" (Wangenge-Ouma, 2013, p.28). This is attributed to "the architecture of the apartheid education system" (HEFCE, 2013, p.18) and the difficulties in transforming higher education in the post-apartheid era. Although the legacy of apartheid education is unique, there are many ways in which South African higher education is comparable to education systems in other parts of the world. Firstly, the foundations of South African higher education were transplanted from Scotland in the 1800s and institutions developed along the lines of universities in the UK (Phillips, 2003). Secondly, there was opposition from within higher education to the policies of separate education and transformation efforts in a number of universities began a decade before apartheid was dismantled. Finally, education policy in South Africa after the fall of apartheid, after a period of robust negotiation, reflects the forces of globalisation impinging on higher education systems worldwide (Davies, 1996). A review of higher education policy after 10 years of democracy in South Africa noted that

> discursive tensions between equity and development were sustained in the debates of stakeholders. The 'economic rationalist' position was endorsed in a policy focus on the development of higher skills to meet the needs of economic development and global competitiveness. . . The 'popular democratic' position was endorsed in the declared commitment to a programme of redress (CHE, 2004, p.232).

The endeavour to widen participation in the South African context, and to ensure that the students from non-traditional backgrounds who have gained access to higher education also have a reasonable chance of success, is therefore relevant to education systems worldwide.

This article deals with a recent proposal by the Council for Higher Education (CHE) in South Africa to reform the national curriculum. A critique of such a proposal is timely given the recent attention to the need for universities to adapt their curricula for the global marketplace (Blackmore and Kandiko, 2012) through curriculum various reform initiatives (Pegg, 2013). The CHE proposal is outlined below and the theoretical tools of Pierre Bourdieu are used to understand how academic practice will be affected, especially in relation to teaching. While many of the issues are addressed in the literature on curriculum reform in the context of a diversifying student body (Ognibene, 1989; Morey and Kitano, 1997; Warren, 2002), it is hoped that a more critical approach will shed light on the difficulties associated with curriculum reform in the context of a research-intensive university. The intention is to deepen the conversation about the likely effectiveness of such a large-scale curriculum reform exercise and to prompt reflection about strategies to improve success in higher education in other contexts.

The flexible curriculum proposal

The proposal (CHE, 2013) begins by providing updated data on the participation and completion rates prevalent in the system. It confirms the findings of previous studies (Scott, Yeld and Hendry, 2007) that participation rates are both low and racially skewed. In 2011, only 14% of black[1] African

[1] The term 'black' in the proposal and in this article refers to those categorised as non-white under the apartheid government. This includes those classified as black African, 'coloured' and Indian. It is acknowledged here that 'race' was used as a construct to institutionalise oppression in South Africa and such references are not intended to entrench racial classification. However, given the subject of this article, it is impossible to avoid the use of these designators.

youth, the non-traditional – and majority – population group in the South Africa case, attended higher education compared to 57% for whites (CHE, 2013). In terms of completion rates, the proposal draws on the latest cohort analyses to show that only 48% of all students registering for undergraduate qualifications in 2006 at the contact institutions[2] graduated within five years (CHE, 2013). Not surprisingly, these figures are skewed by race: only 42% of black African students as opposed to 61% of white students graduated within five years. "The net result of these disparities in access and success is that under 5% of African and coloured youth are succeeding in any form of higher education" (CHE, 2013, p.15).

Based on these numbers, the proposal argues that the curriculum should not be structured for the minority who complete their studies in minimum time but instead for the majority who take longer than this to complete. The proposed solution is thus a large-scale curriculum reform strategy that entails adding a year to all tertiary qualifications: "it is not feasible to substantially improve graduate output and outcomes without extending the formal time of core first degrees and diplomas, in the interests of the majority of the student intake" (CHE, 2013, p.19). However, since an "appreciable minority" of students are able to graduate in regulation time (three years for most degrees and diplomas or four years for a degree such as engineering) the proposal makes provision for such students within an 'accelerated stream' which is to run alongside the extended version. Disciplinary exemplars are provided in the proposal to demonstrate how the regular and modified curricula structures can run in parallel. In essence, what is being proposed

> is a flexible curriculum structure that establishes new mainstream parameters of duration, starting point and progression pathways – allowing for coherently-designed curricula that meet the needs of the majority – and that also makes provision for shorter pathways within the new norms (CHE, 2013, p.19).

Rather than adding a year at the start of all qualifications – the foundation programme model – the strategy is to insert what is known as "foundational provision" at strategic points to ensure that developmental work is threaded through the curriculum. The "only way" of overcoming obstacles to progression, the proposal argues, is to "put forms of developmental provision

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2 This for all three- and four-year undergraduate qualifications, excluding those offered by UNISA (University of South Africa), one of the largest distance education institutions in the world.

in place at appropriate stages of the curriculum" (CHE, 2013, p.18). In a newspaper article, Shay (2014) explains how this will shift completion rates:

> The flexible degree enables curriculum space (an extra 120 credits) for 'foundational provision' where foundational provision is spread, perhaps rather thickly in first year but threads its way through years two, three and four with particular provision for those 'killer courses', courses which are notoriously difficult and present real bottlenecks for students. If this 'foundational provision' 'works' – and there are 30 years of educational development experience to draw on – fewer students fail, completion rates improve. It's simple.

In order to properly engage with the strategy outlined in the flexible curriculum proposal, it is necessary to understand its origins. This requires a brief foray into the '30 years of educational development experience' referred to above. Elsewhere in the Anglophone world, education development mostly refers to staff development (Amundsen and Wilson, 2009) but in South Africa, concerns about equity and student development are a distinct emphasis (Brew, 2002; Clegg, 2009). The fact that this movement – actually more often called 'academic development' in South Africa – started 30 years ago, means that it began in the mid-1980s, a full decade before the dismantling of apartheid.

It is significant that, early on, *foundation programmes* emerged as the principle strategy of this movement. In the UK, foundation degrees generally refer to qualifications designed with the help of employers to combine academic study with workplace learning degrees (Harvey, 2009). However, in the South African context, foundation programmes are curriculum interventions aimed at assisting educationally disadvantaged students to make the transition to higher education. As such, they are entry-level, credit-bearing programmes catering for full-time students, most of whom are experiencing tertiary study for the first time. As mentioned above, foundation programmes initially referred to the insertion of an additional year at the start of a qualification. This shifted over the years as academic development evolved and, as will be explained in the next section, foundation programmes became more integrated with the 'mainstream', the term used in South Africa to designate the traditional offering. Although it is not possible to go into all the details, it is argued here that the foundation programme strategy contained the seeds of the flexible curriculum proposal.

Foundation programmes as a strategy of academic development

Foundation programmes were developed not only for students to 'bridge the gap' from an inadequate secondary school background, but to "build a foundation for meaningful learning" (Grayson, 1996, p.993) for their tertiary studies. Early on, it was argued by academic development (AD) practitioners that the mainstream needed to adjust to cater for the needs of a diversifying student group. It is maybe less well known that foundation programmes were also intended to pave the way for large-scale curriculum reform:

> . . . if bridging programmes are successful in drawing in ever-increasing numbers of students, the time may come when they become the 'norm' and may be incorporated into the regular academic structures of the university. There are in any case already some strong arguments in favour of adding a year to our current degree programmes; bridging programmes may prove, in future years, to have paved the way for this development (Scott, 1986, pp.24–25).

Although he calls them 'bridging programmes', Scott (1986) distinguishes these programmes from adjunct (separate, pre-first-year) bridging programmes that were a popular approach at the time. In order to understand the significance of this distinction, it is necessary to provide some context.

Although black students were officially prohibited from attending so-called 'white' universities during the early decades of the apartheid era, small numbers of black students began trickling on to the campuses of English-medium universities in the early 1980s. This set of institutions, which had some history of opposition to apartheid education, established small inter-faculty units called Academic Support Programmes (ASPs) to support these students. Adjunct bridging programmes became a popular approach for dealing with the situation in the early 1980s; another strategy involved the provision of extra tutorials, the 'concurrent' support model. However, both of these approaches were deemed unsatisfactory by many practitioners and it was in this context that Ian Scott, Director of the ASP at the University of Cape Town (UCT) at the time, wrote his paper entitled *Tinkering or Transforming?* (Scott, 1986) from which the quotation above is taken. Although he was not the first to do so (see Stanton, 1987), Scott asserted that a particular form of bridging programme, one that properly articulated with regular courses within specific discipline areas, was required if the academic support movement was going to have a meaningful impact.

The advantage of this strategy, according to Scott, was that these programmes would not be bound by the parameters of regular courses like the concurrent tutorial support model and their integrated nature would mean that they were more appropriately forward-looking than separate bridging programmes. They could thus provide the opportunity to concentrate "on addressing the students' fundamental learning needs, and. . .thus provide a solid *foundation* for real competence and independence" (Scott, 1986, p.23,[3] emphasis added). These programmes came to be called 'foundation programmes'. Scott also mentions the issue of accreditation, describing it as a "major problem", suggesting that "every effort should be made to persuade the university to grant at least partial credit" (1986, p.23) for these programmes.

The events in the 1990s leading up to the democratic transition prompted tertiary institutions to take ownership of the phenomena of 'disadvantage' and 'underpreparedness', signalling the shift from the paradigm of academic support to academic development (Volbrecht and Boughey, 2004). While university management at English-medium white universities had always been sympathetic towards academic support, AD meant an official acknowledgment of the issues and recognition of the importance of organisational structures (i.e. academic development units). This was accompanied by developments at the theoretical level among academic development practitioners who argued for a more 'infused' approach to student support (Boughey, 2012) and thus changes to the mainstream. At this stage there was a more widespread implementation of programmes to try to deal with the issues.

While most programmes at the (now so-called) 'historically' white English-medium universities followed this trajectory, practitioners at many of the historically black and white Afrikaans-medium institutions attempted to 'reinvent the wonky wheel', in the words of Chrissie Boughey (2007), implementing adjunct bridging programmes or concurrent tutorial support courses. Some universities sought the help of more experienced practitioners at English-medium universities and in this way there was some sharing of ideas but, according to Kotecha, Allie and Volmink, practice was "institutionally based and fragmented" and there was "little consolidation of ideas" (1997, p.4).

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3 This is actually page 24 of the paper. Pages 23 and 24 are mistakenly swopped around.

This fragmentation was perhaps inevitable given their origins, the historical divisions within the sector along the lines of 'race' and language, and the minority status afforded educational development in general. It also has to do with the autonomy of higher education relative to the political realm and the inordinate amount of time that it took for the new Department of Education (DoE) to implement a co-ordinated strategy of redress. Foundation programmes – or what were called 'extended curricula' – were included in the 1997 White Paper and were to be given "due weight and status as integral elements of a higher education system committed to redress and to improving the quality of learning and teaching" (Department of Education, 1997, Section 2.34). However, it took six more years before extended curricula were included in the higher education funding framework (Saunders, 2011). Ian Scott (2001) argued for public funding for extended curricula, one of the criteria being that they contain "additional foundational elements [that] articulate successfully with the standard curriculum" (p.6).

After a few rounds of 'foundation grants' to pilot the model, the Ministry of Education released *Funding for Foundational Provision in Formally Approved Programmes* (DoE, 2006). According to this framework, which drew heavily on the recommendations of Scott (2001), only formally accredited programmes extended or augmented by some form of *foundational provision* component would benefit from the substantial funds allocated, some R367m for the 2007/8–2009/10 triennium. Moreover, the foundational component had to be "formally planned, scheduled and regulated as an integral part of the programme" (DoE, 2006, p.3). After two cycles of earmarked funding allocated on the basis of institutional applications, funding for extended programmes was transferred to three-year rolling cycles in 2013 which means that they are now funded in the same way as other higher education courses.

It is in this socio-historical and policy context that we must consider the flexible curriculum proposal. The evolution of foundation programmes from bridging programmes to a foundational provision component which is linked with regular programme offerings through funding and policy seems to suggest that the next step is a large-scale curriculum reform strategy. Indeed, the proposal itself (CHE, 2013) contains a review of the developments described above and a discussion of the successes and limitations of extended programmes in order to make a case for mainstream curriculum reform. These limitations are explicitly linked to the low status of foundation programmes. Consider the following excerpt:

> However, the problems inherent in the current extended programme model, arising primarily from its minority and marginalised status, impose intractable limitations on its success. It is interesting that early writing about foundational provision, going back to the 1980s, indicates that the model was not seen as a permanent solution but rather as paving the way for mainstream curriculum reform (CHE, 2013, p.90).

The urgent need for decisive intervention in South African higher education, the apparent inevitability of the step towards mainstream curriculum reform and a concrete solution in the form of the flexible curriculum proposal are a persuasive combination. Indeed, the proposal can be considered the destination of the educational development movement in South Africa, the culmination of three decades of struggle for the transformation of higher education. If the proposal is implemented, the words of Scott (1986) will have proven to be remarkably prescient.

The remainder of this article focuses on whether modifying the curriculum to accommodate the majority of students will be an effective driver for change. This is to be accomplished using Bourdieu's theoretical tools to analyse academic development practice in the context of the *field* of higher education. The proposal suggests that lengthening the curriculum for all core undergraduate programmes is a "necessary condition for improving student learning" (CHE, 2013, p.107) but from a field perspective, what is important is how the curriculum is enacted. How seriously will mainstream staff, who will largely be responsible for teaching the redesigned curricula, take its aims and intentions? Will they have the required understanding and the will to change their practice (Boughey, 2013) in line with the intentions and aims of the proposal?

Theoretical framework

Bourdieu is well known for the notion of 'cultural capital' which he uses to explain the tendency of students from privileged backgrounds to outperform working class students in assessment tasks because of their familiarity with middle class culture (Bourdieu and Passeron, 1977). However, rather than focusing on how the cultural capital *of students* influences performance in education generally, this article focuses on the social space of higher education and how this shapes the practices *of academics* in relation to undergraduate teaching. Central to this analysis is the notion of fields, a concept that Bourdieu uses to describe the ensemble of relatively autonomous social spaces within society. Maton (2005, p.689–690) explains that fields are

autonomous in that they generate their own values and markers of achievement but this autonomy is *relative* in that these values "are not alone in shaping a field; economic and political power also play a role". The focus of this analysis is thus on the field of higher education as a social space, distinct from the political realm and the field of secondary education.

In *Homo Academicus*, Bourdieu (1988) identifies the two forms of power operating in the university field – academic capital which corresponds with the heteronomous principle and intellectual (or scientific) capital which corresponds with the inward-looking, autonomous principle of 'knowledge for its own sake'. These forms of power are simply economic and cultural capital respectively which have been *reinterpreted* in the university field. Academic capital is more temporal and is linked to the instruments of reproduction and corresponds with position in the institutional hierarchy (Bourdieu 1988) while intellectual capital is linked to 'scientific renown' and is governed by the 'logic of research'.

According to Bourdieu, social action within a field can be characterised as a game that agents 'play' as they attempt to dominate the field through accumulating the forms of capital available. Agents struggle to accumulate these forms of capital to improve their position relative to other agents within the field. As they engage in struggle and conflict, the configurations of power relations in fields are inscribed on individual bodies as *habitus*, what Bourdieu defines as transposable "mental and corporeal schemata of perception, appreciation and action" (Bourdieu and Wacquant, 1992, p.16). While habitus largely determines social practice and is moulded by fields, it is also generative and acts as a 'structuring structure' (Bourdieu, 1990) in that agents are able to transform or reinforce the structure of the field as they struggle over its rules, limits, recognised forms of capital etc.

Fields mostly tend to reproduce their structure because those in positions of power, who are able to exert control over the field, employ strategies to conserve field configurations in order to continue reaping its rewards. Those in *dominated* positions on the other hand, tend to engage in struggles to transform the structure of the field. Such agents draw on alternative discourses that originate outside the traditional modes of thinking of the field (Robbins, 1993) to challenge the *status quo*. The nature of the struggle is therefore not only for the forms of capital that are present but for the conservation or transformation of the structure of the field:

> Every field is thus the site of an ongoing clash between those who defend autonomous principles of judgment proper to that field and those who seek to introduce heteronomous standards because they need the support of external forces (Wacquant, 2008, p.269).

Methodology

This work draws on a broader study in which 21 semi-structured interviews were conducted with mainstream professors, academic development managers and foundation programme academics at two South African institutions (Kloot, 2011). Through the use of narrative analysis (Polkinghorne, 1995), the career trajectories of multiple agents were analysed to determine the structure of the field, the forms of capital that are valorised as well as the struggles and conflicting discourses that shape the field. For a number of reasons, engineering educators were interviewed for this study but the universality of the forces shaping the habitus of these academics was found to be far more significant than the characteristics of the disciplinary context of engineering.[4] For this reason, these findings have relevance beyond the context of engineering and, indeed, beyond the context of the institutional boundaries of the universities chosen as case studies.

The use of narratives risks revealing respondents' identities which has certain ethical implications. To address this issue, respondents were asked to review the findings to check the factual details of the data and to confirm that they had not been misrepresented in some way. One respondent (who is not included in the 21 mentioned above) felt uncomfortable with how he was portrayed and it was agreed that his interview would not be used. However, most of the respondents were satisfied with how they were depicted and many contributed information in follow-up discussions or through email contact. Pseudonyms were used to protect the identities of the respondents.

The perspectives of two academics from a research-intensive university that we will call Emerston University, are contrasted in this article. The choice of Emerston can be considered a 'paradigmatic case' (Flyvbjerg, 2001) since, paradoxically, it is both one of the strongest research universities in South Africa and is also committed to the academic development project. This is not an unproblematic state of affairs as will be demonstrated by the contrasting

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4 For a fuller discussion of this point and the nature of the *field of engineering education*, see Kloot (2011).

narratives that are presented below. The entrenched positions of these agents indicate the deep-seated struggles over the structure of the field of higher education which has implications for the mode of curriculum reform proposed by the CHE.

Findings and discussion

The first academic is Prof Andrew Edmund, one of the top research professors in South African higher education and an international leader in his field. He holds a research chair, supervises large numbers of postgraduate students, has published prolifically and is well cited. These are all indicators of the large volume of intellectual capital that he possesses. As will be seen, Andrew's devotion to research, something that he describes as 'unbelievably time-consuming', shapes his practice. Consider the excerpt below in which he frankly discusses the impact this has on his approach to undergraduate teaching:

> I feel the tension, I feel the demand for time. . . Now I have to make a choice: do I want to be remembered at Emerston as being this great undergraduate teacher who students all like because he's so helpful and he's always available or am I this crusty old professor who seems to brush us off the whole time. . . .I'll do my best as a teacher – no, no, I'll do what's required to get most of them through but I can't get all of them through because student success rate doesn't entirely depend on my ability or inability or my time I'm spending on the students. It also depends on the time the students themselves spend on the subject. . .

It is clear that Andrew's dedication to research causes him to resist anything that may draw him away from it, including undergraduate teaching. While the potential conflict between research and teaching in higher education is not a new observation (Wong, 1995; Marsh and Hattie, 2002; Pan, Cotton and Murray, 2014), Bourdieu's framework provides a fresh perspective on this issue. Since academics have a good deal of autonomy in terms of how they structure their 'time-economy' (Bourdieu, 1988), the amount (and quality) of time they spend on activities must be understood in terms of the structure of the field and the associated system of reward. While Andrew keenly feels the 'tension', the 'demand' on his time due to activities related to undergraduate teaching, he consciously limits the time he spends on these activities and is prepared to be a 'crusty old professor' in the eyes of his undergraduates *precisely because of* the satisfaction and recognition that he gains from his research work.

Whereas the autonomy of the field of higher education is aligned with research – as expressed by the maxim 'knowledge for its own sake' (Maton, 2005) – teaching is more closely associated with the field of secondary education and thus does not provide access to such reward. The impact on academic practice is profound. Bourdieu (1996) goes so far as to suggest that, because of the social definition of their office, university professors have "no other choice but to reject every practice that might make them seem like secondary school teachers lost in the corridors of higher education" (p.99).

It is also important to note that Andrew's disposition is coupled with a certain posture towards *student autonomy*, exemplified by his point that student success does not only depend on the time he spends with the students but also on the time the students themselves spend on their studies. This is in stark contrast to the habitus of academics that are employed on extended curriculum programmes. Such individuals are generally committed teachers (Niven, 2012) who dedicate time and energy to getting the very best out of their students in the hope of helping them overcome their educational disadvantage. This is certainly the case with the second academic who will be considered in this article, Mr Richard de Vos.

Richard graduated with an engineering degree from Emerston and commenced his postgraduate studies in a traditional engineering field. During his Masters he began tutoring and enjoyed it so much that he ended up running a tutoring programme for the engineering foundation programme at Emerston. After a few years he encountered problems in his Masters research but it was really his growing love for teaching, and full-time employment on the foundation programme that his Masters came to a standstill.

In the excerpt below, Richard explains the focus of the staff on the extended curriculum programme:

> First and foremost, term time we teach; so everything we do in term time is about the lecture we're going to give, the workshop we are going to design around that, the contact time with the students. . .our priority is the teaching side of it for the students and that's what we have been employed to do and that's what we take very seriously. . .

Whereas Andrew was clear that he would *not* do his best but would 'do what is required' as a teacher, Richard is dedicated, loves his work and sees teaching as the purpose of his job; what he is 'employed to do'.

Since undergraduate teaching *in itself* is neither very highly regarded nor well rewarded in the field of higher education – there is no such thing as 'teaching capital' – such a habitus is at odds with the dominant logic of the field. In the South African case, this habitus is generated and sustained by the oppositional discourse of academic development which has traditionally drawn on concerns about student equity and redress, as explained above, in order to entrench itself. Bourdieu's lens shows that this struggle for legitimation is a clash between those who defend the autonomy of the field and those who draw on alternative discourses in an effort to transform the structure of the field. The foregoing narratives give a glimpse of the deep-seated tensions that exist between research-oriented mainstream professors and foundation programme lecturers. What is at stake in this struggle are the forms of power that are valorised and the underlying structure of the field.

Given its humble origins and its history as a "highly mobile and fragmented profession" (Niven, 2012, p.139), it is not difficult to understand why academic development in South Africa has such a strong oppositional stance. Luckett, for example, notes that "due to early experiences of polarization and marginalisation, AD discourse tends to stereotype academics as autonomous, uncaring teachers and self-interested researchers" (2012, p.350). However, in favourable institutional contexts, academic development discourse can 'carve out' a niche within the field of higher education (Kloot, 2011) to enable the teaching-centred modes of practice described by Richard. Within such spaces, staff are insulated from the powerful effects of the field, especially the pressure to engage in research, and are able to devote themselves to the needs of their students.

Nevertheless, an unintentional consequence of defending the foundation niche from the influence of the field is that it limits the impact of academic development on its structure. Despite certain instances in which foundation work appears to have prompted change in the mainstream (Inglis, Akhurst and Barnsley, 1994; Clarence-Fincham, 2013), these changes are always localised and do not succeed in substantially transforming the structure of the field or the practice of mainstream academics. Even where progression and completion rates of students on foundation programmes is proven to be about the same as, or even better than, students from traditional entry groups (Donald and Rutherford, 1994; De Villiers and Rwigema, 1998; Garraway, 2009), the sustainability of such instances is disappointing. In fact, a recent statistically robust study shows that positive foundation programme

completion rates are not significant when the entire qualification is considered (Smith, 2012).

This article suggests that the bridging programme model, although it has evolved in terms of its relation with the mainstream curriculum, has reached its conclusion as a foundational provision component within the flexible curriculum proposal. Moreover, a field perspective reveals this evolution in terms of a decades-long struggle over what is valorised by higher education. On the one hand is the desperate need for South Africa's universities to address the stubborn patterns of educational disadvantage that plague the sector. This paradigm values 'knowledge for the sake of others' and has driven the development of the kind of curriculum proposed recently by the CHE which requires the kind of teaching exemplified by Richard.

On the other hand, deeply embedded in the field of higher education itself, lies the valorisation of research which is underpinned by the maxim 'knowledge for its own sake'. This drives academics in the pursuit of intellectual capital and the kinds of approaches to teaching exemplified by Andrew. This paradigm is sustained by a global network of scholars engaged in the production of knowledge. Given the freedom that academics have in terms of how they wish to align themselves with these competing paradigms, the inevitable conclusion is that an alternative undergraduate curriculum cannot *drive change* – it cannot not compel mainstream academics to do anything differently.

While '30 years of educational development experience' can be seen as a resource to aid the success of the flexible curriculum, it is important to interrogate whether what is being proposed will be able to accomplish what 30 years of educational development has not. It is difficult to imagine that the shift from foundation programmes to foundational provision in the mode of the flexible curriculum proposal will transform the structure of the field. Indeed, this analysis suggests that entrenched modes of academic practice, in harmony with the high status of research and coupled with a particular approach to student autonomy – that the responsibility ultimately rests with the student and not with the lecturer – reinforce the operations of cultural capital to the extent that the effects of foundational provision on graduation rates are negligible. Rather than bringing about fundamental change, it appears that what will be gained on the swings of the foundation programme will be lost on the roundabout of mainstream.

Conclusion

The sociological analysis presented above suggests that the underlying reason for the seeming lack of effectiveness of curriculum modification strategies is the power structure of higher education itself. The structure of this social space assigns a low status to undergraduate teaching and tends to resist the efforts of educational development to transform it, perpetuating modes of practice that are oriented towards the production of research outputs. While academic development in South Africa has managed to alter the structure of the field under certain circumstances, such as by carving out a foundation niche, the forms of power at work have prevented it from meaningfully transforming the structure of the field. Given the strong relationship between academic development, foundation programmes and the flexible curriculum structure proposed by the CHE, this analysis casts doubt on the likelihood of the proposed reform strategy shifting undergraduate completion rates.

Even if the recommendations in the proposal regarding staff development and capacity building (CHE, 2013) are adopted, this analysis highlights that practice is governed by what is valorised in the field and the associated systems of reward. Employing more staff or providing opportunities for upskilling in relation to curriculum design and development will do little to change the attitudes and practices of the staff already in the system. As far back as 1988, Muller drew attention to the futility of an ASP strategy that failed to pay attention to "reward and other structures that shape academic work" (1988, p.120). Given the heavy workload already on staff, it is quite possible that in many contexts the principles of the flexible curriculum will be superficially adopted and its noble intentions marginalised.

More broadly, this article highlights the danger of embracing curriculum modification as the panacea to the ills of higher education. Perhaps South Africa is unique in terms of its long history of inequitable education and the urgent requirement to adapt its higher education system to the needs to the majority population group. On the other hand, the field analysis presented here is should have relevance beyond the national particularities of South Africa. In the context of an expanding global system of higher education amid calls for widened participation and better completion rates, especially of non-traditional students, this analysis should provoke thoughtful consideration in other contexts.

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Fostering the employability of business studies graduates

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Abstract

Higher education is under pressure to enhance the employability of graduates by ensuring that they acquire competencies that make them employable in the labour market. This research project investigated the contribution of higher education towards the employability of graduates within a business diploma programme. A Delphi approach was employed with the Delphi panel consisting of three types of professionals – employers within the corporate sector, academics in the field of business studies, and graduates with workplace experience in the corporate sector. Both quantitative and qualitative data were obtained from three rounds of surveys. The findings show that disciplinary knowledge of Information Administration, Business Administration, Communication and Personnel Management, and the simulation of workplace practices as well as work-integrated learning opportunities are significant to enhancing the employability of office administrators and office managers. These findings provided academics with the opportunity to make improvements to the curriculum to foster the employability of the graduates.

Introduction

There is growing pressure on higher education to heighten the employability of graduates by guaranteeing that the learning experiences of students contribute to instilling the attributes, knowledge and skills that will empower graduates to "perform successfully as citizens in the knowledge economy" (Nel and Neale-Shutte, 2013, p.437). South Africa is still grappling with developing its economy and also bringing restitution to its black population. The latest unemployment statistics measuring the number of individuals actively seeking employment as a percentage of the workforce shows that the unemployment rate in South Africa increased to 25.5% in the second quarter of 2014 (Statistics South Africa, 2014).

Higher education internationally, as well as in South Africa (e.g. Department of Education [DoE], 1997, 2002a, 2002b), has emphasised the need for increased graduate employability. Higher education reports such as the Robbins Report (1963), the Finn Committee (1991), the Mayer Committee

(1992), the Dearing Report (1997), the DeSeCo Project (Organisation for Economic Co-operation and Development [OECD], 2001), the Report on Employability Skills for Australian Industry (Curtis and McKenzie, 2002); REFLEX Project (Allen and Van der Velden, 2007) and Confederation of British Industry (CBI) Universities UK Report (2009), all emphasise the role of the education and training sectors in preparing graduates to confront the challenges of a global knowledge-based economy.

Employability is seen as a symptom of the brisk changes related to globalisation, the liberalisation of trade, developments in information technology, biosciences, new materials and nanotechnology that have fuelled the rise of the "knowledge economy" (Davidson, 2007, p.1184). This together with technological advances and global economic dynamics requires that graduates have higher levels of knowledge and skills (Nel and Neale-Schutte, 2013). The education policy in South Africa has been intensely influenced by the global mandate that higher education institutions become more receptive to the needs and expectations of industry, the state and society, to guarantee economic and social success (Kruss, 2002). The curricular process provided by higher education attempts to facilitate the development of workplace prerequisites and to meet the demands of the knowledge economy by introducing work integrated learning projects, job shadowing and internships (Lowden, Hall, Elliot and Lewin, 2011, p.25) to name but a few examples. However, it cannot be assumed that the experience provided either by higher education, or in the workplace, or the fact that a student has completed a vocational course, will somehow ensure employability.

The study on which this paper is based argues that employability is about the development of critical, reflective graduates who are empowered to contribute to their future places of employment in order to retain employment and promotion prospects in an ever-changing competitive global society. In order to determine why so many of the graduates of a higher education programme are unemployed, it is necessary to look at the knowledge bases of the curriculum. Knowledge matters and therefore the knowledge bases selected for professional curricula can be expected to play a significant role in enhancing the employability of graduates. Young and Muller (2014) argue that in an age where there is a proliferation of expert occupations, the knowledge that underpins the professional curriculum is of particular significance.

In this respect the study on which this paper is based broadly investigated the contribution of higher education towards the employability of graduates. The research objectives aimed to investigate the knowledge bases of current office management work expertise and the implications thereof for the training of office managers. The findings of this research project provided academics with the opportunity to make improvements to the curriculum and it provided guidelines for the recurriculation of the higher education programme in office management in accordance with the new qualifications framework of the Department of Education (2007).

Literature review

Universities often make a "wish list" (Barrie, 2006, p.215) of knowledge, skills and attributes that will supposedly foster the employability of graduates. Mason, Williams and Cranmer (2006) argue that from the viewpoint of employers, employability often refers to work readiness, described as the possession of attitudes, knowledge, skills, and commercial understanding enabling contributions to be made to the achieving of organisational goals after starting employment. It is also defined as the possession of "foundational skills needed to be minimally qualified for a specific occupation" (ACT, 2013, p.3).

Yorke and Knight (2006) identified four broad attainments on which employability is dependent, namely, knowledge and understanding; general and specific skills; efficacy beliefs and values; and metacognitive understanding. In educational research this position has remained dominant although it has been critiqued for neglecting other factors influencing employability. Contrary arguments include the work of McQuaid, Green and Danson who argue that a broader approach is necessary as it facilitates the "additional consideration of vital demand, personal circumstances and other factors that influence the employability of people in a particular labour market, or at a particular time" (2005, p.194).

McQuaid and Lindsay (2005) argue that employability is not simply about building the attributes and skills of students by educational organisations as such skills require support of knowledge of job seeking skills and are influenced by health factors, gender, age and mobility. Côté and Bynner (2008) argue that economic conditions may influence the social status of young individuals and subsequently their employability, while McGrath

(2009) recognises that factors such as geographic location influence employability. Harvey and contributors (2003) contend that employability should be recognised as a process requiring more than the attributes, skills or experience to empower a student to get a job or to advance progress. The subject discipline selected by the graduate impacts to some degree on the opportunities for employability development. For example, involvement in employability development is considered easier for students studying professional programmes. However, "vocationalism is not synonymous with employability" (Harvey, 2002, p.5).

In the South African context, the Education White Paper 3: A curriculum for the transformation of higher education (DoE, 1997) described the role of higher education institutions as the mobilisation of human resource development. Graduate employability has therefore become a significant aspect of planning by institutional and academic forums since it is beneficial to higher education, employers and graduates' acquisition of an improved understanding of the causes of unemployable graduates (Nel and Neale-Shutte, 2013).

Background to the study

The focus of this research project is the employability of the graduates of a higher education programme at a University of Technology (UoT). The UoT comprises five faculties with over 32 000 students. UoT's curricula have had a strong heritage in the provision of career-oriented education and focus on the workplace as both a learning resource and a site of knowledge production. In accordance with the National Plan for Higher Education (Ministry of Education, 2001) the assumption is that the primary focus of the UoT will be the cultivation of applied knowledge and job-related skills driven by market forces and entrepreneurialism (Imenda, 2005). Wheelahan (2010, p.4) argues that the purpose of professional and vocational education "is to induct students into a field of practice" and provide the knowledge that underpins practice.

The three-year higher education business programme on office management aims to provide the local and international corporate sector with graduates who are skilled in management, administration and technology. The curricular arrangement for office management studies comprises the work of the profession of office administration in support of people in a range of different

industries. Students are required to study the two major disciplines of Information Administration (which comprises computer theory and practice) and Business Administration for the period of three years. The programme for office managers includes two years study of Communication and one year of Legal Practice, Personnel Management, Mercantile Law, Financial Accounting and six months of experiential training or work-integrated learning in the workplace. Graduates of the programme find positions of employment in a variety of fields in the business world such as personal assistant, administrative office manager, data processor, office administrator at a hospital, and administrative assistant in a personnel department or the accountancy/legal section of an organisation or legal firm. There are approximately 290 students studying either on a full-time or part-time basis.

Work experience alone does not ensure that graduates develop the "cognitive, social, practical. . . prerequisites" for employment (Yorke, 2004, p.7). Similarly, the curricular process does not guarantee employability, but it may facilitate it (Knight and Yorke, 2004). The programme for office management attempts to facilitate employability by providing opportunities for work experience and by bringing practitioners and employers into the classroom. Students are required to take part in group work exercises and presentations, co-ordinate seminars, participate in one week volunteer placements in the workplace during the first and second year, as well as undertake six months internship in the third year of study.

Research methodology

This study draws on a Delphi approach which is an established method used to harness the opinions of a diverse group of experts (Powell, 2003). The research project on which this paper is based expanded on the Delphi method by reviewing the traditional Delphi view of 'expert', as the Delphi panel of experts included not only employers, but also graduates of the office management curriculum. It comprised the distribution of three rounds of surveys to a panel of professionals comprising employers, graduates and academics. This provided the opportunity for the testing of knowledge and learning by the professionals as they refined their opinions and reached consensus. The reasons for selecting this research method was to gain the input from the panel regarding the critical skills, generic attributes and discipline specific content which they considered as key to fostering the employability of the graduates. The researcher attempted to elicit judgements

from the participants on the basis of surveys and focus group meetings, interviews and student surveys which centred on the research questions. For the purpose of this article only the primary data, both numeric and textual, obtained by using three rounds of Delphi surveys on the discipline specific content, is discussed.

Purposive sampling was used for the selection of the Delphi panel and provided in-depth information from an interested group of participants. Twenty-three business professionals, fifteen graduates and fifteen academics agreed to serve on the Delphi panel and participate in the three rounds of surveys over a period of three years. The selection criteria for the business experts, graduates and academics were as follows:

- business experts in the Western Cape who operated in local and international medium to high technological environments,
- business experts who were co-operative partners of the UoT,
- business experts who had employed or currently employ OM graduates and/or third-year students (interns) and who are directly involved in their selection and mentorship,
- graduates who had been employed for a minimum period of three years and who were currently in supervisory and/or office management practitioner positions,
- business experts and graduates who were involved in the major sectors of tourism, medical fields, service and retail industries, education, production, government and local government,
- those who spoke various South African first languages (e.g. isiXhosa, English, isiZulu and Afrikaans),
- academics employed in the workplace within the past two to four years where they held positions in the workplace such as accountant, management consultant, administrative officer, training consultant, operations manager and office managers, and
- academics who participated in regular meetings with the business sector to remain informed of the field of office administration and office management.

The strict adherence to these selection criteria enabled participants to evaluate current office management work practices objectively to determine the knowledge areas of the curriculum required by office administrators and office managers. Relevant ethical considerations of anonymity were also considered for this research project.

The first round survey included the discipline specific content of the higher education programme. The panel was asked to rate the content of each discipline of the three year programme according to which were necessary, essential or critical to foster the employability of the graduate. They were also given the opportunity to list additional skills and knowledge areas omitted in the first round survey. The additional items were then added to the second survey and sent to the panel for rating. The data from the final round survey was analysed and an average of the ratings from each group of the Delphi panel was calculated to determine the overall consensus percentage. This data was analysed by examining the responses to the discipline specific ratings of Information Administration, Business Administration, Communication, Personnel Management, Financial Accounting and Legal Practice.

Findings

The findings are hierarchically ordered in line with the credit allocation of the disciplines of the office management programme.

Information administration

The findings showed that the MS Office suite (81%) received the highest degree of consensus followed by word processing (74%), emails and the internet (68%), Spreadsheets: Excel (57%), the protection of documentation (57%) with the rest of the content of the Information Administration curricula receiving below 50% consensus.

The additional items added to the first round survey by graduates were the need for advanced Excel skills and the ability to identify different types of hardware or software and computer security threats. The data from the final round survey showed that the need for advanced skills on Excel received 40% consensus of the panel and the ability to identify different types of hardware

or software and computer security threats received 27% consensus of the panel. These findings imply that most of the panel did not have the same needs for graduates to have these skills. Many large organisations have Information and Technology support staff who would be responsible for the hardware or software installation and have qualified staff with advanced skills in Excel. While the knowledge of computer security and back-up procedures are necessary, these can be learned on site and often are particular to specific organisations.

Information and Communication Technologies (ICT) are considered essential to fostering the employability of graduates (Lowden *et al*., 2011). The International British Education and Examination Board (Edexcel) in its report on the global perspective of effective education for employment (Playfoot and Hall, 2009, p.50) identified one of the qualiies most valued by employers in South Africa as being that of a willingness to "embrace technology".

In the South African context there is a significant gap between what graduates bring to the workplace and employers' expectations in terms of ICT skills, with the biggest gap relating to the "ability to find and access information" (Griesel and Parker, 2009, p.11). The UKCES report entitled "The Employability Challenge" regards employability skills as those which must be present to empower an individual to apply the more particular knowledge and technical skills that their specific workplaces will expect and "using information technologies effectively – operating a computer, both using basic systems and also learning other applications as necessary" (2009, p.6). Refer to Table 1 below for the detailed results.

Table 1: Information administration

Infomation administration	Consensus
MS Office suite	81%
Word processing	74%
Emails and the Internet	68%
Spreadsheets: Excel	57%
Protection of documentation	57%
Windows management	44%
MS PowerPoint: Advanced	41%
Advanced skills on Excel	40%
Computer security	39%
Back-up procedures and software	36%
Flow of information	36%
Management of information technology and systems	30%
Structuring a document management system	29%
Management decision-making	29%
Ability to identify different types of hardware or software and computer security threats	27%
Risk management: internet and network security	27%
Production 35wpm	26%

While the importance of Information Administration skills for the fostering of the employability of office administrators and office managers cannot be denied, the challenge is to ensure that graduates are prepared for the technological demands of the varied fields in which they find employment. The field of information technology is constantly changing and it is required of higher education to not only keep up with business practices, but to ensure that graduates are taking innovative ICT knowledge into their future workplaces (Boud and Solomon, 2001; Geisler, Bazerman, Doheny-Farina, Gurak, Haas, Johnson-Eilola, Kaufer, Lunsford, Miller, Winsor and Yates, 2001; Barnett, 2004). This was supported by the opinions of a number of the employers and graduates on the Delphi panel. For example a graduate

commented, ‘having knowledge alone is not enough’ and ‘simulations of information technology skills will be useful’. This emphasises the need for academic staff to remain current with workplace practices so that they may make use of innovative methods to simulate these practices in the classroom to prepare students for the workplace (Jeong, Taylor and Chi, 2000).

Business administration

The highest rates of consensus of the Delphi panel were in respect of items added to the first survey, namely time management (89%), and understanding the critical importance of administration as one of the pillars in any organisation (73%). In the higher education context students are required to adhere to values of time management which mirror those of the workplace such as punctuality, the adherence to deadlines for the submission of tasks and assignments, and the presentation of written and oral feedback reports.
The knowledge of administrative procedures (73%) was followed by control of office activities (57%) and an additional item, knowledge of company policies and procedures (53%), which was added to the first round survey. Two other items added to the first survey were knowledge of planning, executing and reviewing events such as meetings and workshops, and project management. The rating of consensus of the Delphi panel for the significance of these areas of knowledge and skills was below 50%.

Administration is considered essential in all sectors of business, regionally, nationally and internationally. In the South African context it is listed as a critical skill in the Education, Training and Development Practices (ETDP) Sector Education and Training Authority Report 2010/2011. A number of the employers and graduates called for increased simulation of workplace practices and an employer commented that ‘the basic office management skills are necessary in all contexts’ and 'should be applied in simulation exercises in the classroom’. This supports the view expressed earlier that students require opportunities to apply their knowledge in simulations of workplace practices. Table 2 shows the detailed results of the Delphi surveys.

Table 2: Business administration

Business administration	Consensus
Time management	89%
Understand the critical importance of administration as one of the pillars in any oganisation	73%
Administrative procedures	73%
Control of office activities	57%
Knowledge of company policies and procedures	53%
The office: organisation and supervision	49%
Human resource management	46%
Evaluation of administrative systems	44%
Knowledge of planning, executing and reviewing events such as meetings and workshops	42%
Financial management	42%
Understand workplace safety and security issues	37%
Management functions	36%
Strategic management	29%
Project management	29%
Risk management	27%
Systems design and analysis	24%
Marketing and research	22%
Entrepreneurship	20%
Business sectors	20%

Communication

The highest consensus ratings for the content of the Communication studies were for items added to the first round survey. Correct written language (77%); understanding English language and the application of language skills (71%), and documentation etiquette (71%). This was followed by teamwork and small groups (70%), listening skills and conflict resolution (64%); oral communication and presentation skills (63%), and the importance of setting goals and objectives (50%). The rest of the content received less than 50%

consensus as being significant to fostering the employability of the graduate. The implications of these findings are that an excessive amount of time is spent in the classroom on the study and practice of written communication skills such as report writing (33%), whereas employers pointed out that 'workplaces often have their own on-line reporting programmes'. The majority of the graduates and employers suggested that workplace simulations of communication situations should take place in the classroom. Refer to Table 3 below for the details.

Table 3: Communication

Communication	Consensus
Correct written language	77%
Understanding English language and the application of language skills	71%
Documentation etiquette	71%
Teamwork and small groups	70%
Listening skills and conflict resolution	64%
Oral communication and presentation skills	63%
Goals and objectives	50%
Telephone technique	45%
Business letters: letters of complaint, enquiry, invitation, thanks, etc.	43%
Emails and facsimiles	42%
Proficiency in at least two official languages	42%
Meeting correspondence: notice, agenda, minutes	38%
CV writing and interview skills	35%
Report writing	33%
Intercultural communication	32%
Organisational communicaion	32%
Proposals	32%
Professional self-development	31%
Website communication - Facebook, Twitter and other digital forms of communication	29%
Research: referencing skills	29%

The UK Commission's Employer Skills Survey, 2013 (UK Commission for Employment and Skills, 2014) found an increase in skill-shortage vacancies as a result of a lack of communication skills, particularly oral communication, as well as a lack of literacy skills. Opportunities for deliberate practice and feedback on performance are necessary for the development of expertise in oral and writing skills, especially in the context of a "professionally relevant task domain" (Kellogg, 2008, p.18). For example, the Delphi graduates' comments were that the communication studies should include 'more presentation skills' and that 'communication skills are important and simulations of these skills will be useful'. Employers commented that 'communication knowledge and skills are particularly necessary among second- and third-language English speakers, working in a predominantly English environment' and 'technical knowledge and skills … stand for little and are useless unless this can be communicated effectively and applied' .

Personnel management

One of the items added to the first round survey relating to significance of upholding confidentiality (80%) received the highest consensus rating of the Delphi Panel. This was followed by knowledge of dealing with individuals (77%), attitudes and behaviour in the workplace (62%), understanding of organisational culture (61%) which was also added to the first round survey, stress management (54%), personal relationships on the job (52%), and knowledge of labour laws and disciplinary procedures (50%). Emotional intelligence and the importance of personal development were also added to the first round survey but both received less than 50% consensus rating from the Delphi panel. Refer to Table 4 for the detailed results.

Table 4: Personal management

Personnel management	Consensus
Upholding confidentiality	80%
Dealing with individuals	77%
Attitudes and behaviour in the workplace	62%
Understanding of organisational culture	61%
Stress management	54%
Personal relationships on the job	52%
Knowledge of labour laws and disciplinary procedures	50%
Emotional intelligence	47%
Personal development	45%
Resolving frustration and conflict	43%
Business psychology and human behaviour	42%
Dealing with small groups	37%
Human resource management: introduction	30%
Social and personal perception	30%

Graduates need to know about dealing with individuals and group dynamics when they enter the workplace. An employer commented that 'being aware of how to deal with other people . . . can only be developed through practice'. The UK Commission for Employment and Skills (2009, p.6) describes employability skills as including "working together – co-operating, being assertive, persuading, being responsible to others. . .".

Financial accounting

The highest consensus was received for budgets and budgetary control (60%) and how to read a balance sheet and profit and loss accounts (56%). The panel added items of legislation and financial policies and petty cash management, which received less than 50% consensus. Refer to Table 5 for the detailed results.

Table 5: Financial accounting

Financial accounting	Consensus
Budgets and budgetary control	60%
How to read a balance sheet and profit and loss accounts	56%
Results of operations and financial positions	47%
Introduction to accounting	45%
Legislation and financial policies	45%
Analysis and interpretation of financial statements	42%
Understanding monthly requisitions – to form part of budgets	42%
Petty cash management	39%
Income statement	39%
Stock	37%
Debtors	36%
Creditors	36%
Bank reconciliation statements	31%
Ledger and trial balance	31%
Fixed assets	31%
Cash flow management to balance sheet	31%
Subsidiary journals	25%

A comment by an employer regarding the rating of items such as stock and debtors and creditors, was that 'one cannot do financial statements without these areas of knowledge and skills and therefore one cannot rate them as more or less important as the other'. A graduate commented that 'financial accounting skills are not critical for administrative work in the training environment – this function is outsourced' and an employer commented that 'apart from budget control and planning for the year ahead the financial management aspect is often based elsewhere as a support service'. Lowden *et al*. (2011, p.12) argue that employers "value numeracy relevant to the post".

The findings show that, while Financial Accounting knowledge and skills might be necessary for the employability of the graduates, many organisations have specialists who are responsible for these functions. Those graduates who

find employment requiring these skills will have the basic financial knowledge and skills and can undertake further studies if required.

Legal practice and mercantile law

The highest consensus was for the additional area of knowledge of applicable legislation in the context of the working environment (68%), which was added to the first round survey. Knowledge of labour law received 50% consensus but 75% of the employers serving on the Delphi panel rated this knowledge as critical to the fostering of employability of graduates. Comments received from the graduates were that knowledge of their employment rights was beneficial, but it appears that most of the Delphi panel did not consider this content as critical to the employability of the graduates. The rest of the content received less than 50% consensus from the Delphi panel. Table 6 shows the detailed results of the Delphi survey.

Table 6: Legal practice and mercantile law

Legal practice and mercantile law	Consensus
Knowledge of applicable legislation in the context of the working environment	68%
Labour law	50%
General principles of the law of contract	43%
Business law in order to be equipped to start own business	43%
Intellectual property: copyright, trademarks and patents	32%
Specific contracts	28%
The administration of justice	24%
Introduction to civil procedure and criminal litigation	24%
Introduction to the study of law	20%
Debt collection procedures in the Magistrate's Court	20%

Experiential training syllabus

The members of the Delphi panel were selected as they are committed to and support the internship programme where students gain exposure to the world

of work and receive mentorship from employers. Twice a year they have third-year students allocated to their organisations for the six months internship. This is learning combined with work and includes an organised programme merging applicable work experience with academic study. The practice of entering internships is a valuable training technique for learning skills as it unites observation, knowledge and action with learning from a mentor (Kellogg, 2008). Research undertaken in the UK on the employers' perceptions of the employability skills of new graduates (Lowden *et al*., 2011) recognised that internships, work placement and vacation work were effective to enhance graduate employability. This applied across all sectors and sizes of organisations and the duration of the experience of at least six months was considered necessary for students and employers to obtain the full benefits.

At a national level, the White Paper for Post-School Education and Training (DHET, 2013) emphasises the importance of close co-operation between employers and education providers, especially in professional curricula where on-the-job training, including internships, should be expanded upon. At the UoT at which the research was undertaken, an Advisory Committee is held twice a year comprising of graduates, and employers of the students undertaking the internship. This committee, of which most of the employers of the Delphi panel are members, plays a significant role in curricula development and to the fostering of the employability of graduates as they provide feedback on the programme content and make recommendations for changes to the curriculum where necessary.

Conclusions

These findings showed the relevance of the knowledge bases of the office management curriculum and identified what content needed to be added or omitted in order to foster employability and prepare students for the workplace. The discipline specific content considered key to the work readiness of the graduates with consensus ratings of 70% and higher showed the need for Information Administration knowledge of the MS Office suite and word processing; Business Administration knowledge of time management and the understanding of the critical importance of administrative procedures; Communication knowledge of the use of the correct written language, understanding of the English language and its application, documentation etiquette, and the ability to work in teams and

small groups, and Personnel Management knowledge of the significance of upholding confidentiality and the ability to deal with individuals. The identification of the discipline specific knowledge considered key to the work readiness of the graduates by the Delphi panel provided academics with guidelines for improvements to the curriculum. The simulation of workplace practices and the provision of work-integrated learning opportunities are considered important for the training of office administrators and office managers and contribute to fostering the employability of office management graduates.

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Book Review

Maton, K. Knowledge and knowers. Towards a realist sociology of education. London: Routledge.

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The late and well-known British sociologist of education, Basil Bernstein, claimed that in educational research (although this could apply to many more fields) we need less of an allegiance to a theory and more of an allegiance to the problems we need to solve (Maton, 2013). There are indeed many problems in education around the world today that need to be solved and many questions that need to be answered. But in order to tackle these problems and begin to answer our many questions, we need theoretical and analytical frameworks and conceptual tools that we can put to work to look not just at the problems themselves, but at what is beneath or behind them so that we can better understand the nature of the struggles within education, as well as how to bring about sustainable and necessary changes. Legitimation Code Theory, or LCT, the subject and focus of Karl Maton's book, *Knowledge and Knowers*, is such a framework.

In *Knowledge and Knowers*, and in his work leading up to this book, Karl Maton introduces us to a way of thinking and working that represents a focus on solving problems with a strong explanatory and conceptual framework that allows researchers to go beyond and beneath what can be seen and understood through a constructivist or instrumentalist lens. His broader aims, in a body of research that reaches beyond this book, are to address a significant gap in educational research left by a lack of strong, generative theoretical and conceptual frameworks and tools, and an inability of much educational research to build on past research findings more cumulatively (something noted by the National Research Foundation in South Africa in a recent report). This lack of cumulative building of knowledge about education and about the nature of educational knowledge and knowing itself is something with which LCT is particularly concerned.

Legitimation Code Theory, or LCT as it is known, is the conceptual and explanatory framework that is the focus of this book. This is a theory, as Maton argues, in Bourdieu's sense, where the latter argued that 'Theories are

research programmes which call not for "theoretical discussion" but for practical implementation' (Bourdieu, Chamboredon and Passeron, 1991, p.255). This is an important point to understand when reading this book and other papers and books that use LCT as 'theory' or as a basis for analysis of data. The book draws on data from different studies to illustrate and clarify more abstract theoretical arguments, showing consistently that this is indeed a 'research programme' that poses at least as many questions as it answers and that does indeed call for 'practical implementation'. LCT, even though a work in progress, is more than a call to arms, though. It provides researchers with a range of tools, some more well developed and tested out than others, that can be used both within educational research and without to delve into problem situations and attempt to find answers and a way forward in research and practice.

LCT is a realist framework, and draws on insights from critical realism, critical rationalism and social realism. One of the most important insights, drawn from critical realism, is Bhaskar's layered ontology, arguing for the need to look beyond and beneath empirical reality to understand and see the generative mechanism and tendencies (Bhaskar, 1989) or, in LCT terms, the organising principles that generate or give rise to that reality. Another is critical realism's three commitments: to ontological realism; to epistemological relativism; and to judgemental rationality (Archer, Bhaskar, Collier, Laurie and Norrie, 1998). Ontological realism holds that we need to recognise that knowledge is 'about something other than itself' (Maton and Moore, 2010, p.4); there is a reality that does exist beyond that which we can behold, and while we can believe in anything we want to, we cannot know anything in the same way. Epistemological relativism says that this knowledge that exists independently of us is not universal or unchanging or True. Rather, it is socially produced over time in socio-historical contexts and is thus fallible and mediated by and through those contexts (Archer *et al.,* 1998; Maton and Moore, 2010). Our knowing is further mediated by these socio-historical contexts. Finally, judgemental rationality holds that there are 'intersubjective bases for determining the relative merits of competing knowledge claims, because some knowledges are more powerful and productive than others' (Maton and Moore, 2010, p.4). Thus, knowledge is not the same as knowing and can indeed be seen in its own right as an object of study. It emerges from but is not able to be reduced to or conflated with the condition or contexts or minds from which it emerges (Maton and Moore, 2010). This is very important to understand as a foundation for LCT, because

it is the framework's realist underpinnings that enable it to be focused on both knowledge and knowing without excluding or being blind to either.

LCT subsumes and extends parts of the work of two well-known sociologists, Basil Bernstein and Pierre Bourdieu. From Bernstein, LCT takes code theory – Bernstein's educational knowledge codes and their orientation to examining what gives rise to practices rather than just what practices themselves are – as well as the pedagogic device and knowledge structures. From Bourdieu, LCT draws on field theory, and central concepts of habitus, capital, field and practice. Neither Bernstein's work nor Bourdieu's can provide a whole picture in terms of understanding the field of education, and there are gaps left by both of these theorists that need to be filled if we are to solve the problems facing the field in terms of intellectual and educational development as well as pedagogy and student success. But rather than creating a break with these foundations and carving out a new path, LCT draws code and field theory into the framework and builds cumulatively on these foundations, using the prior tools and in so doing developing them in new and very productive directions. This is a significant development for the sociology of education, because it creates the capacity for a different kind of research programme – one that builds cumulatively on its foundations, showing how the prior thinking and research can be re-analysed, re-interpreted, developed and also critiqued within a framework that seeks to bring these insights together into a larger whole that has greater explanatory power as well as more conceptual economy.

Maton begins the book by laying down the aims of the book as well as discussing the broader concerns with which LCT is concerned and the framework's realist underpinnings. The main point of the book, and about LCT itself, and one Maton demonstrates consistently throughout, is that this book is about 'building knowledge about knowledge-building' (p.3) and that rather than a 'new' sociological approach, LCT is building on and extending prior approaches and in so doing is evolving into a 'sophisticated toolkit' (p.3) for research and also for practice. A more practical point of the book is the laying out or unfolding of the framework, or at least the two dimensions of it that are able to be discussed in detail in this limited space: Specialisation and Semantics. As Maton explains in the first chapter, there are five dimensions of LCT currently, but not all of these are as developed as the first two dimensions, and much work, research, and development lies ahead.

What is very clear throughout the book is the process that Maton has undertaken to do what he claims LCT is designed to do: to cumulatively build on prior tools and foundations and to extend research, primarily into education, in new, exciting and more generative and productive ways. Thus, each chapter builds on the one before, and although there is some repetition, this works to keep the reader in step with the text. It also makes the text more accessible, as some of the concepts are fairly complex, and require careful reading. Chapter two begins the unfolding of Specialisation. In this chapter the Legitimation Device is explained, about which there is much more to say than I could do justice to here. In essence, all academic disciplines comprise fields, in which there are a range of actors and resources. Actors within these fields are either in accord, if they are working together towards the same goals and have the same underlying orientations or principles or, if they do not they may well struggle over these resources, and over the rights to make their orientations and principles the 'ruler' for the field. Thus, all academic disciplines (and this applies to fields outside of the academy too) are sites of struggles over what counts as legitimate and what does not, and who gets to decide that and when they get to do so. In order to understand the nature of these struggles and the changes and shifts within field over time, we need to be able to see the underlying orientations or principles of the actors and their practices. Otherwise we are likely to be working with assumptions about why things happen as they do rather than reasoning based on knowledge and understanding. The dimensions of the Legitimation Device – the symbolic ruler of consciousness that allows those who control it to set the bar as it were in terms of what knowledge, practices, habituses and resources are valued and why and how – provide these tools. This chapter goes on to explain the first part of the 'toolkit', epistemic and social relations and how these can be brought together to create legitimation or specialisation codes. Simply put, they allow us to see what it is that counts in particular fields in terms of success and claiming legitimacy or recognition.

Epistemic and social relations are concepts and also analytical tools that are returned to in subsequent chapters, and simply explained they allow researchers to look both at the relationships between knowledge and its objects (what is known) and knowledge and its subjects (who is doing the knowing) so overcoming both a blindness to knowledge and knowers. This is important to understand when moving on to chapters three and four, where the following two parts of Specialisation are unravelled and discussed, namely the epistemic-pedagogic device and knowledge-knower structures. All of these parts of Specialisation build quite deliberately on Bernstein's code

theory, with specific reference to his collection and integrated codes and classification and framing, as well as his work on the Pedagogic Device as a way of seeing education as comprised of three distinct yet interrelated fields. Knowledge-knower structures build quite specifically on Bernstein's later work on knowledge structures.

Chapter five discusses gazes, using an idea of Bernstein's that was not fully explored in his work, but which has potential in terms of understanding the growth and development of fields that exhibit horizontal knowledge structures. In the chapter Maton develops a notion of four different gazes that denote different strengths of the relation of knowledge to its subjects or knowers, and in doing so shows how fields that can often seem segmented, and to be exhibiting weaker 'verticality' (Muller, 2007) or ability to develop cumulatively over time can actually have the potential to develop cumulatively through the specialisation of knowers rather than of knowledge. There are questions raised by this chapter that have yet to be answered. One such question is whether social gazes, which knowers possess by virtue of being part of specific social groups, really do lead to the fragmentation of intellectual fields or educational knowledge fields in the ways they have in Cultural Studies (the case used in the book). The differences between social and cultivated gazes, the latter possessed by those who have immersed themselves in a field for a lengthy period of time and thus learned the particular methods and knowledge of a specific discipline, need to be further explored in empirical studies. Maton acknowledges very clearly that the framework is evolving, and while he shows explicitly and with reference to data and analysis thereof both how Specialisation subsumes and extends particular parts of Bernstein's work, thus building the LCT framework cumulatively, there remains much work to be done. This is a strength, because LCT is a framework that poses questions as well as answering them, thus driving the research programme on.

A second dimension, Semantics, comprising the two key concepts of semantic gravity and semantic density, is built on Bernstein's early work on elaborated and restricted codes, and as a further dimension of the Legitimation Device it does not represent a break with Specialisation but rather 'codes' different elements of practice. In chapters six and seven Maton lays out first semantic gravity and then semantic gravity, connecting them to preceding chapters where relevant and moving towards perhaps the most exciting part of the framework for analysing whole fields as well as parts of them: constellations. Using accessible metaphors, and well-known examples of student-centred and

teacher-centred learning, Maton shows how both Specialisation and Semantics can be brought together to analyse the differences between certain stances taken within fields, and the reasons why some of these may be well-supported and others not, even though those stances not well supported may be sound.

In chapter nine, Maton moves into newer territory, referring back to epistemic and social relations to develop what he calls his '4-K' model encompassing knowledge, knowers, known and knowing. He also further develops the gazes discussed in chapter five expanding this concept to include insights and lenses. This chapter shows how fine-grained and sophisticated LCT can be, and highlights for researchers the potential for developing other parts of the framework in similar directions as needed, creating finer typologies for more nuanced, less fuzzy and more focused analysis and research. However, as Maton continually argues, you only need as much theory as the problem requires, and you only need to choose the parts of the toolkit that will help you look at your particular research questions as clearly as possible. Thus, while the book is truly a grand journey through what has currently been developed of LCT and published, researchers need not feel overwhelmed by the depth and breadth of the framework, because one will never use all of it in one project.

The final chapter points quite clearly to the ways in which the framework is still building on the work of Bourdieu and Bernstein, primarily. It discusses new directions in which LCT is beginning to move as a field – and makes quite clear that LCT is a field with a growing number of newer and more established voices who are beginning to think in different ways about educational research and practice and also about fields outside of the realm of education. It also points to other complementary frameworks that have been brought together with LCT that are leading to productive new forms of research, for example Systemic Functional Linguistics. Maton's own words perhaps sum up best what LCT is and can be when he says 'An adequate working theoretical tradition is not only epistemologically powerful but also socially inclusive. By making visible the workings of the gaze, we have a chance to make that gaze more widely available. We can climb on the shoulders of. . .giants. Not only can we then see further, more of us can do so' (p.147). This book, and the conceptual tools and framework it lays out and discusses, is most certainly an attempt to make visible the workings of this particular sociological gaze, and is aimed at making it possible for more scholars to immerse themselves in the tools they find most relevant and

productive to their work in order to use this gaze to research substantive problems that need solving. It is a must-read for students of the sociology of education, and for scholars who find that their current approaches may not be providing the answers they need. LCT is not the only answer, but it is a very good place to start working from.

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Frequently asked questions

Is the Journal of Education SAPSE accredited?
Yes

How many issues per year?
In terms of a recent policy decision, we aim to produce at least two 'normal' editions of the journal each year in addition to at least two special issues (one of which will be the SAERA Special Edition).

Most journals now have a per article fee which contributors are required to meet should their articles be accepted. Does the Journal of Education levy such charges?
Yes. This step was necessary to cover the costs of the increased number of issues each year. A levy of R3 000 per article will be applied to successful articles submitted to our office. The central research offices in most institutions of higher education routinely arrange for such payments to be made. We encourage individual authors who do not have such cover to contact us.

Are articles peer reviewed?
Yes. Our goal is for articles to be refereed by three experts in the field.

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Referees provide their crucially important service for no reward, and are sometimes unable to oblige on time but we endeavour to respond within three months.

Can I send my submission by e-mail?
Yes. The electronic version of the article should be sent as an email attachment.

To what extent should an article being submitted be presented in 'the style' of the journal?
Citation and referencing should be in the style of the journal (see the previous section 'Notes for Contributors'). Authors are not expected to reproduce the particular fonts and font sizes used in the journal, but the levels of headings and subheadings should be clear. With regard to the electronic version of the article, we prefer as little formatting as possible.

Does the journal have a policy to encourage and support budding novice researchers?
Unfortunately not – this is simply beyond our capacity. While we welcome extended comment that referees may be able to offer, we cannot impose on their good services beyond the expectation of an overall judgement on the article, together with brief justification of that judgement.

What is the rate of acceptance/ rejection?
The following statistics for 2012 and 2013 provide an indication of the pattern of acceptance/ non acceptance:

Year	Accepted with no or minor revisions	Accepted after revisions	Not accepted
2012	1	11	30
2013	0	8	34

Even an increase in the number of issues each year will not keep pace with the ever-increasing number of submissions. We can do little to mitigate the competition engendered by state funding policy and the kinds of incentive schemes that have become a feature of the higher education landscape.

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Beyond summarizing reasons for rejection – where applicable – we regret that we are unable to enter into detailed discussion on decisions reached by the Editorial Committee on the basis of referee reports.

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We understand this as implying that articles should represent a rigorous enquiry (conducted through argumentation or empirically) into the understanding of educational issues. Such inquiry originates in a problem rather than a solution, and it is rare for such enquiry to have no reference to, or engagement with, a broader literature and theory. Advocacy in the form of prescriptions or 'how to do it' recipe knowledge for practitioners seldom finds favour with referees. The question of audience is key. The assumed audience is the collective body of researchers rather than those more narrowly concerned with the effective implementation of specific policies.

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