

Inclusive education in initial teacher education in South Africa: practical or professional knowledge?

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Abstract

Inclusive education is embedded in South African policy with the expectation that teacher education will equip pre-service teachers to teach inclusively. As a result, courses in inclusive education are offered in most Initial Teacher Education (ITE) programmes and research interest in teacher education for inclusion has grown. This paper contributes to this body of knowledge by using Legitimation Code Theory to engage critically with concepts and assessment tasks from three inclusive education courses. This meant identifying where theoretical, context independent knowledge is privileged (semantic density), and where the knowledge is derived from practice or experience and designed to be implemented within specific contexts (semantic gravity). Using examples as reference points, I discuss how inclusive education comes to emphasise practical knowledge, to be enacted in particular contexts, or with particular groups of learners. An alternative is to position inclusive education as professional knowledge where theoretically informed judgments are made in response to the complexity of learner diversity. This will require strengthening the disciplinary foundation of concepts presented in ITE courses in inclusive education.

Introduction

Inclusive education is now a compulsory component in Initial Teacher Education (ITE) programmes in South Africa (Republic of South Africa, (RSA) 2015). The origins of inclusive education can be found in human and disability rights initiatives championed by the United Nations (Unesco, 1994) and the field has had various influences, including special needs education, medicine and psychology, critical sociology and curriculum, pedagogy and assessment (Slee, 2011). While the meaning of ‘inclusive education’ has been a matter for debate (Walton, 2016), in South Africa it has come to be understood as a system-wide response to “those groups of learners who have been, or continue to be disadvantaged in terms of educational provision”

(Department of Basic Education (DBE), 2010, p.1). These groups of learners are deemed to have ‘additional support needs’ which are said to, “arise from any factor which causes a barrier to learning, whether that factor relates to social, emotional, cognitive, linguistic, disability, or family and care circumstances” (DBE, 2014, p.7). This approach to inclusive education is a broad approach (Ainscow, Booth, Dyson *et al.*, 2006) which acknowledges that there are a number of reasons why some learners do not access, participate and succeed in school, and that these reasons need to be addressed by the education system. In response to the legislative expectation that newly qualified teachers will be able to “understand diversity in the South African context in order to teach in a manner that includes all learners” (RSA 2015, p.62) ITE programmes across the country offer courses in inclusive education.

Not all pre-service teachers are satisfied with their ITE courses in inclusive education, with indications that they want courses to have a *practical*, rather than a theoretical orientation. Pre-service teachers in one research project¹ reflected on their course in inclusive education saying, “[I would prefer] not just learning the theories but the more practical . . . what are the methodologies you could perhaps employ?” and “I think what we’ve learnt is very theory based and theoretical and the perfect situation. And I don’t think we’ve learnt like practically what to do”. Beginner teachers concur, saying, “I think the inclusion course needed to be more practical, (showing) you how to implement it in the classroom” and “It is all well and good saying here is the theory and apply it, but sometimes you are not sure how to apply it, or what applies in different situations” (Harrup, 2015, p.34). Despite these assertions, I argue in this article that inclusive education *is* generally presented to pre-service teachers as practical knowledge in a number of ITE programmes in South Africa. And, contrary to what the pre-service teachers say, there is very little theory in what they are taught. I wish to problematise this orientation and suggest that inclusive education would be better served by being positioned as a professional, rather than a practical knowledge in ITE. To achieve this, I argue for strengthening the disciplinary and theoretical foundations in the presentation of concepts commonly taught in inclusive education courses.

¹ Data collected for the study reported in Walton, E. and Rusznyak, L. (2013). Pre-service teachers’ pedagogical learning during practicum placements in special schools. *Teaching and Teacher Education*, 36, 112–120.

Setting the scene: teacher education for inclusive education

Teacher education is identified as one of the key components for the successful realisation of an inclusive education system. Research from countries who pioneered inclusive education in the 1980s and 1990s points to the importance of teacher professional development for the achievement of more inclusive and equitable education systems (Ainscow, 1999). The Salamanca Statement and Framework for Action (UNESCO, 1994, p.27) confirms this, saying “Appropriate preparation of all educational personnel stands out as a key factor in promoting progress towards inclusive schools”. Just before the introduction of inclusive education to South Africa in 2001, scholars here also alerted us to the need for teacher training² in knowledge, skills and attitudes for the implementation of inclusive education (Bothma, Gravett and Swart, 2000; Hall and Engelbrecht, 1999). White Paper Six: Special Needs Education (Department of Education, 2001) in outlining the framework for building an inclusive education and training system in South Africa, identified classroom teachers as the “. . . primary resource for achieving our goal of an inclusive education and training system”, noting that these teachers will “. . . need to improve their skills and knowledge, and develop new ones” (p.18).

Despite these policy directives and research findings, a lack of teacher training in inclusive education is often identified as one of the impediments to the achievement of inclusive education, both internationally and in South Africa. Inclusive education has been critiqued in the international literature on the grounds that teachers are insufficiently trained (Kavale and Forness, 2000; Lloyd, Wilton and Townsend, 2000). Echoing this, various South African scholars attribute the non-implementation of inclusive education to insufficient professional development opportunities (Eloff and Kgwete, 2007; Engelbrecht, Nel, Smit and Van Deventer, 2015). This is despite evidence that many universities offer modules, courses and programmes in inclusive education at undergraduate and post-graduate level, and some offer

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I note my dis-ease with the term ‘training’ as it is used in connection with inclusive education. As I show in this article, inclusive education is not well served by being presented as a series of technical interventions implemented in response to a bounded problem, for which teachers can be ‘trained’. Many sources to which I refer do use the word training and I use it when referring to this work. My preference is for the terms teacher education or professional development.

workshops or short courses (Pooe, 2012). National and provincial departments of education have provided workshops and other in-service learning opportunities for teachers, as have various NGOs in the field (Walton, 2011). It is clear that much more research is needed to understand what it is that teacher education should offer to enable more inclusive education, and why it is that current offerings are not translating into the realisation of greater inclusivity in schools.

My focus in this article is on pre-service teacher education. This is not to deny the importance of in-service teacher education. In fact, the *Integrated Strategic Planning Framework for Teacher Education and Development in South Africa* (DBE, 2011a) prioritises inclusive teaching as it has been identified as a “key lever for improving quality across the system” (p.10). It seems important that teacher education for inclusive education must clearly distinguish what it is that pre-service teachers should be learning, and what is relevant and appropriate for in-service teachers with different years of classroom experience, and with different roles and responsibilities within the education system. Pre-service teacher education for inclusive education has attracted relatively less attention from South African scholars, whose work has tended to focus on the content and effects of various in-service professional development opportunities (see, for example, Lessing and De Witt (2007); Swart and Oswald (2008); Dalton, Mckenzie and Kahonde (2012)).

Internationally, there has been considerable interest in pre-service teacher education for inclusive education. The focus of this body of literature has been on decisions about whether inclusive education should be taught as stand-alone courses or infused into the general teacher education programme (Loreman, 2010a); what the content of inclusive education courses needs to be (Loreman, 2010b); the impact of courses (Lancaster and Bain, 2007; Sharma, Forlin and Loreman, 2008); and the role of different types of field experiences (Lambe and Bones, 2008; Waitoller and Kozleski, 2010). This article focuses on the content of ITE inclusive education courses as currently taught in some South African Higher Education Institutions and offers an analysis of this content using some the conceptual tools of Legitimation Code Theory.

The conceptual tools of the analysis

The dimension of Semantics within Legitimation Code Theory (Maton, 2014) forms the basis for my analysis of inclusive education content in ITE. This is then developed with reference to Shay's (2013) work on the semantic field of recontextualised knowledge.

Legitimation Code Theory (LCT)

LCT emerged in the 1990s and is seen to be an evolving theory, with its development driven by the studies that use it. It is styled as a “practical theory rather than a paradigm” and “a conceptual toolkit and analytic methodology” (Maton, 2014, p.15). It has its roots in the work of both Pierre Bourdieu and Basil Bernstein and sees fields as knower-knowledge structures. Bourdieu's influence on LCT is primarily in terms of ‘gazes’, which encompass knower-structures and knower-grammars, and which are conceptualised in terms of the varying strength of social relations in a field (Maton, 2014). Bernstein's code theory is developed in LCT in terms of the structuring of knowledge practices. To use the conceptual toolkit afforded by LCT is not to suggest that the critiques of LCT should not be considered. Singh (2015) maintains that LCT, particularly as reflected in Maton's (2014) book *Knowledge and Knowers*, has a “restricted interpretation of knowledge, ways of knowing, and knowledge growth” (p.493). In a more extensive critique, Tyler (2014) suggests that LCT represents “a return to earlier and abandoned phases of Bernstein's project” (n.p.) and neglects recontextualisation as a “crucial feature of pedagogic discourse and knowledge acquisition” (n.p.). Having noted these critiques, I do agree that the different dimensions of LCT offer a useful and accessible framework (Clarence, 2015; Case, 2014) that “enables knowledge practices to be seen, their organising principles to be conceptualised and their effects to be explored” (Maton, 2014, p.3).

Five dimensions currently comprise the LCT toolkit. Each has associated concepts or modalities which might be relatively stronger or weaker (+/-) and which can be used to study the principles that organise various practices. The five dimensions are Autonomy, Density, Specialisation, Temporality and Semantics. I have little doubt that all five dimensions would yield insights into the broad field of inclusive education, but given space constraints, I have chosen to focus on Semantics. In this regard, Maton (2014) reassures that,

“you only need as much theory as space will allow” (p.19). Semantics has been identified as the “newest and fastest growing” (Maton, 2014, p.19) dimension in LCT research and it has been productively used in various South African studies. These include Shay and Steyn’s (2016) work with vocational curricula; Clarence’s (2015) case study of academic development practitioners working with Political Science educators; Arbee, Hugo and Thomson’s (2014) analysis of a Marketing course in Higher Education; and Rusznyak’s (2015) categorisation of teacher learning envisaged by policy.

Semantics has two concepts or modalities. The first is *gravity*, which relates to the extent to which meaning is dependent on the context in which it is produced. Relatively strong semantic gravity indicates that context is vital in meaning making, such that a particular knowledge cannot be abstracted beyond the context. Maton (2014, p.110) puts it as “meaning is more closely related to its social or symbolic context of acquisition or use”. To illustrate this, in South Africa, knowledge of which hand signals to use to hail a taxi going in a desired direction is very context specific – Johannesburg knowledge doesn’t help in Cape Town (Woolf, 2013). This hand-signal knowledge is characterised by very strong semantic gravity, abbreviated as SG++. Weaker semantic gravity (SG-/-) is evident as context becomes less important for meaning and knowledge is more abstract and generalisable across contexts. The second modality of semantics is *density*. Density refers to the extent to which meanings are condensed in symbols, concepts and practices. Stronger semantic density (SD+//++) is evident as more meanings are condensed within any particular symbol, concept or practice. Maton (2014, p.130) calls this a “semantic TARDIS” after the Doctor Who television series in which a police box opens to reveal an entire space craft – in other words, “it’s bigger on the inside than the outside” (The Doctor Who Site, n.d.). Other literary analogies might be the wardrobe in the Narnia series, or Mary Poppins’s carpet bag. All of these serve as a metaphor for strong semantic density as “more resides within than may first appear” (Maton, 2014, p.130). Weaker semantic density refers to simple ideas or concepts with fewer meanings.

Semantic gravity and semantic density are evident in all knowledge practices and their strengths can vary independently. As a result, knowledge practices can be constructed with the intersecting axes of each of the continua of semantic gravity and semantic density, generating a semantic plane (Maton, 2014) with four quadrants. These are characterised as SD-/SG+; SG+/SD+; SD+/SG-; and SG-/SD-. From these four quadrants Shay (2013) has

developed a semantic field of recontextualised knowledge, with a focus on the types of curriculum that each quadrant offers. This is important for my analysis of the content of inclusive education courses as I am not concerned here with the field of knowledge production in inclusive education itself, but in the Pedagogic Recontextualising Field (PRF) where inclusive education becomes curricula, courses and texts (Bernstein, 2000).

The semantic field of recontextualised knowledge

From Maton’s semantic plane, Shay (2013, p.572) offers a “semantic plane for curricula” in which she demarcates the quadrants as generic curricula (SG-/SD-); theoretical curricula (SD+/SG-); practical curricula (SD-/SG+); and professional/ vocational curricula (SD+/SG+). This is reproduced in figure one.

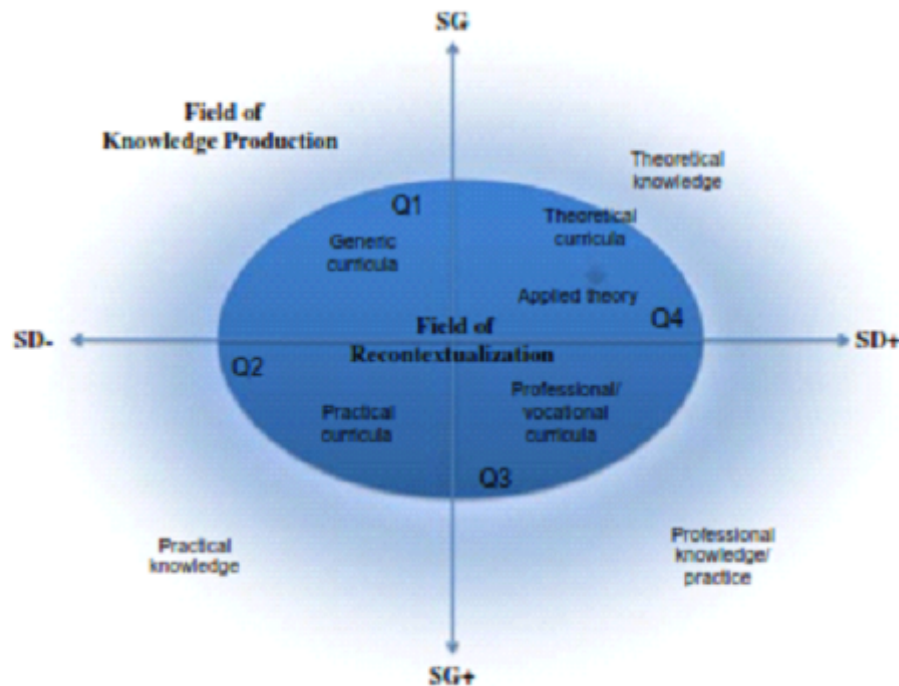


Figure 1: Shay’s (2013) semantic field of recontextualised knowledge.

Without empirical evidence, Shay is cautious about defining generic curricula, suggesting that these may be manifested in some of the generic, cross-field learning outcomes that are intended to be concept empty (SD-) and transferable across contexts (SG-). Theoretical curricula derive their logic from the discipline and reflect the “world of theory” (Shay, 2013, p.574). While there may be some range in semantic density and semantic gravity within theoretical curricula, there will always be a “ceiling” on semantic gravity as no direct application to the problems of practice are expected. Here Shay draws examples from the disciplines of mathematics, physics and political philosophy.

The quadrants of practical and professional curricula are my concern in this article as they relate directly to possible conceptions of curriculum in teacher education. Practical curricula, Shay (2013) argues, reflect recontextualised practical knowledge. Context or workplace practices are translated into principles or concepts for these practices, resulting in slight strengthening of semantic density and weakening of semantic gravity. However, the principles and concepts in these curricula are “derived from practice not theory”, which means there will always be a “ceiling” on semantic density (p.573). Semantic gravity will always be relatively strong in these curricula because they are bound to the context of practice. Professional/vocational curricula recontextualise both theoretical and practical knowledge. Shay distinguishes these curricula from theoretical curricula by saying that the logic of professional curricula is the “demands of the practice” (p.575). They are different from practical curricula because “the principles informing the practice are derived from theory” (p.575). In professional curricula, theory is not taught for its own sake, but for its potential to inform and understand practice. Thus both semantic density and semantic gravity have to be strong in professional curricula. Guile (2014) makes a similar point, but without reference to semantics:

... the challenge for aspiring professionals is to develop the capability to use disciplinary knowledge, in conjunction with professional experience, as a resource in a specific context to pick out the salient features of that situation or event, and then infer what follows and how to act (p.82).

Shay’s contribution of a semantic plane of curricula is to show the different logics that give rise to different curricula, and to indicate what knowledge progression is possible through the strengthening of either semantic density or semantic gravity, or both. She also indicates boundaries between different

curricula, suggesting how articulation between curricula is unlikely to be straightforward, given the different criteria that legitimise knowledge in each. Rusznyak (2015) brings this discussion more directly to teacher education as she considers various recontextualising principles that might be used to inform initial teacher education curricula. In particular, Rusznyak shows the “trade-offs” (p.8) that must be made in the selection and sequencing of knowledge. She argues that foregrounding practical and situational knowledge in teacher education, while possibly compromising theoretical knowledge, is more likely to enable beginner teachers to cope with the realities of South African classrooms. Foregrounding the systematic acquisition of theoretical knowledge, by contrast, would more likely enable prospective teachers to use the insights from theory to inform pedagogical choices in practice. While Rusznyak’s concern is with the broad design of ITE programmes, I wish to focus on a particular component, that of inclusive education. One part of a wider, multi-institutional research project entailed the collection and cataloguing of courses in inclusive education to understand how teacher education for inclusive education is currently conceptualised and realised in South Africa.

The data that informs this discussion

With ethical clearance from my university ethics committee, and with permission from lecturers in other HEIs, I was able to access course outlines of inclusive education courses or modules from three university courses in inclusive education in the Bachelor of Education programme. These HEIs included one university constituted by a merger, one historically advantaged urban university and one historically disadvantaged university in a rural area. I use the term ‘course outline’ broadly to refer to the document given to pre-service teachers which includes, as a minimum, expected outcomes of the course, topics to be covered and at least one assessment task. As different HEIs have different requirements for course outlines, direct comparisons were not possible, but it was possible to use the material supplied to identify the key concepts that were included in the courses. These were indicated in the course material as lecture topics, section headings or learning outcomes.

I set out to map the relative semantic gravity and density of the concepts offered in the course outlines. This involved identifying the extent to which concepts were presented as being dependent on context and derived from practice (i.e. semantic gravity), and the extent to which concepts were

presented as complex with meanings condensed or simplified and rarefied (i.e. semantic density). A significant part of this analytical work was to focus on what teacher educators presented to pre-service teachers as the *source* from which the concepts are derived. It became clear that concepts in inclusive education courses cannot be evaluated in terms of relative semantic gravity and density independently of the sources from which they are generated or with which they are associated. As will be argued in the discussion below, it is possible for the same concept to be presented with different semantic profiles, depending on its given source. In addition to a focus on concepts, assessment tasks from the course outlines were considered in terms of their orientation towards semantic gravity and density. These were then mapped onto Shay's semantic plane for curricula to enable a discussion about the different logics and bases of legitimation used as inclusive education is recontextualised in ITE.

There are acknowledged limitations in this research process. With only three sets of course outlines available with consent for use in research, conclusions are not necessarily applicable across the sector. Courses may well deviate from the outlines, with more or less content actually delivered to pre-service teachers. Aspects seen as lacking in the course outlines may well be provided to students in class or through supplemental readings. As mentioned above, the format of the materials differed, with some course outlines providing more substance in terms of content than others. Considerations of the anonymity of the participating HEIs further limit the dissemination of the findings of this research. The presentation of an overview of all topics and assessments that are presented in each outline would be useful, but would also potentially lead to the identification of the participating HEIs.

Another limitation of the analysis presented in this paper relates to the critique of LCT mentioned above in that there is no reference to the process of recontextualisation and the work of pedagogising knowledge. Singh (2002, p.575) maintains that pedagogising knowledge has implications for, “‘what’ knowledge is available to be converted into pedagogic communication, ‘who’ . . . will undertake the work of pedagogising knowledge, and ‘how’ this knowledge is transformed into pedagogic forms”. This analysis of inclusive education course content has some relation to the knowledge that has been ‘converted into pedagogic communication’, but it does not go further to examine who undertakes this work and how the knowledge is transformed. In other words, the analysis takes the course outlines as pedagogical artefacts,

with no interrogation of the people and processes involved in their creation or use.

The purpose of this work is not to offer a comparative evaluation of courses, but to develop a conceptual argument derived from the data. The limitations discussed are thus deemed acceptable. Like Clarence (2015), I present the discussion that follows as a beginning, rather than a conclusion, hoping that it will open a conversation about what is taught to pre-service teachers in the name of ‘inclusive education’.

Inclusive education as practical knowledge within practical curricula

Many of the concepts presented in inclusive education courses are characterised by relatively strong semantic gravity, and relatively weak semantic density. Assignments too, show context dependence (SG+), with relatively little conceptual depth (SD-). Using selected examples, I will show how this potentially and problematically locates inclusive education as practical knowledge within a practical curriculum.

The semantic profile of concepts

The following four concepts have been selected from the three course outlines. This selection is not comprehensive, but at least one concept from each course is presented for discussion. With the detail given about the source of the concepts, they can be seen as illustrative of a successive strengthening of semantic gravity and weakening of semantic density.

Differentiation or *differentiated instruction* is offered as a classroom strategy that enables teachers to be more responsive to diverse learner needs. The given source of the concept is the codified principles of good practice with reference made to articles (e.g Subban (2006)) and websites (e.g <http://www.help4teachers.com>). These sources describe the rationale for differentiation in terms of assumptions of differences in readiness to learn, learning profile and interest and offer processes and techniques that have been found to be useful in enacting differentiation. This strengthens the semantic gravity of the concept by grounding its source in classroom practices. The classroom from which the principles are derived is generic, so no classroom at

any particular time or place is required for the meaning of differentiation. This prevents the concept from reaching extreme semantic gravity on the continuum. Because the principles of practice have been codified, and there is a significant body of literature on differentiation (although less empirical work (Subban, 2006)), there is a slight strengthening of semantic density. This indicates to pre-service teachers that differentiation is not a simple concept, but one with a number of constituent components. There is, however, no theory associated with differentiation in this course, so it must be positioned as SG+/SD-.

Learner support is a concept presented in one of the courses with the South African policy on Screening, Identification, Assessment and Support (SIAS) (DBE, 2008, 2014) as its source. The semantic gravity of the concept of learner support is significantly strengthened by grounding it in one specific South African policy. Thus the meaning of learning support for pre-service teachers in this particular course is inextricably bound up with the South African context and current policy provision. Because the policy itself is complex, and “constellates” (Maton and Doran, 2017) a number of other concepts like ‘barriers to learning’, ‘accommodations’ and ‘collaboration’, learner support as a concept in this course retains some strength in terms of semantic density, but there is no associated theory. Learning support can thus be mapped as SG+/SD-.

Contextual disadvantage is a concept foregrounded in one of the courses, where it constitutes a discrete unit of study. Here pre-service teachers are presented with a number of ‘case studies’ of particular learners, from which pre-service teachers are invited to derive an understanding of contextual disadvantage. As a result, contextual disadvantage is conveyed in this course as a concept with extremely strong semantic gravity (SG++), as it is completely grounded in very specific and described contexts. The semantic density of the concept is retained to some extent through reference to a framework of Child Friendly Schools (<http://www.unicef.org/cfs/>), which in itself relies on a constellation of concepts. Also, pre-service teachers are required to consider orphan and vulnerable children and discuss the development of their self-concept and self-identity. Self-concept and self-identity are not explicitly framed by any theory in the course material, but they do point pre-service teachers to some conceptual complexity in the idea of contextual disadvantage. The concept can be mapped as SG++/SD-.

Social problems is a final concept and is presented with two sources in one of the courses analysed. Newspaper reports and clippings are the one source, and their effect on the semantic profile of the concept is similar to that of the case studies, i.e., grounding the meaning in a particular time and place. It is noteworthy that pre-service teachers' own perceptions of social problems are validated as a second source of the concept. This represents the most extreme strength of semantic gravity evidenced across all the concepts, as the meaning of 'social problems' becomes each individual's personal experience. Here, incidentally, is where the LCT dimension of Specialisation would be relevant, as this is evidence of very strong social relations with the object of knowledge, as personal opinion and experience are regarded as legitimate forms of educational knowledge (a Knower Code). With this extremely strong semantic gravity comes particularly weak semantic density, as no other concepts or theories are shown to constitute the meaning of social problems (SG++/SD--).

Assessment

Assessment plays an important role in a course by indicating to students what is salient and where they should direct their focus. As such, assessment tasks can be considered as a reliable indicator of what teacher educators consider as important in their inclusive education courses. Two of the course assignments have been selected to illustrate particularly strong semantic gravity and relatively weak semantic density (SG+/SD-). These tasks are slightly abbreviated as follows:

- A. *Go to two of your home schools . . . , collect information about OVCs [orphans and vulnerable children] and learners experiencing barriers to learning and development. Discuss the types of barriers experienced and show how the schools tackle these challenges.*

- B. *Identify a real learner in a real classroom who experiences a barrier to learning. Observe the learner in class and decide on the accommodations necessary for the learner. Discuss with the class teacher how you would implement the accommodations as prescribed in the SIAS process. Then write a report . . .*

In neither of these assessment tasks is there a strongly demarcated “conceptual object of study” (Shalem and Rusznyak, 2013, p.1125) which would convey to pre-service teachers that their practice could be informed by theory or a context-independent body of knowledge. The semantic density of these tasks is thus weak (SD-), with pre-service teachers’ own decisions (Task B) indicated as a legitimate form of knowledge of inclusive education. In Task A, pre-service teachers’ attention is drawn to the school’s actions in “tackling” the challenges, and in Task B, the teacher’s knowledge of implementing accommodations is indirectly recognised. The specific “practice-based context” (Shalem and Rusznyak, 2013, p.1125) is strongly demarcated in each task, indicative of very strong semantic gravity (SG++). The message to these pre-service teachers is that meaning is made in context, and enacted in practice. Moreover, the knowledge of inclusive education as reflected in these tasks is taken to be highly individual and contingent, depending on the contexts that the pre-service teacher encounters.

Taken together, the four concepts and the two assignment tasks can be mapped onto a semantic plane of recontextualised knowledge (Maton, 2014; Shay, 2013) and are seen to be located in the quadrant of stronger semantic gravity, and weaker semantic density (SG+/SD-). This suggests that many of the concepts and tasks in inclusive education courses reflect the logic of a practical curriculum (Shay, 2013). Before problematising this orientation, I would like to suggest possible reasons for inclusive education being recontextualised into a pedagogic discourse characterised by such strong semantic gravity and relatively weak semantic density.

Accounting for the practical orientation of inclusive education courses

The field of knowledge production from which teacher educators select inclusive education knowledge is characterised by relatively strong semantic gravity (Walton, 2016). There is an often repeated mantra in the field that the meaning of inclusive education itself is context dependent, and will be conceptualised and implemented differently in different contexts (Florian, 2012; Kozleski, Artiles and Waitoller, 2011). As far back as 1998, Booth and Ainscow (1998) noted that different contexts influenced the ways in which inclusive education was practiced, and that comparisons across contexts were not helpful. This emphasis on contextual peculiarity has resulted in the field of knowledge production focusing on describing iterations of inclusive

education in a wide variety of geographical locations and socio-cultural and historical contexts. With this emphasis on the contextual dependence of the meaning of inclusive education, it is unsurprising that teacher educators reflect this in the knowledge that they select.

The field of knowledge production in inclusive education has also been criticised for being theoretically flimsy, and hence could be said to be characterised by relatively weak semantic density. Armstrong, Armstrong and Spandagou, (2010, p.37) note the “theoretical vacuum” in which inclusive education sits and Slee (2011, p.65) says that is important to “Build a theory of inclusive education”. This is not to say that there is no theoretical work in inclusive education. South African scholarship in inclusive education has had a strong disciplinary basis in psychology, with many influential academics in the field being psychologists (Walton, 2016). This work has brought ecosystemic theory and the ideas of Bronfenbrenner to the foreground in inclusive education research (Geldenhuys and Wevers, 2013), policy (DBE, 2010, 2014) and teacher education (Swart and Pettipher, 2011). There are also South African sociologists (Sayed, Subrahmanian, Soudien *et al.*, 2007) and philosophers (Horsthemke, 2017) engaging with issues of educational inclusion and exclusion, reflecting Dyson’s comment, quoted in Allan and Slee (2008, p.35) as,

. . .[Y]ou get a kind of wing of the inclusion movement which is very much about conceptualization, critical thinking. If it has a home in academic disciplines it’s probably within philosophy of education, sociology of education, where people do not feel it is necessary to do empirical work out there in the field because it doesn’t actually tell you very much.

This suggests that there is the potential to locate inclusive education in initial teacher education within broader disciplinary and theoretical traditions.

The influence of policy must also be considered in accounting for the dearth of theory in inclusive education courses. Policies are in what Bernstein (2000, p.33) calls the “Official Recontextualising Field” (ORF) which is “created and dominated by the state”. Bernstein is clear that the independence of the PRF from the ORF is “a matter of some importance” (p.115). He argues that through the ORF the state tries to weaken the PRF and reduce its relative autonomy over the construction of pedagogic discourses. The ORF exerts some influence over pedagogic discourses of inclusive education in South Africa. As noted above, one course in this data set frames learner support within current policy, and some authors of textbooks for pre- and in-service teachers (like Ntombela and Raymond (2013)) look directly to policy to

define and rationalise inclusive education. What is less clear is the relationship between the field of inclusive education knowledge production and the ORF in this country. Policy makers selectively appropriate research to inform and justify their policies, and in accordance with their objectives (Sarakinioti, Tsatsaroni, and Stamelos, 2011; Vithal and Volmink, 2005). South African policies make scant reference to the research bases that inform them, with key policies like White Paper Six (DoE, 2001) and SIAS (2008/2014) offering no reference lists. Policies that do compile reference lists (like *Guidelines for full-service/inclusive schools* (DBE, 2010) and *Guidelines for responding to learner diversity* (DBE, 2011b) cite very little South African research. Close readings of these documents do suggest the strong but tacit influence of ecosystemic theory on policy formulation, and some attempts to replace a medical deficit approach to difference and disability with the social model. Clearly, this is an area that requires further research in the development of the field of inclusive education in this country.

Another possible reason for the practical orientation of inclusive education coursework in ITE is that textbooks in South Africa that might be prescribed for courses foregrounds inclusive education as a practical knowledge. In their preface to the book *Making inclusive education work in classrooms*, Pienaar and Raymond (2013, p.viii) say that this book “will help teachers and teachers-in-training see how inclusive education can *work* to benefit all children” (emphasis mine). The back-cover blurb of the often-prescribed *Addressing barriers to learning* (Landsberg, Kruger and Swart (Eds), 2011) says that the book contains, “Case studies [which] offer practical examples and activities [which] provide hands-on experience regarding classroom practice and management . . .”. Finally, *Believe that all can achieve* (Bornman and Rose, 2010) is punted on the back cover as paying “specific attention to practical implementation”. These examples are presented not to suggest that attending to inclusive practice is not important, but to show that teacher educators do not have to look far to find inclusive education recontextualised as practical knowledge.

A final reason for inclusive education being presented with the logic of a practical curriculum is the “ideological screens” (Bernstein, 2000, p.115) through which an original discourse must pass as it becomes a pedagogic discourse. There may be any number of ideological screens that could be identified in the contested space of inclusive education. Here I would like to draw attention to two closely related screens in relation to my discussion about semantics and curricula within an ITE programme. The first would be

the extent to which the recontextualising agents (in this case, teacher educators), subscribe to a theory-dependent or theory-independent approach to initial teacher education as espoused by Shalem and Rusznyak (2013). The theory-dependent approach privileges theory in initial teacher education on the basis that “It is necessary to develop propositional understanding about concepts and modes of justification amongst student teachers, with the view to equipping them with an epistemic foundation that will guide their professional judgement” (Shalem and Rusznyak, 2013, p.1121). A theory-independent view, by contrast, eschews theory in favour of reflection and apprenticeship. The assessment tasks described above seem to reflect the latter approach, as there is no reference to theory in the tasks, but reflection and observation/apprenticeship are valorised.

The second ideological screen is similar to the first and refers to the extent to which teacher educators promote conceptual or contextual coherence in knowledge selection (Rusznyak, 2015). It seems that in much of what is offered in inclusive education courses to pre-service teachers is “. . . situational and practical knowledge . . . [and] contextually relevant insights” (Rusznyak, 2015, p.24). This suggests that contextual coherence is privileged by teacher educators in the design of inclusive education courses. There may be good reason for this. Inclusive teaching is currently not a reality in many South African schools (see, for example, Engelbrecht, Nel, Smit, and Van Deventer, 2015) and Engelbrecht, Nel, Nel, and Tlale (2015)) and teacher educators cannot rely on practicum experiences or early career school environments to model inclusive practices. As a result, teacher educators may be concerned to offer as much practical knowledge about teaching inclusively as possible in the ITE programmes.

While there may be good reasons why inclusive education is taught with the logic of a practical curriculum, with minimal theory and weak semantic density, and contextual exigencies foregrounded with strong semantic gravity, I argue that this is problematic.

The problem with the practical orientation of inclusive education in ITE

I do not wish to rehearse the critique that Shalem and Rusznyak (2013) have made about theory-independent ITE, nor Rusznyak’s (2015) indication of the limitations of knowledge selection based on contextual rather than conceptual

coherence in the preparation of teachers. Instead, I wish to focus specifically on inclusive education and argue that the current positioning of inclusive education in ITE is problematic. The problem with the strong semantic gravity is that the specificities of context may be over-emphasised to pre-service teachers. This means that they may not see the knowledge as applicable beyond particular contexts, and may not imagine themselves able to transfer the knowledge to different contexts. Furthermore, at the extremes of strong semantic gravity, personal, experiential and idiosyncratic understandings of inclusive education are legitimated. This easily becomes mere everyday knowledge, which potentially reproduces the status-quo. This works against the disruption of existing inequitable practices in education and thwarts the achievement of more inclusive ways of schooling.

The relatively weak semantic density in courses, revealed in the scant reference to theory means that pre-service teachers may not access non-intuitive ways of thinking of learner difference in relation to pedagogy. Theory deepens and broadens everyday interpretations and experiences and provides different and alternative descriptions of educational processes and practices (Biesta, Allan and Edwards, 2014). In the case of inclusive education, theory potentially offers abstract knowledge and concepts, which can then be applied in complex situations. Inclusive classrooms are indeed complex contexts (Engelbrecht, Nel, Nel and Tlale, 2015). But when inclusive education concepts are pared down in ITE and abstraction is minimised, the problem it addresses becomes simple, merely requiring a technical or instrumental response. In other words, the relatively weak semantic density of inclusive education in ITE programmes in South Africa means that it is not positioned within the logic of a professional curriculum.

An argument for a professional orientation to inclusive education

To develop inclusive education as a professional knowledge in professional curricula requires “knowledge progression” (Shay, 2013, p.576) through strengthening semantic density, while not losing its semantic gravity. This means moving inclusive education in ITE from SG+ and SD- to SG+ and SD+. I would suggest that semantic density can be strengthened by forging constellations with other concepts and expanding the meanings of the concepts presented. It would also mean deriving concepts from theory rather than policy, practice or experience. An example from the data is illustrative.

Unlike other concepts, co-operative learning is presented in one of the courses as a concept where the source is explicitly shown to be located in theories from the discipline of psychology. The theories given as the foundation from which co-operative learning can be practised are Vygotsky's socio-cultural learning theory, Bandura's work on observational learning and Johnson and Johnson's theory of social interdependence (Putnam, 2009). This foregrounding of theory weakens the semantic gravity of co-operative learning, in that context is rendered less significant for meaning—in the case of social interdependence theory, the field of education is not even required. Context is not absent, though, as the theory is expected to be applied in practice. This means that the concept cannot cross Shay's "ceiling" into the quadrant of theoretical knowledge. The theory strengthens semantic density by packing the concept of co-operative learning with a constellation of other concepts (mediation and zones of proximal development from Vygotsky, observational learning from Bandura and positive and negative interdependence from Johnson and Johnson's theory), each of which has strong semantic density in its own right. Given these sources, the concept in this course can be mapped as SG+/SD+.

It is clear, though, that co-operative learning *could* have been presented as a concept with much weaker semantic density. There is a significant body of accessible knowledge about co-operative learning that is based on codified principles of good practice. This literature describes classroom arrangements that support optimal co-operative learning, like role allocation, group accountability and skills instruction (see, for example, Jolliffe (2007)). These could form the basis for teaching the concept in a way that position it, like the four concepts discussed above, as practical knowledge in a practical curriculum. By omitting reference to theory, and simply drawing pre-service teachers' attention to the codified principles of co-operative learning in practice, the semantic density of this concept could be significantly weakened. This is significant, because it illustrates the point that concepts in inclusive education do not necessarily have to have weak semantic gravity, but that there is the possibility for situating them within broader disciplinary and theoretical traditions.

The example of co-operative learning demonstrates the possibility of both strengthening or weakening the semantic density with which a concept is presented to pre-service teachers. In a quest for "knowledge progression" (Shay, 2013, p.576) in inclusive education, I return to the four concepts characterised by weak semantic density discussed above (in section 5.1).

There are possibilities to strengthen their semantic density by forging constellations with other concepts and explicitly situating the concepts within the disciplines of psychology and/or sociology, and the scholarship of teaching. Differentiated instruction and learner support could be derived more specifically from the reading and learning that pre-service teachers do in psychology of education, with particular reference to theories of learning and development (Kern and Fritz, 2017). These concepts could also be located in the wider studies of curriculum, pedagogy and assessment undertaken by pre-service teachers. Contextual disadvantage and social problems could be strengthened with reference to theories in sociology of education, and concepts like cultural reproduction, race and class, which are likely components of pre-service teachers' studies in education (Soudien, 2017). By mooring concepts taught in inclusive education courses within a disciplinary framework (either psychology, or sociology, or a well-informed combination of the two)³ it becomes possible to bring the concepts into relationship with each other, and builds coherence in relation to other relevant concepts. This has the potential to move the position of inclusive education towards professional knowledge within ITE.

Conclusion: Looking forward

In this argument I am not discounting practical knowledge, nor attempting to invalidate pre-service teachers' voices that clamour for less theory. Instead, it is to recognise the limitations of a practical orientation to inclusive education in developing professional teachers who have access to relevant theory and research that could inform their professional judgment. It is also a call for the recognition of both the possibilities and limitations of ITE in developing inclusive teachers and teaching. The undergraduate qualification may be the only time and space that teachers have in their careers to be systematically introduced to theories, and ITE should not easily relinquish this in favour of a more 'practical' curriculum in inclusive education. There is also a limit to what can be accomplished in a four-year pre-service qualification, and it would be useful for teacher educators to consider what should be learned about teaching inclusively in the induction year and in continuous professional development. There may be value in South Africa considering

³ Whether inclusive education should be seen as an issue of learners and their diversity, teachers and their competence or schools and society is explored in more detail in Walton and Rusznyak (2016).

the development of a framework that describes inclusive teaching in a way that differentiates the competencies that could be expected by teachers at different stages of their careers. This has been done in Scotland (Scottish Teacher Education Committee, 2014) and might offer South African initial teacher educators a clearer sense of what needs to be developed in the pre-service qualification, and what could be left for site-based learning through mentoring and professional learning communities, and other professional development activities. Released from the demand to provide all the practical knowledge that an inclusive teacher would need, initial teacher educators could then focus on developing a theoretically informed conceptual framework for inclusive education that would promote inclusive education as a professional response to the complexity of learner diversity in South African classrooms.

References

- Ainscow, M. (1999). *Understanding the development of inclusive schools*. London: Routledge.
- Ainscow, M., Booth, T., Dyson, A., with Farrell, P., Frankham, J., Gallannaugh, F., Howes, A., & Smith, R. (2006). *Improving schools, developing inclusion*. London, UK: Routledge.
- Allan, J. & Slee, R. (2008). *Doing inclusive education research*. Rotterdam: Sense.
- Arbee, A., Hugo, W., & Thomson, C. (2014). Epistemological access in Marketing – a demonstration of the use of Legitimation Code Theory in higher education, *Journal of Education* 59, 39–63.
- Armstrong, D., Armstrong, A., & Spandagou, I. (2011). Inclusion: by choice or by chance? *International Journal of Inclusive Education* 15(1), 29–39.
- Bernstein, B. (2000). *Pedagogy, symbolic control and identity: theory, research and critique (revised edition)*. Lanham: Rowman and Littlefield.

- Biesta, G., Allan, J., & Edwards, R. (2014). Introduction. In G. Biesta, J. Allan & R. Edwards (Eds). *Making a difference in theory* (1–9). Milton Park: Routledge.
- Booth, T. & Ainscow, M. (1998). From them to us. Setting up the study. In T. Booth & M. Ainscow (Eds). *From them to us. An international study of inclusion in education* (1–10). London: Routledge.
- Bornman, J. & Rose, (2010). *Believe that all can achieve*. Pretoria: Van Schaik.
- Bothma, M., Gravett, S., and Swart, E. (2000). The attitudes of primary school teachers towards inclusive education. *South African Journal of Education* 20(3), 200–204.
- Case, J. (2014). Book review: Karl Maton: Knowledge and knowers: towards a realist sociology of education. *Higher Education* 69(1),157–159.
- Clarence, S. (2015). Exploring the nature of disciplinary teaching and learning using Legitimation Code Theory Semantics. *Teaching in Higher Education* 21(2), 1–15.
- Dalton, E., Mckenzie, J., & Kahonde, C. (2012). The implementation of inclusive education in South Africa: Reflections arising from a workshop for teachers and therapists to introduce universal design for learning. *African Journal of Disability* 1(1), 1–7.
- Department of Basic Education (DBE). (2010). *Guidelines for full-service/inclusive schools*. Pretoria: Department of Basic Education.
- Department of Basic Education (DBE). (2011a). *Integrated strategic planning framework for teacher education and development in South Africa*. Pretoria: Department of Basic Education.
- Department of Basic Education (DBE). (2011b). *Guidelines for responding to learner diversity*. Pretoria: Department of Basic Education.
- Department of Basic Education (DBE).(2008/2014). *Strategy for identification, assessment and support*. Pretoria: Department of Basic Education.

- Department of Education. (2001). *White paper six: Special needs education*. Pretoria: Department of Education.
- Eloff, I. & Kgwete, L. (2007). South African teachers' voices on support in inclusive education. *Childhood Education* 83(6), 351–355.
- Engelbrecht, P., Nel, M., Smit, S., & Van Deventer, M. (2015). The idealism of education policies and the realities in schools: the implementation of inclusive education in South Africa. *International Journal of Inclusive Education* 20(5), 1–16.
- Engelbrecht, P., Nel, M., Nel, N., & Tlale, D. (2015). Enacting understanding of inclusion in complex contexts: Classroom practices of South African teachers. *South African Journal of Education* 35(3), 1–10.
- Florian, L. (2012). Teacher education for inclusion: A research agenda for the future. In C. Forlin (Ed.), *Future directions for inclusive teacher education: An international perspective* (212–220). London: Routledge.
- Geldenhuys, J.L. & Wevers, N.E.J. (2013). Ecological aspects influencing the implementation of inclusive education in mainstream primary schools in the Eastern Cape, South Africa. *South African Journal of Education*, 33(3), 00. Retrieved February 11, 2017, from http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0256-01002013000300014&lng=en&tlng=pt.
- Guile, D. 2014. Professional knowledge and professional practice as continuous recontextualisation: a social practice perspective. In J. Muller & M. Young (Eds), *Knowledge, expertise and the professions* (78–92). London: Routledge.
- Hall, R. & Engelbrecht, P. (1999). The possible role of special schools in inclusive education. *South African Journal of Education* 19(3), 230–234.
- Harrup, C. (2015). The impact of pre-service teacher education for inclusion on beginner teachers' practices. Unpublished B.Ed Honours Research Project, University of the Witwatersrand, Johannesburg.

- Horsthemke, K. (2017). Inclusive education and Barrierefreiheit: some social-epistemological considerations. *Ethics and Education*, 1–12. doi: 10.1080/17449642.2016.1270508
- Jolliffe, W. (2007). *Cooperative learning in the classroom*. London: Paul Chapman.
- Kavale, K.A. & Forness, S.R. (2000). History, rhetoric, and reality. Analysis of the inclusion debate. *Remedial and Special Education* 21(5), 279–296.
- Kern, B. & Fritz, A. (2017). Educational psychology for teachers. In L. Ramathan, L. le Grange & P. Higgs (Eds). *Education studies for initial teacher development* (319–331). Cape Town: Juta.
- Kozleski, E., Artiles, A. & Waitoller, F.R. (2011). Introduction. Equity in inclusive education. In A. Artiles, E. Kozleski, & F.R. Waitoller (Eds), *Inclusive education: Examining equity on five continents* (1–14). Cambridge: Harvard Education Press.
- Lambe, J., & Bones, R. (2008). The impact of a special school placement on student teacher beliefs about inclusive education in Northern Ireland. *British Journal of Special Education* 35(2), 108–116.
- Lancaster, J. & Bain, A. (2007). The design of inclusive education courses and the self-efficacy of preservice teacher education students. *International Journal of Disability, Development and Education* 54(2), 245–256.
- Landsberg, E., Kruger, D., & Swart, E. (Eds). (2011). *Addressing barriers to learning*. Pretoria: Van Schaik.
- Lessing, A. & De Witt, M. (2007). The value of continuous professional development: Teachers' perceptions. *South African Journal of Education* 27(1), 53–56.
- Lloyd, C., Wilton, K., & Townsend, M. (2000). Children at high-risk for mild intellectual disability in regular classrooms: Six New Zealand case studies. *Education and Training in Mental Retardation and Developmental Disabilities* 35(1), 44–54.

- Loreman, T. (2010a). A content-infused approach to pre-service teacher preparation for inclusive education. In C. Forlin (Ed.), *Teacher education for inclusion* (56–64). London: Routledge.
- Loreman, T. (2010b). Essential inclusive education-related outcomes for Alberta preservice teachers. *The Alberta Journal of Educational Research* 56(2), 124–142.
- Maton, K. (2014). *Knowledge and knowers: towards a realist sociology of education*. London: Routledge.
- Maton, K. & Doran, Y.J. (2017) Semantic density: A translation device for revealing complexity of knowledge practices in discourse, part 1 – wording, *Onomázein, Número especial SFL*, 77–110.
- Ntombela, S. & Raymond, E. (2013). Inclusive education in South Africa and globally. In C. Pienaar & E. Raymond (Eds). *Making inclusive education work in classrooms* (2–17). Cape Town: Pearson.
- Pienaar, C. & Raymond, B. (Eds). (2013). *Making inclusive education work in classrooms*. Cape Town: Pearson.
- Pooe, T. (2012). Preliminary research report: Inclusive education course content offered at university level. Inclusive Education Western Cape.
- Putnam, J. (2009). Co-operative learning for inclusion. In P. Hick, R. Kershner & P. Farrell (Eds). *Psychology for inclusive education* (81–95). Milton Park: Routledge.
- Republic of South Africa (RSA). (2015). Revised Minimum Requirements for Teacher Education Qualifications. Government Gazette No. 38487. Pretoria: Government Printing Works.
- Rusznyak, L. (2015). Knowledge selection in initial teacher education programmes and its implications for curricular coherence. *Journal of Education* 60, 7–29.
- Sarakinioti, A., Tsatsaroni, A. & Stamelos, G. (2011). Changing knowledge in higher education. In G. Ivinson, B. Davies & J. Fitz (Eds), *Knowledge*

and identity: Concepts and applications in Bernstein's sociology (69–89). London: Routledge.

Sayed, Y., Subrahmanian, R., Soudien, C., Carrim, N., Balgopalan, S., Nekhwevha, *et al.* (2007). Education exclusion and inclusion: Policy and implementation in South Africa and India. London, DFID. Online: http://addc.org.au/documents/resources/20080110-education-inclusion-and-exclusion-in-south-africa-and-india_763.pdf

[Accessed 21 May 2017].

Shalem, Y. and Rusznyak, L. (2013). Theory for teacher practice: a typology of application tasks in teacher education. *South Africa Journal of Higher Education* 27(5), 1118–1134.

Sharma, U., Forlin, C. & Loreman, T. (2008). Impact of training on pre-service teachers' attitudes and concerns about inclusive education and sentiments about persons with disabilities. *Disability & Society* 23(7), 773–785.

Shay, S. (2013). Conceptualizing curriculum differentiation in higher education: a sociology of knowledge point of view. *British Journal of Sociology of Education* 34(4), 563–582.

Shay, S. & Steyn, D. (2016). Enabling knowledge progression in vocational curricula: Design as a case study, in K. Maton, S. Hood & S. Shay (Eds) *Knowledge-building: Educational studies in Legitimation Code Theory* 138–157. London: Routledge.

Slee, R. (2011). *The irregular school*. Milton Park: Routledge.

Singh, P. (2002). Pedagogising knowledge: Bernstein's theory of the pedagogic device. *British Journal of Sociology of Education* 23(4), 571–582.

Singh, P. (2015). The knowledge paradox: Bernstein, Bourdieu, and beyond. *British Journal of Sociology of Education* 36(3), 487–494.

Soudien, C. (2017). The relevance of sociology for education. In L. Ramathan, L. le Grange & P. Higgs (Eds). *Education studies for initial teacher development* (243–254). Cape Town: Juta.

- Swart, E. & Pettipher, R. (2011). A framework for understanding inclusion. In E. Landsberg, D. Kruger & E. Swart (Eds.). *Addressing barriers to learning. A South African perspective (2nd edition)* (3–26). Pretoria: Van Schaik.
- Subban, P. (2006). Differentiated instruction: A research Basis. *International Education Journal* 7(7), 935–947.
- Swart, E. & Oswald, M. (2008). How teachers navigate their learning in developing inclusive learning communities. *Education as Change* 12(2), 91–108.
- The Doctor Who Website (n.d.) <http://www.thedoctorwhosite.co.uk/tardis/>
Accessed 28 November 2015
- Tyler, W. (2014) Legitimation code theory and the social semiotics of pedagogic discourse: a Bernsteinian critique. Accessed 23 March 2016 from [https://www.researchgate.net/publication/271207986 Legitimation Code Theory and the Social Semiotics of Pedagogic Discourse a Bernsteinian Critique](https://www.researchgate.net/publication/271207986_Legitimation_Code_Theory_and_the_Social_Semiotics_of_Pedagogic_Discourse_a_Bernsteinian_Critique)
- UNESCO. (1994). *The Salamanca statement and framework for action*. Paris: UNESCO.
- Waitoller, F. & Kozleski, E. (2010). Inclusive Professional Learning Schools. In C. Forlin (Ed.). *Teacher Education for Inclusion* (65–73). London: Routledge.
- Vithal, R. & Volmink, J. (2005). Mathematics curriculum research: roots, reforms, reconciliation and relevance. In R. Vithal, J. Adler & C. Keitel (Eds). *Researching mathematics education in South Africa: Perspectives, practices and possibilities* (3–27). Cape Town: HSRC Press.
- Walton, E. (2016). *The language of inclusive education*. Milton Park: Routledge.

Walton, E. (2011). Getting inclusion right in South Africa. *Intervention in School and Clinic* 46(4), 240–245.

Walton, E. & Rusznyak, L. (2016). Choices in the design of inclusive education courses for pre-service teachers: The case of a South African university. *International Journal of Disability, Development and Education*, 1–18. DOI: 10.1080/1034912X.2016.1195489

Woolf, S. (2013). South African taxi hand signs documenting the history and significance of taxi hand signs through anthropology and art, including the invention of a tactile shape-language for blind people. Unpublished PhD thesis, University of the Witwatersrand, Johannesburg.

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