Part-time Post Graduate Certificate in Education Teacher-Students: What do they bring to and expect from a formal South African Teaching Programme?

Tabitha Grace Mukeredzi
Durban University of Technology,, tabitham@dut.ac.za

Doras Sibanda
University of KwaZulu-Natal, sibandad@ukzn.ac.za

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Tabitha Grace Mukeredzi
Durban University of Technology
Doras Sibanda
University of KwaZulu-Natal

Abstract: The purpose of this study was to understand the nature and extent of subject content and curriculum knowledge that part-time Post Graduate Certificate in Education students in one South African university, brought to the classroom, and the kind and level of knowledge that they expected and sought from the programme. The study employed a qualitative design and data were collected through a questionnaire administered to 146 part-time students on this programme. These students were teaching in different contexts: urban, rural and, township high schools. The findings indicated that teachers within the 0-3 years' professional life phase expected to gain knowledge of the curriculum. The student teachers did not believe that they possessed adequate content knowledge, despite their previous undergraduate training and thus expected to learn the subject content knowledge from the programme. Many of the students however had adequate understanding of teaching practice although they still expected to learn more, including learning about aspects of professional teacher attributes. The core-educational modules in the programme exposed students to knowledge of curriculum and assessment requirements. However, these findings suggest a need to establish individual needs of students to ensure that their classroom practice needs are addressed by the time they graduate. Given the link between teacher content knowledge and student achievement, and the need to improve the content knowledge of PGCE part-time teacher-students, the study recommends inclusion of content knowledge in the curriculum.

Key words: Post Graduate Certificate in Education, kinds of knowledge, qualification, part-time students.

Introduction and Background

Many developing countries experience challenges related to the mismatch between supply and demand of teachers (Bertram, Mthiyane & Mukeredzi, 2013; Mukeredzi, 2009). South Africa has not been spared this challenge; for example, in 2006, 20 000 teachers left the profession, while only 6 000 teachers graduated (DOE, 2007). More up to data national statistics are not available, however, the Educator Supply and Demand Report (2008) indicated a shortfall of approximately 15 000 teachers at the time. This shortage of teachers is more pronounced in rural and other marginalized contexts, where issues of *"hard to staff, harder to stay"* are more

severe (Mukeredzi, 2013), thus creating a situation where most classrooms are handled by unqualified teachers (Hugo, Jack, Wedekind & Wilson, 2010). The mismatch between teacher supply and demand has forced education systems to recruit graduates into the teaching field, who are not necessarily professionally qualified as teachers. In this regard, Jansen (2012) citing the KwaZulu-Natal Department of Education in 2012 stated that there were approximately 8 000 unqualified or under-qualified teachers in the province. Similarly, international trends (Mukeredzi, 2009) indicate that graduates are being persuaded to go into teaching with special dispensation to achieve qualified status through part-time study in formal professional programmes, such as a Post-graduate Certificate in Education (PGCE). There is on-going debate in Southern Africa and elsewhere around issues of whether teachers should be university graduates or whether teachers' colleges should be expanded to include undergraduate and diploma level programmes. Countries such as Malawi, Kenya and Cuba have reduced the duration of teacher training programmes to meet EFA initiatives, and so rapidly increase their numbers of teaching personnel (Lewin, Samuel & Sayed, 2003). However, this more rapid throughput needs to be balanced against the quality of graduate so produced. One particular concern is that, with a reduced training period, teachers may have limited depth of disciplinary knowledge. Consequently, a counter argument is that the university graduate teacher is preferable. The University of KwaZulu-Natal (UKZN) launched the PGCE part-time/mixed mode programme in 2006 for professionally unqualified teachers, who are already practicing in schools. Mixed-mode combines distance or school-based learning with face-to-face tuition. The part-time students differ from conventional full-time students in the sense that they are already practicing in schools, and are thus not strictly 'pre-service' student teachers as such. Moreover, given that these professionally unqualified teachers have been practicing for a number of years, and also have undergraduate degrees, we may assume that they bring to the programme extensive practical and professional knowledge of teaching, as well as in-depth disciplinary knowledge. Consequently, in this study we wanted to investigate teacher perceptions of the kind of knowledge that they brought into the formal PGCE programme, and what knowledge they expected to gain from it.

Accordingly, here we address two key questions. What kinds of professional knowledge do part-time PGCE students say they brought to the programme? What kinds of knowledge do they say they expected to acquire through the university-based programme?

Teacher Qualifications in South Africa

The current South African qualification framework is specified in the Norms and Standards for Educators, published in 2000 (Loots, 2008). Essentially a teacher's Relative Education Qualification Value (REQV) status indicates the number of years of post-school study they have completed, and whether the teacher (a) has recognized qualifications and is qualified in terms of minimum requirements; or (b) is un- or under-qualified (Reeves & Robinson, 2010). In terms of the Employment of Educators' Act No.76 of 1998, an adequate teacher qualification for appointment in South African public schools has a REQV of 13. This is a three-year post-school qualification that includes appropriate training as a teacher. Thus 'qualified teachers' professional status is based on formal accreditation through a recognized degree and/or diploma. In other words a REQV level 13 signals an acceptable, shared professional identity for the South African teaching force as a whole.

Records provided by the Department of Education (2007) indicate that 77 per cent of South Africa's teachers have a Diploma in Education; this is a three-year qualification having a REQV of 13. Thus, teachers who have only an undergraduate degree, three or four years post-school education, are not considered professionally qualified teachers if they do not also have professional training, even though they may already be practicing. The Teacher Qualifications Framework has raised the minimum qualification requirement for all new teachers from a three-year post-school level (REQV 13) to a four-year professional degree level or a three-year undergraduate degree plus a one-year post-graduate professional diploma to qualify at REQV 14. While discussions around raising the minimum requirement for qualified teachers to REQV 14 have been ongoing, the Department of Education is yet to specify a date when this change will effectively take effect. Whereas the qualifications standardization and increased duration of study to become an adequately qualified teacher suggest professionalization of the teaching profession in South Africa (Reeves & Robinson, 2010) this move would, however, exacerbate the shortage of teachers in the country (Bertram et al. 2013). The national higher education sector is simply not graduating the number of teachers required by the system.

PGCE Part-Time Programme

Conceptualization of the PGCE programme in South Africa was underpinned by the assumption that these student teachers already possessed content knowledge acquired from their Bachelor degrees (Reeves & Robinson, 2010). The South African Council on Higher Education (2010) confirms that PGCE is a generalist educator's qualification that is intended to 'cap' a subject specialist undergraduate degree qualification.

The UKZN PGCE Part-Time programme is a professional qualification, undertaken over two years, by students who already have a relevant Bachelor degree. Unlike other higher education programmes, the general purpose of the PGCE is established through national policy. The qualification was developed in response to a perceived national need – the shortage of trained teachers. The driving assumption underpinning this teacher education model was that these teacher-students already possessed disciplinary subject content knowledge from their undergraduate studies. The PGCE professional qualification then aims to equip them with the competencies, knowledge and skills needed to teach this disciplinary knowledge to school children (Bertram et al., 2013). The PGCE curriculum is made up of three key parts: core education and professional studies modules, teaching specialization modules and teaching practice (University of KwaZulu-Natal, 2006). Three core education and professional studies modules introduced students to propositional knowledge around history of education, education policies, theories of learning, barriers to learning, curriculum and assessment, issues of language across the curriculum, classroom management, and a wide variety of teaching strategies. The specialization modules focused on the particular curriculum subjects or learning areas in which the PGCE teacher-students had achieved their Bachelor degrees and also introduced them to pedagogical content knowledge relating to how to teach those subjects. The teaching practice component consisted of one four-week module in the first year and one six-week module in the second year. PGCE students completed their teaching practice modules in the schools where they were already teaching, unless that school did not offer their specialization subjects. The programme thus comprises two aspects: a university-based component, which focuses on

propositional knowledge and, a school-based component, where students develop their practical knowledge.

Although these part-time students were not in essence 'pre-service' teachers, because they had been teaching for some years, they covered the same curriculum as did conventional full-time students. It was simply spread over two years, rather than the one year allowed to full-time students. The main difference was in the delivery, as the PGCE Part-Time programme was offered through mixed mode. As such, these teacher-students attended classes during weekends and school holidays at four university campus satellites across the province, with concurrent school-based study. This study focuses on the 2012/2013 cohort.

Conceptual Framework

The study aimed to understand the kinds of knowledge that PGCE part-time students brought to the programme and that which they expected to gain from it. In analyzing types of knowledge, researchers may distinguish between two sorts of knowledge. One aspect is procedural knowledge, comprising sensori-motor and cognitive skills. This practical or "how to" knowledge is used when driving a car or presenting a lesson. Alternatively, there is declarative knowledge, which is propositional in nature, and may include concrete facts as well as higher-order, abstract knowledge of ideas and principles (Cochran-Smith & Lytle, 1999; Kereluik, Mishra, Fahnoe & Terry, 2013; Knight, 2002). Practical knowledge is mainly about learning how to do a task while propositional knowledge is mainly about sense-making and meaning. However, successfully doing or performing (practical knowledge) is neither sufficient, nor necessarily a consequence of, understanding (Kereluik et al, 2013; Ohlsson, 1996). Thus, one aspect does not guarantee the other, because they are acquired, renewed and modified differently

The literature also shows renewed efforts to delineate and describe the specific nature of teacher knowledge, and so a number of teacher knowledge models have been developed. Elbaz (1983) in Grossman (1990) identified six categories of teacher knowledge: practical knowledge, knowledge of self, knowledge of the milieu of teaching, knowledge of subject matter, knowledge of curriculum development, and knowledge of instruction. In contrast, Leinhardt and Smith (1985) placed teacher knowledge into only two categories: subject matter knowledge and knowledge of lesson structure. Shulman (1987) came up with seven interlinking domains of teacher knowledge: "Content knowledge, General pedagogical knowledge, Knowledge of curriculum, Pedagogical content knowledge, Knowledge of learners and their characteristics, Knowledge of educational contexts and, Knowledge of educational ends, purposes, and values and their philosophical and historical grounds" (p. 127). According to Knight (2002), these seven categories all represent propositional knowledge.
While there are slight differences in the way researchers define the various domains of knowledge, Grossman (1990) argues that there remain four main components as cornerstones for professional knowledge for teaching: general pedagogical knowledge, subject matter knowledge, pedagogical content knowledge and knowledge of context (Figure 1). In this paper we draw on Grossman (1990) to interpret the data.

1. Subject Matter/Content Knowledge			2. General Pedagogical Knowledge			
Syntactic structures	Content	Substantive structures	Learners and learning	Classroom management	Curriculum and instruction	Any other
3. Pedagogical Content Knowledge						
Conceptions of Purposes for Teaching Subject Matter						
Knowledge of Students' Understandings		Knowledge of the Curriculum		Knowledge of Instructional Strategies and Approaches		
4. Knowledge of Context						
Knowledge of Students						
Communities		The School		Districts		

Figure 1. Grossman's (1990, p. 5) Model of Teacher Knowledge Domains

Content knowledge (CK) refers to knowledge of the major facts and concepts in a discipline, and the linkages among them. In this regard Grossman (1990) and Chapman (2013) concur that it is difficult to judge good evidence on a particular content unless one knows the subject well. Subject matter knowledge thus represents knowledge of the content of a subject and both substantive and syntactic structures of that discipline. Substantive structures refer to the ways in which basic disciplinary concepts and principles are organized and linked to incorporate facts including the questions that guide further research. Syntactic structures are partially epistemological, in that they represent an understanding of the rules/principles/standards of evidence or proof in a discipline, by which truth or falsehood, validity or invalidity may be established or, the ways in which knowledge claims are evaluated by discipline members (Ball, Thames & Phelps, 2008; Grossman, 1990; Shulman, 1987). The nature of the substantive and syntactic knowledge teacher possess may shape the way they represent their discipline to students. Hence, no matter how skillful teachers may be in classroom practice, the quality of their teaching depends on their having sufficient disciplinary knowledge to enable appropriate and relevant choice of learning experiences and to design lessons that do not misrepresent the nature of their subject matter or the discipline itself (Ball et al, 2008; Charalambous, 2016; Grossman, 1990).

General pedagogical knowledge (GPK) encompasses that generic body of knowledge, beliefs and skills concerning: teaching that is knowledge and beliefs around learners and learning; knowledge around general philosophies of teaching (for example time on task, wait-time, group work teaching); knowledge and skills around classroom management and learner discipline, as well as knowledge and beliefs around purposes and aims of education (Ball, Thames & Phelps, 2008; Chapman, 2013; Grossman, 1990). Thus, GPK represents aspects of pedagogy that pertain to teachers and transcend their specialized subject matter knowledge. This is the knowledge that Shulman (1987) believes teachers draw on principles of child development, relevant teaching approaches, and strategies for classroom management and learner discipline. While teaching requires teachers to draw on both CK and GPK, it is also informed by knowledge that is specific to teaching their particular subjects. In this regard, pedagogical content knowledge (PCK) is viewed as an amalgam of content and general pedagogy, which transcends subject matter per se, to become the dimension of subject matter knowledge for teaching practice, which is uniquely the province of teachers (Cogill, 2008; Shulman, 1987). Such knowledge includes the most regularly taught topics in a discipline, useful representations of those ideas/concepts, the most powerful analogies, comparisons, illustrations, examples, explanations and demonstrations. Simply put, these are ways of interpreting, manipulating and representing subject matter that will make it comprehensible for students (Bertram, 2011;

Charalambous, 2016; Grossman, 1990). This is what Dewey, quoted by Grossman, refers to as "psychologizing the subject matter for teaching". PCK also encompasses comprehension of what makes some topics easy or difficult to learn, and the preconceptions and conceptions that students of diverse backgrounds may carry with them into instruction (Shulman, 1987). As such, it is knowledge of instructional approaches and representations suitable for teaching particular topics.

Knowledge of context, which is Grossman's (1990) fourth domain, can be seen as the broad understanding of the particular context or circumstances in which teachers teach, so as to adapt their more general knowledge to their specific setting and group of students and the local demands. Thus, knowledge of context includes: knowledge of the district in which teachers work, that is the opportunities, expectations and constraints posed by the district; knowledge of the school setting, including its norms, cultures, practices and departmental guidelines and other contextual factors at school level; and knowledge of students, their communities and backgrounds, their particular strengths, weaknesses and interests (Grossman, 1990, p. 8-9). This individualized knowledge of the school and its setting can shape effective teacher practice.

Research Site

The study was carried out at four University of KwaZulu-Natal (UKZN) campus satellites. While two of the satellites were urban and two were rural, the majority of students taught in rural schools (See Table 2). The UKZN is situated in the province of KwaZulu-Natal (KZN) which has close to 6 000 schools and 87,255 teachers (Hugo et al., 2010). It is the second largest province of South Africa, both in terms of population (10.27 million after Gauteng with 12.27 million) and land areas. It consists of large rural and non-urbanized areas, many of which were parts of previous "homelands" (Punt, 2008). Homelands are those areas where native Black South Africans were forced to live by the former apartheid policies such as the Land Act, the Group Areas' Act of 1953, and the Separate Development Act. The former homelands are still generally characterized by poor infrastructure and inadequate services and facilities (Gardiner, 2008; Wedekind, 2005). The teacher-students explored in this study were teaching across the province and in diverse school contexts (See Table 2).

Methodology

The study is located within a qualitative design that draws on the interpretive paradigm, given that it aimed at understanding from the perspective of the students the kinds of professional knowledge the part-time PGCE students said they brought into and the knowledge they expected to acquire through the university-based programme. The interpretive and qualitative orientations see reality as constructed from the subjective meanings and understandings, as developed by participants (Creswell, 2008; Cohen, Manion & Morrison, 2007). This study employed open-ended survey to generate subjective data from the participants.

Data Generation

All 2012 first year part-time PGCE students who attended the first contact session on 11 February participated in this study. This was a convenience sample – or, as it is sometimes called, accidental or opportunity sample, because as Cohen, Manion and Morrison (2007) point out, it involves choosing the nearest individuals, or those who happen to be available and accessible at the time, to serve as respondents. We thus simply chose the sample from those to whom we had easy access. Given that such a sample does not represent any group apart from itself, our study does not seek to generalize about the wider population, or to transfer findings to other contexts, which poses a major limitation. Transferability would therefore be considered on the understanding that findings may be limited only to similar specific groups, communities and /or circumstances (Creswell, 2008). However, given that decisions around transferability will be left to readers based on their own understanding and experiences, the strength of the findings from this study lies in the fact that the study involved a large group of students and thick descriptions are provided in the presentation and discussion of findings. Further, while we call this group a sample for the study, this may not really be a sample in the true sense but may be regarded as a full cohort of students who were in class on the particular day.

A questionnaire was designed and administered to 146 part-time PGCE students in learning centres in KwaZulu-Natal. The questionnaire involved four questions. The first two addressed biographical details around the type of school (rural, urban, township), academic or professional qualifications, and teaching experience. The other two questions asked student teachers to provide written comments about, firstly, the knowledge they brought to the programme and, secondly, the knowledge they expected to gain from the programme.

The biographical details showed diversity in teaching experience, qualification and school context (See Table 1). Analysis of the biographic data indicates that the 99 (68%) of the 146 student teachers in this study had an average of 0-3 years of teaching and 70 (48%) were teaching in rural schools. In Table 1, the results also reveal that 58 (40%) student teachers in this programme had a Bachelor of Arts degree and 12 (8%) students had a post graduate qualification.

Characteristics (N=146)	Groups	Frequency	Percentage
Teaching experience	0 to 3 years	99	68.00
	4 to 7 years	36	25.00
	8 years and above	11	8.00
	Total	146	100.00
Qualification	BSc	28	19.00
	BCom/Acc/BBA	27	19.00
	BA	58	40.00
	BSocial Science	19	13.00
	Post graduate	12	8.00
	No response	2	1.00
	Total	146	100.0
	Rural Village	70	48.00
Location	Urban	32	22.00
	Township	19	13.00
	Not teaching	25	17.00
	Total	146	100.00

Table 1: The Student Teachers' Demographic Information

Data analysis

Data analysis employed qualitative procedures of content analysis. The term 'content analysis' simply refers to a process of summarizing and reporting written data – the main contents of data and their messages. More specifically, it defines a strict and systematic set of procedures for the rigorous analysis, examination and verification of the content of written data (Cohen, et al., 2007). Text data might be verbal, print, or electronic and might have been obtained from narrative responses, open-ended survey questions, interviews, focus groups, observations, or print media such as articles, books, or manuals (Hsieh & Shannon, 2005). In this study text data was obtained through open-ended survey questions. The content analysis process allows categories and names for categories to flow from the data itself, through researcher immersion in the data, which enables new insights to emerge (Hsieh & Shannon, 2005). Data analysis thus, started with immersion, by reading all data and so obtaining a sense of the whole. This was followed by deriving codes (Creswell, 2008) through reading the data word by word highlighting the exact words from the text that appeared to capture key thoughts or concepts. Next, researchers approached the text by making notes of the first impressions, thoughts, and initial analysis. Through this process, labels for codes started to emerge that reflected more than one key thought coming directly from the text, which then became the initial colour coding scheme. Colour codes were then sorted using Microsoft Excel into categories based on how different codes were related and linked. These emergent categories were then used to organize and group codes into meaningful clusters.

Findings
Types of Knowledge Brought into the Programme

The first research question concentrated on the types of knowledge teachers brought to the programme. Table 2 shows the types of knowledge teachers thought they possessed at the start of it. Data analysis indicates that the professional knowledge brought into the programme revolved around knowledge of teaching, curriculum and content.

Types of knowledge N= 146	Number of student teachers	Teaching experience	Number of student teachers	Location of schools	Number of student teachers
Knowledge of teaching	66	0-3 years	32	rural	34
		4-7 years	18	township	8
		above 8 years	6	urban	13
		no response	10	no response	11
Content knowledge	31	0-3 years	13	rural	12
		4-7 years	8	township	5
		above 8 years	1	Urban	8
		No response	9	no response	6
Knowledge of curriculum	23	0-3 years	10	rural	12
		4-7 years	7	township	2
		above 8 years	2	urban	6
		no response	4	no response	3
Unspecified knowledge	10	0-3 years	5	rural	5
		4-7 years	0	township	1
		above 8 years	1	urban	3
		No response	4	no response	1
No responses	16	0-3 years	7	rural	7
		4-7 years	2	township	2
		above 8 years	1	Urban	5
		Not clear	6	no response	2

Table 2: Knowledge Brought to the Programme and Student Teachers' Profile

From the table it can be seen that 66 (45%) student teachers believe that they have knowledge of teaching. Knowledge of teaching, according to Grossman's (1990) domains, relates to general pedagogical knowledge. According to Knight (2002) and Shulman (2004), this domain includes knowledge of principles and strategies for curriculum delivery and managing classroom engagement (both proactive and reactive), with a special focus on understanding general principles of different forms of group-work, as well as the knowledge of materials and programmes that are teachers' "tools of the trade". To illustrate our data in this domain, some students point out that:

> *I know how to organize a lesson in a systematic manner how to write a lesson plan and make sure learners are in a conducive environment for learning and teaching in the classroom.*
> *I know how to do educator's file, standing in front of the learners and teach them starting on their prior knowledge; assess learners - setting formal and class tests, how to control class.*
> I am familiar with counseling of learners as well as administrative duties.

All these aspects mentioned in the comments, namely understanding of the value of preparation, and planning, organizing a lesson, lesson progression from known to unknown, creating a conducive environment, and assessment, fall into the general pedagogic knowledge domain

(Grossman, 1990; Shulman, 1987). In particular, Bertram (2011) adds that this domain of teacher knowledge as a complex set, which encompasses knowledge of classroom organization and management, different teaching strategies or methods, assessment strategies as well as understanding classroom communication and discourses. She suggests that there is an important interplay between general pedagogical knowledge, which emerges from research, and personal pedagogical knowledge which is "fuelled by personal beliefs and personal practical experience" (p. 5), which Kelly (2006) refers to as knowledge-in-practice.

Again from Table 2, only 31 (21%) indicate that they brought content knowledge to the programme. In this regard, some of them pointing out that:

> *I have the subject knowledge for teaching needed by professional teacher since I acquired a degree in education economics in my first degree*
> *I possess knowledge in the subject area that I am currently teaching in grade 10-english. I am proficient in the English language therefore I know my subject learning area well. ... I do have the correct content knowledge as well, yes the content of my subject, mathematics.*

Given that 31 (21%) indicated they brought content knowledge, of concern is that the remaining 115 (79%) of respondents seeming did not possess adequate content knowledge. This could imply that they expected to gain such knowledge from the programme. However, the PGCE did not aim to develop teachers' disciplinary knowledge. As stated already, the course was based on the assumption that these teachers already had content knowledge from their Bachelor degrees. Furthermore, the South African Council on Higher Education (2010) points out that the PGCE programme is a generalist educator's qualification that 'caps' an undergraduate qualification. Our finding, thus, raises questions around the extent to which the PGCE curriculum should equip students with appropriate content knowledge, which should have been acquired from the undergraduate degree, along with the competences and skills needed to teach the disciplinary knowledge. This finding is also consistent with earlier studies that reported on South African teachers' poor content knowledge, particularly in mathematics and science (van der Sandt & Nieuwoudt, 2003; Taylor, 2009).

Knowledge of context encompasses understanding the character of communities and cultures that affect teaching and learning; that is the workings of the groups, or classes, within a school; its organizational culture, setting, and practices; the students and their backgrounds, including their particular strengths, weaknesses, interests, expectations and, opportunities, constraints posed by the district or community; the governance and financing of school districts, and (Shulman, 1987). One comment from the student teachers illustrating this aspect is:

> *I know how to develop lesson activities that will capture their attention and how to ask them questions to get every learner to participate. I have also learnt how to interact with particular learners in order to assist them. I know how to manage my teaching workload and my different classes.*

There were, however, few such responses to suggest that students highlight their contextual knowledge. The paucity of such responses is unsurprising because knowledge of context may be taken for granted and not considered as important knowledge. In this regard, Mukeredzi (2013) notes that knowledge of cultures and practices, which shape teaching/learning, results from engagement in activities within particular contexts. Thus students may see this type of knowledge as non-generic and unimportant.

Curriculum knowledge is another kind of knowledge that some students noted they brought into the programme. Broadly, curriculum knowledge is the knowledge of what should be

taught to a particular group of students at a particular level/phase of study. Shulman (1987) indicates that curriculum knowledge transcends an awareness of the different programs and materials, and includes knowledge of the effectiveness and implications of said programs and materials for given contexts. While Grossman (1990) locates curriculum knowledge as an aspect within general pedagogical knowledge, Shulman views it as a separate knowledge domain which manifests as a particular grasp of the materials and programmes that serve as tools of the trade for the teacher. The following comments illustrate the student teacher's responses as collected in Table 2.

> *I know that I need to have my lesson plan as evidence and a directive of what to teach.*
> *I have the knowledge of curriculum needs for education. I also know the different methods of teaching the curriculum sections.*
> *I understand the curriculum. I know that before I start to teach I need to go through and understand policy and do my work schedule, unpack the assessment standard and prepare lesson plan, teach the learners, assess them and keep their records in portfolio*

The term 'professional life phase' is used by Day and Gu (2007) to refer to the number of years that a teacher has been teaching. Table 1 indicated there were 36 (25%) teacher-students within the 4-7 professional life phase with 11 (8%) in the later phases, that is 8 years and beyond. Of these 7 and 2 student teachers, respectively, indicated that they brought curriculum knowledge to the programme, that is 6 % for the two phases. These figures contrast with those for the professional life phase 0-3 years, where only 10 (10%) of the 99 student teachers reported that they brought curriculum knowledge. From those figures, it thus appears that student teachers did not have sufficient curriculum knowledge. Again this aspect was apparently more important for those early in their professional life.

Kinds of Knowledge expected from the Programme

The second research question focused on the kind of knowledge the teacher-students expected to acquire from the PGCE programme. Patterns that emerged from the data in relation to this question, include aspects of GPK, PCK, as well as professional practice for teachers. The data analysis is shown in Table 3 below.

Categories (N =146)	Number of student teachers	Teaching experience	Number of student teachers	Location of schools	Number of student teachers
Teaching methods/ pedagogical knowledge	70	0-3 years	36	rural	38
		4-7 years	15	township	8
		above 8 years	5	urban	11
		No response	14	No response	
Professional teacher	65	0-3 years	25	rural	30
		4-7 years	18	township	10
		above 8 years	5	urban	16
		no response	17	no response	9
Qualification	11	0-3 years	3	rural	2
		4-7 years	2	township	1
		above 8 years	1	urban	4
		No response	5	no response	3

Table 3 Kinds of knowledge expected from the programme, according to teachers' profile (N =146)

The knowledge domain of teaching methods was one that almost all participants indicated that they expecting to receive from the programme. This is notwithstanding their earlier indication of having already brought this highly ranked kind of knowledge into this programme. Further data analysis also indicated that 36 of the student teachers who indicated this expectation −"teaching methods and skills" were within 0-3 years professional life phase and/or were teaching in rural schools. To illustrate, some of the comments made in this regard were:

I expect to be able to learn how to organize a learning programme, to manage learners in a classroom situation. To be able to help learners gain knowledge they need.
I expect to learn the teaching methods and strategies on how to prepare your lesson before starting to teach and to learn the roles of a teacher.
PGCE programme will be able to teach the methods of teaching. In post grad certificate in education I expect to learn about how to do lesson plan, how to deliver it and other things concerning education for learners.
I am expecting PGCE to add to the knowledge I have of teaching and introducing us to a range of different teaching strategies. The other thing is to equip me with new policies, teachers should know in relation to education
I also expect to learn about classroom management and more specific teaching skills for teaching Natural Science. I expect to learn a lot of teaching skills from the course, how to manage problems that my learners are faced with in my school and also how to deal with such crisis in the school.

The teacher sentiments expressed above also suggest expectations around knowledge of curriculum and policy, as well as knowledge of handling contextual issues.

This kind of knowledge, according to Grossman (1990) and Shulman (1987) falls under GPK. The comments mentioned by student teachers above thus point to expectations around GPK. Cogill (2008), however, points out that GPK is often regarded as more fundamental to teaching at primary school than at other levels, because in this educational phase teachers may be expected to teach several subjects. The GPK domain of teacher knowledge encompasses broad principles and strategies of classroom management and organization, which transcend subject

matter, so it falls broadly into two categories. Firstly there is knowledge of teaching related activities such as lesson preparation, children's learning, learner motivation, assessment of learning or teaching, classroom organization and management of learner discipline, including the teachers' personal disposition. The second category includes strategies for effective teaching.

In addition to general teaching and pedagogical knowledge, students also expected to gain PCK. PCK has been understood as the knowledge of how to teach within a particular subject area which enables teachers to ease the learning for students by using clear explanations, appropriate analogies and, presenting learning materials in interesting, motivating and even entertaining ways. According to Cogill (2008) PCK denotes the distinctive bodies of knowledge for teaching that make concepts comprehensible for learners. In this regard, some students' commented that:

I expect to learn a broad knowledge for teaching my specific subject, the technical skills of teaching my subject specialization.
I expect to learn how to use the skills and knowledge I have gained to teach some topics because I might have the qualification and knowledge but not know how to put knowledge across so that the learners understand.
I want to learn how I can teach starting from the learners' previous knowledge and then adding new information how to involve learners so that they master content and are interested in their learning.
I would expect to, at the end of this qualification to understand the different methods used in teaching.
I also expect to learn how to engage in different techniques of teaching taking into account that the majority of the learners are second language English speakers

The comments above suggest a blending of content and pedagogy related to how particular topics, problems or issues can be organized, represented, and adapted for the diverse interests and abilities of learners, and so presented for instruction (Shulman, 1987, p. 4-5). This definition implies that the knowledge of how to teach (GPK) and PCK are intrinsically linked. In other words, PCK is the knowledge of how to teach within a particular subject specialisation. Grossman (1990) adds that expert teachers may possess rich repertoires of metaphors, experiments, activities or approaches effective for teaching particular topics, while novice teachers may be in the process of developing such repertoires of instructional strategies and representations. Thus, it is unsurprising that novice teachers or those teaching in more isolated rural environments would be in need of, and so expecting, such knowledge from the programme.

Another category of data indicates expectations around knowledge related to being a "professional teacher". Again, it was mainly participants within the 0-3 professional life phase and those teaching in rural schools who prioritized gaining such skills. The following comments illustrate what some student teachers said concerning this aspect:

I want to know how to be a professional teacher, to know how I must deal with them … how I must relate to learners in the classroom.
To learn to be a good teacher and experience one, what roles must I do to teach effectively, how must I do it as a professional teacher.
How to behave as a good teacher in the classroom, school and the community, how to teach well
An understanding of what it means to be a teacher and how to apply the methods practically in a classroom

With regards to teacher professionalism, Brown and McIntyre (1993) outlined some of the qualities of an effective teacher as abilities to: create a relaxed and enjoyable classroom atmosphere; control learning processes; teach in a way that interests and motivates learners; provide conditions that make pupils understand concepts; make clear what pupils have to do and achieve; judge what can be expected of pupils; scaffold learning; motivate students to set high expectations for themselves; build strong teacher-student relationships; make plans for class management and learning; introduce lessons effectively and manage question and answer sessions; and develop confidence in and trust of students. Kardamis (2013) adds that professional teachers care about their students; want to be involved in their lives, but also realizing that their role is mentorship rather than friendship. Thus they are steering and guiding their students without acting like their peers. In other words, professional teachers should be friendly and open in their interactions with students, while avoiding being familiar. This relates to what the teacher-students imply in their comments.

With regard to professional qualification, Table 3 indicates that a few participants thought that the programme was primarily to obtain a professional qualification. We note that only 11 (8%) of the teacher-students made such comments as: "be a qualified teacher," "to obtain formally recognized qualification," "to get a qualification of teaching". Hence we deduce that for the majority of participants merely obtaining a professional qualification was not an important factor for attending the programme; instead they were there to learn.

Discussion

The purpose of this study was to explore the kinds of knowledge that PGCE part–time students brought to the programme and to establish what they expected from it. Data analysis shows that we could interpret the PGCE students' responses in line with Grossman's (1990) 'Teacher Knowledge Domains' (see Table 1). Because this study has been limited to only a single cohort of students, we suggest that further research with other students, perhaps a comparison with full-time PGCE students, to verify our findings. From Table 2, it is clear that many PGCE students' 65 (45 %) indicated that they possessed some professional knowledge of teaching before enrolling for the programme. However, the results in Table 3 indicate that 70 (48%) still expected to gain pedagogical knowledge. Expectations of gaining pedagogical knowledge were unsurprising because teacher-students had not previously received formal instruction in this domain.

Results also show that 31 (21%) teacher-students felt that they had adequate content knowledge for teaching their discipline. Earlier studies support this finding; that is low levels of content knowledge among South African teachers (van der Sandt and Nieuwoudt, 2003; Taylor, 2009). Nevertheless, Grossman (1990) argues that CK is critical, as it influences what and how teachers teach, the levels of classroom discourse, as well as how they would critique and use teaching/learning materials. It would appear fundamental that a teacher possess a deep comprehension of the essential concepts in the discipline, rather than just a huge collection of facts of the subject. The understanding of core concepts, the connections and linkages between them, as well as how they are organized, enables the teacher to draw on their subject matter knowledge for teaching. Thus students' lack of confidence in their content knowledge contradicts the general suppositions behind the PGCE, that the students already possess adequate content knowledge from undergraduate degrees, but are expected to need other domains of

teacher knowledge. Consequently, the finding challenges the general assumption and aim of PGCE as a capping programme, to follow a subject specialist undergraduate degree. Furthermore, an American study by Kennedy (1991), cited by Bertram (2011), revealed that teachers who had subject specializations as a university major were often no more able to explain the substantive and syntactic structures in their discipline than other teachers without such a major. Citing that study, Bertram (2011) argued that having a major in the subject specialization does not necessarily guarantee appropriate disciplinary knowledge for teaching. Our findings therefore reinforce the need for addressing content knowledge in a teacher education programme. The teacher-students' expressed further learning needs around PCK, while it is generally understood that GPK, the knowledge of how to teach, and CK, the knowledge of subject matter, are intrinsically linked, there is debate concerning the nature of linkages between these and the formation of PCK. In teaching science, Cogill (2008) points out that the ability to teach transcends merely understanding CK and GPK, to an understanding of what happens at their intersection. In this regard, McNamara (1991) suggests that PCK is formed not merely by bringing knowledge together, CK with GPK, but when teachers reflect on classroom practices they may create their own PCK. This later aspect is what Kelly (2006) calls knowing-in-practice or tacit knowledge. Further questions arise regarding the experiential knowledge and theoretical knowledge of teachers, given the existence of tacit stupidity and tacit wisdom (Cogill, 2008). Cogill maintains that as skills are generally derived from mediation between experience and theory, a combination of theory and practice enables greater professionalism. Thus, without the appropriate prior CK, teachers may not be in a position to make the appropriate choices of GPK strategies. Again, this reinforces the importance of teachers having sound content knowledge.

A small number of PGCE teacher-students 23 (16%) indicated that they brought knowledge of the curriculum to the programme. Further analyses indicate that it was predominantly students in the 4-7 years professional life phase who indicated prior knowledge of the curriculum, suggesting that teacher-students within the 0-3 years professional life phase, who were in the majority 123 (84%), still expected to gain such curriculum knowledge. Therefore this result could mean that with greater experience, teachers tend to become more familiar with the curriculum and its demands. This finding is also consistent with findings from Mukeredzi's (2009) study, wherein South African part-time PGCE students in the 0-4 years professional life phase also indicated professional needs around curriculum. Further, curriculum knowledge needs an understanding of children's learning potential, national syllabi, school planning documents and year group plans (Cogill, 2008). It also encompasses knowledge of any examination or testing schedules that must to be taken into account and any national, regional, local or contextual requirements to be considered. Other types of curricular may define what is to be taught and how they should be taught. Knowledge of curriculum has four components (Chauvot, 2008). Firstly, curriculum knowledge encompasses knowledge of programmes and corresponding materials available for teaching the given content. Secondly, it is knowledge that transcends an awareness of programmes and materials to include knowledge of the effectiveness and implications of programmes and materials for given contexts. A third component is knowledge of content and corresponding materials in other subject areas for the students (lateral curriculum knowledge). The fourth aspect of curriculum knowledge concerns the way that topics are developed across given programmes (vertical curriculum knowledge). While comments made by teacher-students included the first two aspects, they generally excluded both lateral and vertical curriculum knowledge. Once again, this points to the importance of teachers being confident in their personal content knowledge.

Our data also indicated that 65 of the146 teacher-students expected to gain appropriate knowledge to become professional teachers. According to Townsend-Hall (2014) a professional teacher is knowledgeable and confident without being arrogant, admits when they have no answers but promises to find information for the student, and carries out that promise. Professional teachers are always well prepared when they enter the classroom with all the required materials and lesson plans. However, if teachers have low levels of content knowledge, it raises questions regarding how they would be able to plan, and so how they could become effective professional teachers. Teachers who are caring, yet professional will be much more effective, and ultimately much more influential, than the familiar, unprofessional teachers. Among professional standards of behavior for teachers' interaction with learners, Cassidy (2013) includes being polite, firm and fair, orchestrating the class in a way that gives everyone their chance to contribute, having the ability to reflect-in-practice and being flexible enough to modify strategies during the lesson, while at the same time being a role model in every sense, such as punctuality, deportment and dress. Cassidy further points out that professional teachers care more about being effective than being liked. While everyone has an innate desire to be liked, professional teachers cannot let this natural inclination control them. Often, if teachers worry about whether or not their students like them, they will not be professional and, their classrooms will often become very difficult to control. Instead, they should focus on the desire to be effective teachers whom the students can respect. This is probably the kind of knowledge that the teacher-students were hoping to gain from the programme.

Conclusions

The evidence from our study clearly shows that while many teacher-students reported possession of knowledge of teaching or pedagogical knowledge, even more expected to further this kind of knowledge during the programme. Teachers within the 0-3-year professional life phase expected to gain knowledge of the curriculum which indicates that while these teacher-students were enrolled in the same programme, their knowledge base is different. This means that they started at varying points in their level of understanding. While core-educational modules in the programme offered curriculum and assessment, it may be vital to establish individual needs of students in these programmes, to ensure that their classroom practice needs are addressed by the time they graduate. Of concern was that 21% of teacher-students explored indicated possession of content knowledge, implying that the rest probably expected to gain it from the programme, despite having a Bachelor degree in their discipline. Teachers need to know the content matter to be taught in schools, along with pedagogic knowledge of how to engage learners with learning and management of the classroom, in order to be able to represent and formulate subject matter in a way that will make it accessible. Teachers who are not themselves sufficiently competent in the subject content are not likely to succeed in assisting students learn this content. Poor conceptual knowledge of a subject is a fundamental constraint on the quality of teaching and learning activities that the teacher-students engage in and, consequently, on the quality of student learning gains and outcomes. The teachers cannot teach what they do not know. This study recommends inclusion of content knowledge as part of the teacher education curriculum in these programmes. Inclusion of a content knowledge component in the programme will add onto the content knowledge students acquired at undergraduate level and also broaden their chances of changing to other subject specializations. Further, a content

knowledge component on the programme will reduce turning away many prospective students from enrolling on the programme viewing them as lacking school curriculum subjects as is the current practice. Again this will also enhance opportunities of other students with non-school curriculum teaching subjects to enroll and train as teachers thereby broadening their knowledge base and at the same time contributing to the teacher demand in the country. While this study involved a relatively small number of PGCE teacher-students, limited content knowledge among South African teachers has been noted in other contexts. It is a complex and urgent problem whose solution needs to be well-thought through, so that rigorous measures are taken to urgently address teacher quality in South Africa. It has been suggested that the current PGCE course at the University of KwaZulu-Natal was apparently conceived as simply a top-up of teaching knowledge to content knowledge acquired in an undergraduate degree. The findings raise questions about the structure and content of the current PGCE programme and highlight the need for further research. The question raised is whether it really matters as to the kind of knowledge students entering the programme have in determining their understanding of teaching and learning. This and other studies (van der Sandt & Nieuwoudt, 2003; Taylor, 2009) show that the current view of the PGCE course as a 'capping' programme may not produce the quality of teacher the education system expects in the classroom.

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