Abstract—This paper addresses mathematics student-teachers’ experiences of mentoring at a teaching school (TS) in South Africa. The research question was: What are postgraduate certificate in education (PGCE) mathematics student-teachers’ experiences of mentoring at a TS? A case study using a qualitative research design was adopted with three data collection methods, namely interviews, lesson design analyses and reflection reports. From the population of 15 PGCE mathematics student-teachers, a sample of five was purposefully selected. The findings indicate that student-teachers acknowledged their responsibilities with regard to the effectiveness of learning. They experienced problems with time-management pacing them when presenting lessons and found the use of the resources challenging. Student-teachers started valuing reflection and considered classroom management important. They considered administration as part of a teacher’s job and acknowledged that the environment of the TS contributed to their growth. The article adds to research on the role of TSs in South Africa.

Key-words: Teaching school (TS); mentoring; student-teachers; relational; developmental; contextual.

1.1 INTRODUCTION

In April 2011, the South African Department of Education (DoE) released a technical report, Integrated Strategic Planning Framework for Teacher Education and Development in South Africa for 2011-2025 highlighting challenges being experienced in teacher education and development, especially by teachers. Only 13.1% of the 2650 education students in the senior phase at higher education institutes and 12.1% of the 5 899 education students in the further education and training (FET) registered for Mathematics at all higher education institutions in South Africa in 2009, even though the need profile was 49% and 21% respectively (DoE, 2011, p.52). Other challenges include a lack of access to quality teacher education and development (TED) opportunities for prospective and practising teachers; a mismatch between the provision of and demand for teachers of particular types; the failure of the system to achieve dramatic improvement in the quality of teaching and learning in schools; a fragmented and uncoordinated approach to TED; the tenuous involvement of teachers, their organisations and other role-players in TED planning; and inefficient and poorly monitored funding mechanisms. In order to meet these challenges, this report’s main outcome was to set guidelines in improving the quality of teacher education and development in order to improve the quality of teaching. In particular, the aims were to define “innovative, collaborative relationships among the key stakeholders for the improvement of teacher development”; to make “institutional arrangements for the delivery of key components of teacher development, such as teacher education”; to establish “a network of viable, accessible Teacher Education Institutions (TEIs) [and] Teaching Schools” (DoE, 2011, p. 3); and to address the “imbalance between the current registration profile and the needs profile” (DoE, 2011, p.66).

In order to improve the quality of teachers and teaching of South Africa it is important to draw on the experiences of other countries (DoE, 2011, p.5)), in particular the Finnish education system, one of the best performing education providers in the world. According to the PISA international testing program, this system’s had a ranking of 2 in a Mathematics literacy test in 2006 (Tuovinen, 2008). They conduct methodologies and practice teaching throughout the entire duration of the teacher education programme within TSs, which are “organically linked with the departments of education of the university” (DoE, 2011, p.111). However, post-graduate certificate in education (PGCE)
student-teacher training at the University of Johannesburg is delivered in a highly theoretical mode, while work integrated learning (WIL) is only occurring in short block periods during the year, namely three weeks in the first semester (March) and seven weeks in the second semester (August-September). Hence, the university has the responsibility for ensuring that their education programme is accessible to aspirant teachers, is of high quality and leads to meaningful development for teachers. In particular, the university will need to “implement innovative mechanisms to strengthen the work integrated learning component of their teacher education programme, e.g. through the effective use ... of teaching schools” (DoE, 2011, p.3)

Against this background, the University of Johannesburg was approached by the DoE to conduct a broader study on the establishment of TSs in South Africa. In particular, this paper focuses on a pilot study toward the broader study, namely to examine the experiences of mathematics student-teachers with regard to mentoring at a TS school in South Africa, so as to explore the relational, developmental and contextual dimensions. The question arising from the above is thus: What are post-graduate certificate in education (PGCE) mathematics student-teachers’ experiences of mentoring at a TS? Hence, a literature inquiry with regard to three dimensions of mentoring, namely relational, developmental and contextual dimensions was conducted.

1.2 MENTORING IN A TS

TSs are “schools in which a major part of student pedagogical practice is conducted are linked organically with the departments of education” (Moon, Vlasceanu, & Barrows, 2003, p.89). In particular, TSs are local schools consisting of supervising teachers contracted by universities to specialise in the supervision of student-teachers, by guiding teaching practice, develop pedagogy and curriculum planning. These schools integrate teaching practice into all levels of teacher education time, thus integrating theoretical studies and practice from the beginning to the end of a student-teacher’s studies. In particular, TSs are teaching laboratories, where student-teachers can engage in learning-from-practice, such as by observing best practice, participating in micro-teaching exercises and taking subject methodology courses.

Beyene, Anglin, Sanchez and Ballou (2002, p.87) argue that “definitions of mentoring range from the simple and romantic images of Greek mythology’s Mentor to the complex, multivariate processes of structured human interaction within institutional contexts”. In particular, Donaldson, Ensher and Grant-Vallone (2000) view mentoring as a one-on-one, lasting relationship between a more knowledgeable person and a less knowledgeable person fostering professional development. According to Hyde and Edwards (2013, p.2) “the guidance, support and wise advice of a mentor is vital in providing pre-service teachers with appropriate learning experiences so that they develop effective skills as teachers of mathematics”. In this paper mentoring refers to the developing assistance and care of an experienced mathematics teacher to an unexperienced mathematics PGCE student-teacher.

Lai (2010) reviewed literature and has found that mentoring is conceptualised with respect to its relational, developmental and contextual dimensions as indicated in diagram 1.

![Diagram 1: Dimensions of mentoring](image)

These dimensions form the conceptual framework of this paper. The relational dimension is the “mutually beneficial relationship in which both the mentor and the protigé grow as a result of their relational connection” (Beyene et al., 2002, p.87), thus, the relationship between the mentor and
the mentee. According to Beyene et al. (2002) two qualities are central to all relationships, namely empathy and mutuality. In addition, the conception of mentoring emphasises the role of a mentor as emotional supporter and critical friend (Bradbury, 2010). Furthermore, Ensher and Murphy (2011) mention three factors impacting on the relational dimension of mentoring, namely commitment, measuring up to a mentor’s standards and career goal.

The developmental dimension of mentoring focuses on the mentoring roles aiming to develop student-teachers professionally and personally (Lai, 2010). Here, firstly, the developmental level of the novice teacher is recognised by the mentor who then shifts the novice towards a higher level of development (Wang & Odell, 2002). This does invoke the notion of scaffolding that emerged from socio-constructivist views of learning, especially Vygotsky’s (1978) notion of learning in the zone of proximal development (ZPD).

The contextual dimension focuses on cultural and situational features of the mentoring setting. It recognises the powerful influence of the school organisation and culture of teacher learning. According to Feiman-Nemser (2003, p.25) the mentoring of new teachers involves a process of surrounding “new teachers with a professional culture that supports teacher learning”, thus enculturation, in which they are helped to fit into a particular school community.

1.3. RESEARCH METHODOLOGY

1.3.1. Research design
Vandeyar (2010, p.87) noted social investigations are bound in the “consideration of how certain phenomena or forms of knowledge are achieved by people in action”, which convinced me to adopt a social constructivism theoretical paradigm. Moreover, this paradigm can be tailored to an investigation of how Mathematics student-teachers’ experience mentoring at a TS, and the way in which these perceptions inform and shape their development as future teachers.

A case study design using a qualitative method research design was adopted for the study. This design is suitable for people’s ideas and experiences are used in order to understand the world under investigation (Rowley, 2002). In particular, case studies allow for the exploration of multidimensional aspects using a comprehensive inquiry (Baxter & Jack, 2008). Furthermore, case studies allow for the use of a collection of evidence from various sources, such as interviews, lesson plans, observations and reflection reports (Rowley, 2002). I established student-teachers’ experiences regarding mentoring at a TS qualitatively through interviews, lesson design analyses and reflection reports.

1.3.2. Sample
A purposeful sampling technique (Creswell, 2003) was used to select five mathematics student-teachers from a population of 15 enrolled PGCE mathematics student-teachers at a university in South Africa. Criterion sampling was utilised (Palys, 2008). The TS was chosen for it is approximately 5 km away from the university and allow easy access to students between the university and the TS. All mathematics students enrolled for full-time studies in the PGCE course, which were only five students, were selected. Participation was voluntary, consent was obtained and the anonymity of the participants was protected (Mouton, 2001).

1.3.3. Data collection: interviews, lesson design analyses and reflection reports
One-on-one semi-structured interviews were conducted before the start of the piloting project and after the conclusion of the project. The purpose was to determine mathematics student-teachers’ viewpoints on mentoring regarding the relational, developmental and contextual dimensions before and after mentoring. Student-teachers participated voluntarily. Furthermore, lesson designs submitted to mentor-teachers, as well as 11 weekly written reflection reports by the student-teachers, were collected.

1.3.4 Data Analyses
Tesch’s protocol of data-analysis (Creswell, 1994) to analyse the data from the one-on-one semi-structured interviews, lesson designs and reflection reports was used. Firstly, the interview was
audio-recorded and transcribed. Secondly, the transcriptions were read to obtain a holistic perspective, after which relevant answers were separated from irrelevant answers. Thereafter, Saldana’s (2009) method of coding was used, a “heuristic exploratory problem-solving technique without specific formulas to follow” (p.8), where a code in qualitative inquiry refers to a “word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (p. 3). In particular open and axial coding was used. Axial coding “relates categories to subcategories and specifies the properties and dimensions of a category” (Saldana, 2009, p.159). After coding was applied to the data, codes sharing the same characteristics were grouped into sub-themes and grouped together to form the themes (Saldana, 2009). Table 1 represents the themes, sub-themes and codes emerging from the qualitative analysis.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Sub-themes</th>
<th>Codes</th>
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| Relational dimension        | Caring and nurturing     | Caring  
Teacher's understanding 
Nurture 
Observation 
passion |
| Critical emotional support  | Support                  | Communication 
Available 
Age/Emotional support |
| Collaborating within a community of practice | Engagement | COP |
| Developmental dimension     | Developing pedagogical thinking | Lesson plan  
PCK  
Solutions to problems  
Solving of problems  
Methods of teaching  
Other methods  
Methodology  
Higher order questions  
Assessment  
planning vs. preparation  
perception  
Teaching – conducting lessons |
| Inquiry-oriented teachers   | Inquiry-based learning   | Heuristic approach |
| Reflecting on practice      | Reflection               | Steps in lesson plan |
| Evidence –based practice    | Evidence-based practice  | Resources  
Content knowledge  
Knowledge of the syllabus  
Nature of Maths  
time allocation  
evaluation |
| Conceptualise everyday phenomena | focus on concepts | Conceptualisation |
| Scaffolding                 | Scaffolding              | guidance |
| Contextual dimension        | Enculturation into the school culture | Enculturation  
School culture Professionalism  
Punctuality  
Time management  
Too many examples  
Honesty  
Preparation  
Administration  
Documents  
Code of conduct  
Discipline  
Respect  
Relation with learners |
1.4 ETHICAL CONSIDERATIONS
The ethical committee of the Faculty of Education of the University granted ethical clearance for the study and permission was obtained from the participating TS to conduct the research.

1.5. RELIABILITY, VALIDITY AND TRUSTWORTHINESS
Qualitative rigour was ensured through a careful consideration of all the elements of trustworthiness. The data was verified by means of data saturation and crystallisation, which allowed for new facets to emerge from the data. Sufficient data sources ensured internal validity or “Truth Value” (Guba, 1981, p.80). Trustworthiness is further enhanced through a repeat of interviews and reflection reports. The research questions, as outlined in the introduction of the study, were used as a framework for the development of the interview questions used in the study. The research questions were broken down into smaller, more appropriate conceptual ideas and these became the concepts to be explored. In this way, the validity of the interview questions is ensured because it is testing the conceptual ideas, which form the basis of the study. To ensure face and content validity, the interview questions were shown to colleagues for comments and responses, to ensure that the constructs were clearly conceptualised. Consequently, the interview questions were amended with regard to terminology and clarity.

1.6. MAIN FINDINGS
The findings from the pre- and post-interviews, lesson design analyses and reflection reports reveal how student teachers experienced mentoring at the TS. In the following protocols the names of the learners are pseudonyms to protect their identity. All the protocols are from the pre-interviews conducted on Saturday, 23 February 2013; post-interviews conducted on Tuesday, 13 August 2013; lesson designs collected on 25 April 2013 – 23 May 2013; and written reflection reports submitted on 28 February 2013 – 15 August 2013.

1.6.1 Findings from the analysis with regard to the relational dimension
Before the start of the pilot project, student-teachers’ perceptions on mathematics teaching were that teachers do not have the responsibility to teach learners. Learners should “go out and do problems [them]selves and come and ask if [they] encounter problems” (Isaac). In the post-interviews, after the TS school project was completed, student-teachers’ views have changed on mathematics teaching. Isaac realised that “I thought teaching math’s was going to be very easy no challenges just put the equation on the board and I found it to be way more than that” Tshepo also realised that “as a teacher I have so much responsibility, for the learning to be effective … I realised this it’s up to me whether the class is going to be effective or not … you must know that you are at work you must do your work that’s why you are there”.

Before commencement of the teaching project, Fiona held the perception on barriers in mathematics teaching that “maths … its difficult”, while Fay viewed “the lack of understanding of the learners” as a barrier in Mathematics teaching. At the end of the project, student-teachers viewed barriers in mathematics teaching from their own experiences, which indicate that they started...
reflecting. Tshepo found it difficult to relate some mathematics concepts with real life, as she noted that

“Some of the mathematics concepts you cannot relate them to daily life you have to think hard, what I can include so that they can grasp this thing. It’s very difficult sometimes like some of them you don’t know what to compare with it with solving for X. Sometimes it becomes very difficult and frustrating”

Dina argued that learners find the understanding of mathematical language difficult if their mother tongue language differs from the language of instruction. According to her “they find it difficult to understand the mathematical language because of their poor ... fluency in English”. Fiona also felt that language is a barrier, especially the way in which it is used by textbooks. She noted that “the way some textbooks are written ... language to a certain level is getting deconstructed and so maybe now once you deal with concepts”.

Student-teachers developed self-confidence. Fay noted that “I find myself being more confident to be a teacher than before I went for that practice”. Also, Dina realised that “when you are well prepared you feel confident in front of the learners and when you are confident it’s easy to manage your class”. However, Fay complained that “they should not feel that we are qualified teachers, we are not qualified already”. The students were stressed, nervous and frustrated, as Dina reflected: “I was nervous which made me do some new errors while speaking and writing”. Initially, student-teachers experienced mentoring as an additional burden, but eventually it changed, as Tshepo stated that “I no longer see this project as an extra job for me, because it help me with many thing like, I have realised my weakness and I am working on it and the mentor teacher is very helpful”.

Student-teachers experienced the mentor teachers not only as caring and supportive, but also as role-models. According to Isaac the mentor teacher “is very fair ... she considers your problems if you talk”. Tshepo noted that “the mentor-teacher is very friendly, empathetic warm, friendly and supportive”. Dina added that “she is really caring because when she addresses us she does not address us as assistants or something like helpers. She refers to us as teachers”. Fiona claimed that the mentor teachers are “supportive, friendly, they are welcoming”. Fay also noticed that “she show care and kindness to her profession by making sure that every learner understands and follow up with the lesson”. At the end Fiona confessed that “you start to care about what you are doing and now you also think about the learners when you do your work ... it rubs off on you when you’re there how the teachers do ... you can see that they care about the work so yah it rubs off on you so it builds on you as a student”.

Student-teachers indicated that they prefer to have face-to-face discussions with mentors, rather than e-mails. Tshepo complained that - “the obstacle is sending the lesson plan electronically; I wish to sit down and discuss the lesson plan face to face before I can give a lesson”.

The student-teachers were willing to function in a community of practice. Dina mentioned that “I am willing to try any way by asking from others how to approach problems, how to go about solving them. I am going to be hands-on and open-minded to any suggestion”. Isaac noted that “you pretty much blend in so you are pretty much part of the community”. Student-teachers realised that they cannot work in isolation. Dina noticed that “as a teacher you are not working alone you have to communicate with other teachers from other classes”. Student-teachers also have a sense of belonging at the school. Isaac noticed that “you belong to that group ... You kind of immediately feel like part of the community”.

1.6.2 Findings from the analysis with regard to the developmental dimension

Lesson plan presentation and conducting of lessons improved during the project. Fiona confessed that “I need to make sure that my work is proper in order for them to get the best out of it”. She also noted later in the project that “regarding to lesson planning, preparing and conducting of lesson is that I am getting used to it, it is no longer difficult and frustrating like the first time I had to do it”. Also, Fay commented that “in the aspect of planning a lesson, in production of the lesson and in completion of the lesson. I have really learnt a lot since I have started this program”. The student-
teachers realised the importance of preparation as Tshepo noted that “... you must be ready and prepared”. Isaac added that “the planning, preparing and conducting has improved and is very interesting, there are a lot of things that I had taken for granted but, this experience is an eye opener”. Fay viewed “planning as a building block of lesson presentation. There is an adage that says if you fail to plan, you plan to fail”.

Student-teachers found the transferal of content knowledge challenging, but also realised the importance of PCK. Isaac mentioned that “you have to understand that we ... just know content, the environment is a new story, delivering content to learners”. Fiona also noted that “it’s one thing to know it and then transferring it then getting to a place where the learners can also grasp it you know it’s not always easy”. Gradually, student-teachers realised that they should also utilise other methods, as Tshepo reflected after he conducted a lesson that “I forgot that I do not have to concentrate on one method, I can also introduce other methods”. Isaac confessed that “I initially thought it was just about content knowledge but also meaning of that content to learners is required and that is a skill that requires sharpening over time”. Fiona acknowledged “I didn’t know that you give learners an activity to do but now I know when you are teaching, you give an activity to do”. Dina confessed that “it takes time to develop a pedagogical content knowledge, so but it’s something that you should work on it if you want to have a successful lesson plan”. According to Fiona “practice still remains a key element in teaching so you need to give the children time to work through a lot of problems in order for them to grasp the concepts”. She also noted that a teacher should “try to make the concepts less abstract more understandable for the students”.

According to the student-teachers the mentor teachers are concerned about results and do not use learner-centered teaching approaches or encourage creativity. Isaac stated that the mentor teacher does “not encouraging creativity or brain activity to come with new ways of doing it”. According to Dina “she is the one who is doing a lot of talking in the class, she does not really use the learner centered teaching approach”. The school is concerned about their standard and their results. Tshepo believed that “the school is more concern of keeping the image of producing good results of 100% pass rate, so there is a limit creativity “ She also noted that

“at [the TS] I don’t think they use the heuristic approach it’s all about the standard of the school. So she always told us you must tell them everything they mustn’t discover, they know nothing and they don’t know how to discover things for themselves you must give all the information you can think of. This is how it must be done here so I thought that maybe because she always tell us that they are always getting a hundred percent so they are trying to keep the standard”.

Student-teachers acknowledged the use of various resources, as Dina remarked “the thing I like about that school, it is well resourced. Tshepo acknowledged that “you must also find other textbooks in to find out other methods”. Also, Fiona indicated

“One issue for me during the lesson preparation was the classroom mathematics textbook. It was not easy to construct the lesson using the textbook only. The mentor was helpful in this regard since she created a worksheet that was used to facilitate the lesson. We also do have access to other resources at the university in terms of the internet”.

However, student-teachers find the use of white boards challenging. Dina confessed that “some of the teaching materials like the white boards we are not use to it, it needs a lot of practice there”. She also stated that “I did present one lesson on there, using PowerPoint, although it was my first time presenting a lesson on a PowerPoint but I did learn next time if I can do it I will do it better”. Student-teachers were lacking basic language skills. A challenge was that English is not their home language, as Isaac argued: “We are not really used to speaking English right. So sometimes I have to clarify ... in another language ... that is something that can be worked on, the matter of communicating” As a result, the student-teachers appreciated the way the mentor teacher communicates with the learners. According to Tshepo “she uses the question and conversation approach, because in that way she guides her learners how to get answers and information. I like the way how she communicates with the learners in the classroom when she teaches”.

Even though the teachers did reflection sessions with student-teachers at the end of each day, the student-teachers did not value the importance of reflection in the beginning. Fay mentioned
“after each and every lesson we’d sit down reflect on it talk about it positives and negatives, how did you feel about your lesson today it so that next time you don’t do the very same thing … it’s just that student-teachers might not actually agree to stay after school … at times I’d feel like she is too much maybe criticising my lesson then maybe you realise that it’s necessary”. However, later in the project student-teachers acknowledges the importance of reflection. “Having feedback sessions with the mentor, it definitely helps” according to Fiona. Gradually, student-teachers realised that they have to think on the spot. Tshepo commented:

“It made me realise that teaching is very challenging, it is not a small thing where you can say ok, I am going to teach the learners about x times x and expecting things. But you will be surprised to know that it is not everybody that understands what you are teaching. It made me realise it is all about you must think on the spot, it is very challenging”.

Tshepo also commented that “teaching does not always proceed smoothly, it is a very challenging profession and it requires a teacher that think and reflect”. Fay also realised that she has to reflect everyday as she noticed “by reading my notes I get a reflection on what the mentor teacher’s thoughts after the day like she always give us what she did in the class. I get home, I read it, I reflect. Every day I reflect on what I have learnt that day”. Tshepo noticed that “I must speak to my presentation. Speak to my lesson plan for the success of the lesson for that day”. Dina realised that “we’re also supposed to tell … her, to explain to her what happen here, why did this go wrong or what did you do to make this thing right”. Eventually, she realised that “the process of designing a lesson plan force you to reflect on what you want to achieve in each class and how best you can do that”. Tshepo concluded that

“It really helped to have a detailed plan because it made me visualise each class before I taught it. I imagined the flow from one activity to the next, made sure there was a balance of skills and types of activities, and anticipated places where we might detour from the lesson. Knowing what came next helped me avoid dead zones in class”.

1.6.3. Findings from the analysis with regard to the contextual dimension
Student-teachers started realising professionalism includes responsibility and accountability, as Fay noted that “now [she has] to work and get up at 4 o’clock this morning to make sure I will be there”. Tshepo also viewed “professionalism … that as a teacher I must be accountable for everything I do during my teaching years … it [is] my responsibility to plan and prepare each and every lesson … professional is that you will be respected and be seen as a responsible person by your co-workers and your work will run smoothly”.

Student-teachers started implementing classroom management. Tshepo mentioned that “the way is to be firm in my class and to tell the learners what I want … I tried to … send the learners out of the class … If you talk in my class wait until the lesson is over before you can come back, they said I cannot do that”. However, student-teachers found it difficult to manage discipline in the classroom. According to Dina “a challenge for me is classroom management whereby we find learners who are not behaving and you have to, you have to discipline them. So I think I am not very good on disciplining”.

Student-teachers were exposed to administration and realised that “managing the paperwork is one of the toughest things a teacher has to do. Record keeping and administration is often time consuming and repetitive and many see it as detracting from the teacher’s real purpose to teach” (Tshepo).

Student-teachers felt that they were enculturated into the school system. Isaac commented that “I was almost part of the class, the school culture I was almost part of it”. Fiona also noted that “the culture there at the school they do care about the pupils”.

Student-teachers acknowledged that the environment at the TS school contributed to their growth. Isaac commented that the school “grooms … the student teacher because it is so formal, it is academically inclined”.

88
1.7. DISCUSSION AND CONCLUSION

A measure to address the challenges experienced in teacher education, as noted in the Integrated Strategic Planning Framework for Teacher Education and Development in South Africa (DoE, 2011) is the establishment of TSs, as practiced by the Finnish education system, one of the best performing education providers in the world. Therefore, PGCE mathematics student-teachers of the university were exposed to a TS, as part of a pilot project, to “implement innovative mechanisms to strengthen the work integrated learning component of their teacher education programme” (DoE, 2011, p.3).

This paper examined the experiences of mathematics student-teachers with regard to relational, developmental and contextual dimensions of mentoring at a TS, in South Africa. A TS is a school “in which a major part of student pedagogical practice is conducted” (Moon, Vlasceanu, & Barrows, 2003, p.89). In this paper mentoring referred to the developing assistance and care of an experienced mathematics teacher to an unexperienced mathematics PGCE student-teacher. The relational dimension indicated the “mutually beneficial” (Beyene, Anglin, Sanchez & Ballow, 2002, p.87) relationship between the mentor and the mentee; the developmental dimension of mentoring focused on the mentoring roles aimed to develop student-teachers professionally and personally (Lai, 2010); and the contextual dimension focuses on cultural and situational features of the mentoring setting.

A social constructivism theoretical paradigm was adopted. In particular, a case study design using a qualitative method research design was followed. Student-teachers’ experiences regarding mentoring at a teaching school (TS) were qualitatively established through interviews, lesson design analyses and reflection reports. A purposeful sampling technique (Creswell, 2003) was used to select five mathematics student-teachers from a population of 15 enrolled PGCE mathematics student-teachers at a university in South Africa.

The results from the qualitative data addressed the research question, namely: What are postgraduate certificate in education (PGCE) mathematics student-teachers’ experiences of mentoring at a teaching school?

The results with regard to the relational dimension indicated that student-teachers’ perceptions on mathematics teaching were initially that teachers do not have the responsibility to teach learners. Later student-teachers realised a teacher has the responsibility to ensure that classes are effective. Student-teachers started viewing barriers in mathematics teaching from their own experiences, which indicated that they started reflecting. They developed self-confidence. Initially, student-teachers experienced mentoring as an additional burden, but eventually they viewed it as very helpful. Student-teachers experienced the mentor teachers not only as caring and supportive, but also as role-models. However, student-teachers preferred to have face-to-face discussions with mentors, rather than e-mails. Furthermore, the student-teachers were willing to function in a community of practice, as they realised that they cannot work in isolation. Student-teachers also had a sense of belonging at the school.

It was evident from the analysis with regard to the developmental dimension that lesson plan presentation and conducting of lessons improved. The student-teachers also realised the importance of preparation. However, student-teachers found the transferal of content knowledge challenging, but also realised the importance of PCK by using other methods. According to the student-teachers the mentor teachers were more concerned about results than using learner-centered teaching approaches and creativity. Student-teachers acknowledged the use of various resources, but found the use of white boards challenging. A challenge to student-teachers was that English was not their home language. As a result, the student-teachers appreciated the way the mentor teacher communicated with the learners. Even though the teachers did reflection sessions with student-teachers at the end of each day, the student-teachers did not value the importance of reflection in the beginning. Later, students confessed that having feedback sessions with the mentor, helped, as they have to think on the spot.
The analysis with regard to the contextual dimension revealed that student-teachers started realising professionalism includes responsibility and accountability. Student-teachers also started implementing classroom management. However student-teachers found it difficult to manage discipline in the classrooms. Student-teachers were exposed to administration and considered record keeping and administration time consuming. Student-teachers felt that they were enculturated into the school system and acknowledged that the environment at the TS school contributed to their’ growth.

A limitation to this paper is that only the views of student-teachers were taken into consideration. The experiences of the mentor-teachers would have contributed to a more holistic understanding. Guidelines for the improvement of such a programme are also recommended. The pilot project was implemented for a short time, namely one year. Although to a certain extent it was successful and student-teachers experienced it as valuable, I recommend that in order to discover the full extent of the success of such a project, it should be implemented for more than one year to more than one group of student-teachers in various subject disciplines. Furthermore, it should take place in conjunction with lectures at the university and should not be viewed as additional work to student-teachers. Support should also be provided to both fulltime and part-time student-teachers, and not only be restricted to fulltime PGCE mathematics student-teachers.

In conclusion, for a teaching school to be effective, its value should be communicated to all role players. An important value of the TS is that the emphasis of theory becomes much clearer after experience and TSs prepare student-teachers for their future with regard to responsibilities and expectations of a teacher. The article adds to research on the role of Teaching Schools in South Africa.

REFERENCES


