

**CREATIVITY IN INITIAL TEACHER EDUCATION:
A CASE STUDY IN GEOGRAPHY
AT
STELLENBOSCH UNIVERSITY**

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**Dissertation presented for the degree of
Doctor of Philosophy in the Faculty of Education
at Stellenbosch University**



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MARCH 2017

DECLARATION

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Date: March 2017

ABSTRACT

The purpose of this study was to explore, analyse, interpret and describe how the perceptions of a selected group of twelve geography Postgraduate Certificate in Education (PGCE) students at a South African university developed in the year of their initial teacher education (ITE) programme. The following central research question guided the study: How can the development of geography student teachers' use of creativity act as a mediator between their acquired content knowledge and their related applied pedagogical practice?

This study mainly focused on developmental theories of creativity which advocate that there are qualitatively different levels of creativity and that creativity can and should be developed in the context of ITE. Simultaneously, the importance of preparing student teachers to become subject specialists was highlighted. These two focuses underlay the argument for creativity to be purposefully used to act as mediator between (student teachers') acquired content knowledge and their related applied pedagogical practice to provide for heightened pedagogical content knowledge (PCK). If this could be achieved, student teachers will ultimately have a positive influence on the quality of basic education in South Africa that in turn will provide for better prepared HE students. Apart from enhanced PCK as an outcome, the individual student teacher (and learner) will benefit from acquiring creative skills to equip them to cope with future demands of the 21st Century.

This study followed a case study methodology and the qualitative data was generated by using questionnaires at the beginning of the study period, lesson observations during the course of the study, and in-depth individual interviews at the end of the study period. The data was analysed by means of content and thematic analysis. Although the research findings do not pose to be generalised to a larger population, it may provide new insights that can inform initial teacher education in higher education institutions in South Africa.

The analysis and interpretation of this study's data revealed a synthesis with the literature in the field and iterated the changing landscape in which university students and school-going learners find themselves. The fast-paced world we live in today places demands on individuals to become more creative in their thinking to be able to cope with changing environments, changing knowledge, more choices, more information, more novelty, and greater levels of complexity. Therefore, ITE in the 21st Century has to keep track with the apparent transition from the Information Age to the Conceptual Age. Information alone is no longer enough. Individuals (student teachers and their subsequent learners) have to be empowered to lead change and to survive inevitable change. While academic knowledge and skills may be inadequate to meet the needs of a rapidly changing world, creativity may provide skills in coping with different environments, and therefore creativity becomes increasingly important in dealing with complex issues.

The results of this research indicated that student teachers' creativity can and should be developed as part of the PGCE (ITE) programme for improved pedagogical content knowledge (PCK) in the context of the respondents of this study. The twelve respondents of this study were in agreement that creativity should be included in ITE programmes because they had realised the importance and practical advantages of incorporating creativity in PCK to enhance teaching and learning. This means that creativity does indeed provide the spark that is needed between content knowledge and pedagogical practice to transform subject knowledge for enhanced and deeper learning (or PCK) that may lead to the ultimate creation of new knowledge.

OPSOMMING

Hierdie studie verken, analiseer en interpreteer hoe die persepsies van 'n geselekteerde groep van twaalf geografie Nagraadse Sertifikaat in Onderwys studente aan een Suid-Afrikaanse universiteit ontwikkel het gedurende die afloop van hul aanvanklike onderwyseropleiding. Die volgende oorkoepelende navorsingsvraag het die studie gelei: Hoe kan die ontwikkeling van onderwysstudente in geografie se gebruik van kreatiwiteit dien as bemiddelaar tussen hul verworwe vakkennis en verwante toegepaste pedagogiese praktyk?

Die studie het hoofsaaklik gekonsentreer op ontwikkelingsteorieë van kreatiwiteit wat verduidelik dat daar kwalitatief verskillende vlakke van kreatiwiteit bestaan en dat kreatiwiteit dus ontwikkel kan en moet word in die konteks van aanvanklike onderwyseropleiding. Terselfdertyd word dit benadruk dat dit belangrik is om onderwysstudente se vakkennis te ontwikkel sodat hulle vakspecialiste kan word. Bogenoemde twee aspekte vorm die basis van die argument dat kreatiwiteit doelgerig ingespan word as bemiddelaar tussen onderwysstudente se verworwe vakkennis en verwante toegepaste pedagogiese praktyk, sodat verhoogde pedagogiese vakkennis ontwikkel word. Indien dit bereik kan word, sal onderwysstudente uiteindelik die kwaliteit van basiese onderwys in Suid-Afrika positief kan beïnvloed, wat op sy beurt daartoe kan lei dat studente wat universiteite betree, beter voorbereid is. Benewens verhoogde pedagogiese vakkennis as 'n resultaat, sal die bemeestering van kreatiewe vaardighede individuele onderwysstudente (en leerders) bevoordeel en toerus om die uitdagings van die 21^{ste} eeu aan te pak.

Deur 'n gevallestudie-ontwerp te gebruik, is verskillende dataversamelingsmetodes kenmerkend van hierdie interpretatiewe benadering ondersoek. Sodoende is kwalitatiewe data deur middel van vraelyste aan die begin van die studie, observasie gedurende die studie en semi-gestruktureerde onderhoude aan die einde van die studie, gegenereer. Die data is ontleed deur gebruik te maak van inhouds- en tematiese analise. Die bevindinge van hierdie studie – alhoewel konteks-spesifiek en nie oordraagbaar na groter kontekste nie – lewer 'n bydrae tot

die moontlike vorming van nuwe insigte in terme van aanvanklike onderwyseropleiding in hoër onderwysinstellings in Suid-Afrika.

Die ontleding en interpretasie van die studie se bevindings dui op 'n sinergie met die literatuur in die veld en benadruk die veranderende landskap waarin universiteitstudente en skoolgaande leerders hul bevind. Die vinnige tempo van die wêreld waarbinne ons vandag leef, plaas mense onder druk om meer kreatief te dink om sodoende die veranderende omgewing, ontwikkelende kennis, meer keuses, meer inligting, meer vernuwing en verhoogde kompleksiteit, te kan hanteer. Daarom moet aanvanklike onderwyseropleiding in die 21^{ste} eeu tred hou met die oënskynlike oorgang van die Kennis- na die Konseptuele Eeu. Inligting alleen is nie meer genoeg nie. Individue (onderwysstudente en hul toekomstige leerders) moet bemagtig word om verandering te kan lei en om te kan oorleef binne onafwendbare verandering. Terwyl akademiese kennis en vaardighede onvoldoende mag wees om die uitdagings van 'n snelveranderende wêreld te hanteer, mag kreatiwiteit die nodige vaardighede voorsien om verskillende omgewings te kan hanteer – kreatiwiteit word dus toenemend belangrik om met komplekse kwessies te kan omgaan.

Die bevindinge van die studie het aangedui dat onderwysstudente se kreatiwiteit kan en behoort ontwikkel te word binne die Nagraadse Sertifikaat in Onderwysprogam, ten einde verhoogde vlakke van pedagogiese vakkennis te bereik binne die konteks van die respondente van hierdie studie. Die twaalf respondente van hierdie studie het saamgestem dat kreatiwiteit deel moet vorm van aanvanklike onderwyseropleidingsprogramme omdat hulle die belangrikheid en praktiese voordele van die inkorporering van kreatiwiteit in pedagogiese vakkennis om onderrig en leer te bevorder, besef het. Dit beteken dat kreatiwiteit inderdaad die nodige vonk verskaf tussen vakkennis en pedagogiese praktyk om sodoende vakkennis te kan omskep sodat verhoogde en dieper leer kan plaasvind, wat uiteindelik kan lei tot die skep van nuwe kennis.

ACKNOWLEDGEMENTS

I would not have been able to complete this dissertation without the help and support of a number of people. I therefore extend my sincere thanks and appreciation to:

- Prof Peter Beets and Prof Liezel Frick for their unwavering support, guidance and dedication. It was an honour to learn from you.
- The student teachers who were willing to take part in this study. I enjoyed working with them and wish them success and joy in their careers.
- My children, brothers and sisters, colleagues, as well as close friends who believed in me and supported me on this long and steep journey.

DEDICATION

I dedicate this dissertation to my late parents:

Dr Mynhardt Loubser (Tollie) Traut

(1928 – 1980)

Hester Jacoba Traut (née Louw)

(1930 – 1993)

and my three creative heroes (my children):

Marthinus Gerhardus (Thinus) Slabber

André Mynhardt (André) Slabber

Hester Jacoba (Hesti) Rudman (née Slabber)

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CHAPTER 1 – ORIENTATION TO THE STUDY

1.1 INTRODUCTION

Since the dawn of democracy in 1994, the South African educational landscape underwent drastic changes which were aimed at providing quality education to all in the country (South Africa 1995, 2002, 2005, 2009, 2011, 2011a, 2011b, 2012). However, the process to establish an improved education system is ongoing while South Africa deals with the legacy of its apartheid past as well as current and emerging realities and problems.

According to a report commissioned by the Centre for Development and Enterprise (Spaull 2013:3), “there is an on-going crisis in South African education” and “South Africa has the worst education system of all middle-income countries that participate in cross-national assessments of educational achievement”. One of the main international tests of educational achievement that South Africa participates in is the Trend in International Mathematics and Science Study (TIMMS) where mathematics and science knowledge of Grade 4 and Grade 8 learners is assessed. The significance of the results of these tests lies in a comment by Reddy (2005) that achievement in mathematics and science is one of the key indicators to assess the performance of the schooling system of any country. TIMMS was administered in South Africa four times from 1995 to 2011. While 42 countries participated in TIMMS 2011 at the Grade 8 level, South Africa was amongst three countries (with Botswana and Honduras) that administered the assessments at the Grade 9 level - Spaull (2013:16) claims that earlier rounds of TIMMS indicated that the international Grade 8 test was too difficult for South African learners. All three countries performed among the bottom six countries at the Grade 8 level in both mathematics and science and below the low-performance benchmark with South Africa performing the poorest of these three countries in science and second-poorest in mathematics (Reddy, Prinsloo, Arends, Visser, Winnaar, Feza, Rogers, Janse van Rensburg, Juan, Mthethwa, Ngema & Maja 2011). The Global Information Technology Report of The World Economic Forum furthermore found that the quality of mathematics and science education in South Africa

ranked last out of 148 countries in 2014 and last out of 139 countries in 2016 (Bilbao-Ossorio, Dutta & Lavin 2014; Baller, Dutta & Lanvin 2016).

The Progress in International Reading Literacy Study (PIRLS) is an international initiative aimed at testing the reading literacy of Grade 4 and Grade 8 learners in participating countries. In the 2006 PIRLS, South Africa did not test Grade 8 learners but rather added Grade 5 learners to compare them with the Grade 4 learners. The outcomes of PIRLS 2006 showed that South African Grade 5 learners achieved the lowest score of the 45 countries that participated. Spaul (2013:19) concludes that 87 per cent of Grade 4 and 78 per cent of Grade 5 learners in South Africa were deemed to be at serious risk of not learning to read.

Locally, indicators of South African learner performance indicate failure in terms of the desired results. For instance, according to the 2014 Report on the Annual National Assessment (also referred to as the ANA¹), the overall results for ANA in Grades 1 to 6 points towards a slight upward movement of test scores (South Africa 2014). However, in the senior phase (Grades 7 to 9), the sector is challenged in not delivering the expected progress against targets set by the DBE in 2010. In Grade 9 mathematics, with an average percentage mark of 11, the national performance of learners was at an even lower level as was the case in 2012 (average percentage mark was 12) and 2013 (average percentage mark was 14) (South Africa 2014:41). In Home Language, at the Grade 9 level, the national performance stayed below 50 per cent over the three years (South Africa 2014:42), while the First Additional Language average percentage was below 36 per cent over the three years (South Africa 2014:42). Although the DBE was satisfied that the tests were valid and the project successful, they admitted that the number and variety of questions that could be included was limited, and so were the learning

¹ The Report on the Annual National Assessment (ANA) of 2014 presents to the South African public the performance of learners in the General Education and Training (GET) band who were assessed in Numeracy and Literacy using a nationally standardised test. During the week of 16 to 19 September 2014, more than 7,3 million learners in Grades 1-6 and Grade 9 wrote the national assessment tests in Numeracy and Literacy. This was the third successful large-scale administration of the Annual National Assessment (ANA), a landmark assessment tool that annually measures progress in learner achievement in Literacy and Numeracy, focussing on the government's prioritised goal of improving the quality of basic education (South Africa 2014:8).

outcomes that could be assessed (South Africa 2014:37). Unfortunately, the ANA have come under critique by academics across the country. Spaul (2013:4, 8) summarises that while these tests are especially important in improving the quality of education in South Africa, they cannot be used as a reliable indicator of progress, as their formulation, marking, invigilation, moderation and lack of external verification reduces much of their value.

Spaul (2013:52) emphasises the realities that faces the South African educational landscape when he reports that the percentage of youth between the ages of 18 and 24 years who are not in education, employment or training has increased from 30 per cent in 1995 to 45 percent in 2011. At the same time the percentage enrolled in education has decreased from 50 per cent to 36 per cent.

While recognising the destructive bearing of poor socio-economic conditions and other contextual factors for most learners and schools, one cannot but realise that the road to quality basic education is continuous and steep; it also depends on pre-service teachers who are trained at universities² to be content specialists and who are capable of pedagogical strategies and practices to ensure that deeper and meaningful learning takes place. The *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015) therefore places renewed emphasis on the professional development of student teachers for the realisation of much needed improvement in basic education in South Africa, as argued in the *Report on the Annual National Assessment 2014 Grades 1 to 6 & 9* (South Africa 2014).

Shaheen (2010) states that for developing countries like South Africa, the integration of creativity in education is a vital condition for shaping the future orientations of learners and students³ and to actualise reform in political, economic and social areas (see Section 1.2.1).

² Initial teacher education (ITE) is presented at South African universities, inclusive of the Professionally-focused Postgraduate Certificate in Education which caps an undergraduate bachelor's degree (South Africa 2015:22).

³ A *learner* refers to a school-going child (Grades R to 12) and a *student* refers to a tertiary or university student in the South African context.

But still, for many developing countries (like South Africa), creativity remains neglected and learners and students are being taught to be consumers of knowledge rather than encouraged to participate in the creation of knowledge that is needed for a yet unknown future (Pink 2005).

Fisher and Williams (2004) contextualise that success (in any field) lies in how we apply our creative abilities to the knowledge and skills we acquire. Creativity is developmental in nature (see Section 2.4) and opportunities to explore and experience creative processes are needed in order for learners and students to develop their creative abilities. For creativity to be encouraged amongst its next generation, South Africa thus needs creative lecturers and teachers⁴ who continually develop their pedagogical repertoire to meet the needs of their students and learners while effectively mediating the curriculum and conveying content knowledge.

Creative abilities amongst lecturers and teachers may furthermore support them to respond flexibly in coping and staying abreast with curricular, systemic and official expectations and pressure. One pertinent strain put on South African teachers as well as elsewhere in the world (see Robinson & Aronica 2015), is that of standardised curricula and testing in an attempt to raise the standard of basic education (South Africa 2012, 2014). Emphasis is therefore on the importance of (student⁵) teachers' creative abilities to avoid a general position where a focus only on basic knowledge becomes the norm. Instead, focus also needs to be on higher order thinking and application of knowledge and skills as part of the ongoing creation of new knowledge (see Krathwohl 2002 where a revision of Bloom's Taxonomy is presented).

A clearer understanding of how student teachers perceived creativity in education and specifically in initial teacher education (ITE) in the context of my study could contribute to the

⁴ In the South African context where this study is situated, *teachers* teach at schools to learners in Grades R to 12 while *lecturers* teach at tertiary institutions (and more specifically at universities) to undergraduate and postgraduate students as in the case of the respondents of this study.

⁵ This study is delimited to student teachers. However, creativity is also relevant and important to serving teachers.

growing body of scholarship around the role that the development of student teachers' creativity could play in their applied pedagogical practice. This (my) study further explores the notion of creativity in ITE to act as mediator between content knowledge and pedagogical practice of student teachers⁶ to enhance their pedagogical content knowledge (PCK) (Shulman 1986a, 1986b, 1987). In Chapter 2, I (the researcher) provide a detailed discussion of PCK and the developmental theories of creativity in the context of ITE (see Figure 2.8).

In the problem statement presented below, I clarify the need for my research, describe the problem to be studied, and situate the study in a broader educational context. I also make reference to the literature that substantiated the research as discussed in Chapter 2. I describe the purpose of my study in Section 1.3 where the main objective and the central thrust of my research will be communicated, leading to the research questions that guided the qualitative data collection processes of this empirical research. In Section 1.4 I briefly describe the research design and overview of the methodology used (Chapter 3 provides an in-depth report on the research process and methodology). In Section 1.5 I provide operational definitions of key terminology to clarify how these terms are applicable in the context of this study. I present the rationale and significance of my research in Section 1.6 and set out the way in which the rest of the dissertation is organised in Section 1.7.

1.2 PROBLEM STATEMENT

1.2.1 The broader context

The economy driven, fast-paced world of the Conceptual Age in which we live (Florida 2002; Pink 2005; Imig & Imig 2007; McWilliam 2008) and the astounding development in digital technology (Koehler & Mishra 2009; McWilliam 2015), along with the problems facing our planet

⁶ The respondents of this study were Post Graduate Certificate in Education (PGCE) students with geography as area of academic specialization.

(Aydin 2011; South Africa 2011; Scoffham 2013), are presented as the core reasons for the importance of creativity in education (Craft 2006a, b; Csikszentmihalyi 2006; Kaufman & Beghetto 2009; Beghetto 2010, 2013; Robinson & Aronica 2015). Contemporary scholars seem to agree that human creative contribution is needed for commercial success and social progress to assist nations (inclusive of South Africa) to attain higher employment rates, improve economic achievement, cope with new cultural forms and increased global competition, and to create new knowledge and find creative solutions to problems like global warming, HIV/AIDS, cancer, poverty, starvation, water shortages and food security, to mention but a few (Davies 2002; Florida 2002; Burnard 2006; McWilliam 2007, 2008; Hennessey 2010; Aydin 2011; South Africa 2011; Scoffham 2003, 2007, 2013; Robinson & Aronica 2015).

The 21st Century poses rapidly changing, unknown territory in which life-wide creativity is needed to be able to survive and to prosper. Changes in all aspects of everyday living conditions have become increasingly faster, and people need to constantly cope with new kinds of tasks and situations, regardless of their economic or social status. Knowledge, technologies, social customs and tools are replaced almost as quickly as they are introduced. People therefore need creative skills to be able to cope with and lead change by responding quickly and creatively in original and appropriate ways through combining unrelated ideas into original discoveries and holistically synthesising and forging relationships, rather than by using routine information to solve routine problems (Craft 2001a, 2001b; Csikszentmihalyi 2006; Puccio & Keller-Mathers 2007; McWilliam 2008; Beghetto 2010; Beghetto & Kaufman 2010; Sternberg & Kaufman 2010).

At the same time, people need emotional, social and interactive skills to be able to empathise with others and engage them in powerfully positive ways (Pink 2005; Goleman 2006; Puccio & Keller-Mathers 2007; Tan, Law & Wong 2007). Therefore, in the 21st Century, the ultimate aim of our educational systems should be to develop creative citizens who have the skills to productively contribute to society (McWilliam 2008; Puccio in Pappano 2014) through their ability to adapt to continued and accelerated change in an increasingly complex, challenge-ridden and rapidly changing economic, political and social order (Craft 2006b; Csikszentmihalyi

2006; McWilliam 2007; Ward 2007). The vital need is for people to have the capacity to continuously produce new knowledge in order to solve yet unknown problems by hypothesising, synthesising and reflecting, and generating, adapting or recombining original ideas in appropriate ways (Florida 2002; Runco 2004; Jackson & Sinclair 2006; McWilliam 2008, 2015; Plucker & Makel 2010b; Sawyer 2010; Craft 2011). However, creativity is not just about macro issues like driving the economic engine of society, it also has value in other dimensions of our daily lives. As agreed by Torrance (1995), Csikszentmihalyi (1988, 1997), Fisher and Williams (2004), Runco (2004), Florida (2005), Hunsaker (2005), Jackson (2006), Freund and Holling (2008), McWilliam (2008), Shaheen (2010), and Kokotsaki (2011), creativity enables a person to solve problems; it makes life more interesting and brings about an inner experience of fulfilment and joy not only in intellectual, psychological, emotional and physical terms, but also as far as the quality of communication with other people is concerned. There are many more positive benefits of creativity, including benefits for learning, self-expression, motivation, positive mental states, and educational achievement (see Section 2.4).

While economic globalisation accompanied by rapidly changing conceptions of identity, culture, citizenship, rights and responsibilities put unique demands on teachers and education systems (Csikszentmihalyi 2006; Jansen 2007; McWilliam 2007, 2008; Ward 2007), creativity alone is not all that is needed to navigate an unknown future. New knowledge is needed and it can only be created in the light of existing knowledge – one needs to know enough about a field to move it forward (Sternberg 2007). Conversely, knowledge about a field can result in a closed and entrenched perspective, which may be detrimental to creativity (Sternberg 2010).

It is therefore clear that both strong content knowledge and creativity are essential, especially in initial teacher education (Koehler & Mishra 2009; Beghetto 2013; South Africa 2015), to equip future teachers with the knowledge, attitudes and skills necessary to prepare future citizens of the Conceptual Age (Pink 2005; McWilliam 2008) (see Section 2.5).

1.2.2 The need for creativity and pedagogical content knowledge in initial teacher education

The higher education (HE) environment, especially in the South African context as provider of initial teacher education (ITE), is of utmost importance if creative teachers are to be shaped in order to prepare a next generation of creative citizens. South African university leaders (Jansen 2007; Eloff 2013; Viljoen 2014) agree that universities need to adapt to the rapidly changing world in order to remain relevant and to produce graduates (including teachers) who are prepared for the world of work and who have been taught how to think critically and creatively (South Africa 2011). McWilliam (2008) provides the international perspective that universities will become irrelevant to the creative futures of young people if students are treated as passive consumers of predetermined information rather than active co-creators of knowledge. McWilliam (2008) further cautions that university students are still being taught the kind of literacies used by academics and warns that when these students leave the university, they have to radically rework such content for environments in which speed, clarity and breadth of communication matter more than disciplinary terminology. They therefore have to unlearn many aspects of these skills because they do not add value outside academia. It is thus important for university (ITE) programmes to prepare student teachers not only with academic and subject knowledge, but also with the creative and practical skills they will need when entering the teaching profession.

McWilliam (2008) and Sawyer (2010) suggest that instruction in all subjects should undergo a dramatic transformation – a shift from delivery of facts and procedures through instruction to the creation of learning environments that support active and creative learning and knowledge building (see Section 2.4.3.2). While content knowledge evolves at lightning speed, more focus is on process skills, strategies to reframe challenges and extrapolate and transform information, and to accept and deal with ambiguity (Puccio in Pappano 2014). Tertiary learning institutions need to foster deeper conceptual understanding, problem recognition and solving, solution construction and transfer to new settings – the cognitive structures that support creative work (Guilford 1959, 1967; Rhodes 1961; Torrance 1963, 1965, 1972, 1995; Cropley 2001; Cropley & Cropley 2007; Runco 2010a; Sawyer 2010) (see Section 2.4.3.1). While it is vital for student

teachers to master sufficient content knowledge about their field of expertise (in the case of the respondents in this study it will be geography within the Further Education and Training band) as well as about pedagogical practice (South Africa 2011, 2015), the role creativity may play in providing the stimulus between content knowledge and pedagogical practice is to be considered (Shulman 1986a, 1986b, 1987) (see Sections 2.5 & 2.6).

1.2.3 The development of creativity for improved academic learning

Sarason (1993) agrees with Dewey (1938, 1987) that education should be viewed as a way of exploring and expanding our understanding of the future optimistically in relation to humanity's history, accomplishments and purposes. As such, education is about inquiry and teaching is an interactive, experiential and creative profession (Tan & Wong 2007). Sternberg (2007) further proposes that learning must be life long and that people constantly need to think creatively and apply their thinking in new ways.

In Section 2.4, the developmental nature of creativity is presented within the context of this study, which is geography teaching in initial teacher education (ITE). Scott, Leritz and Mumford (2004) build on the views of well-respected pioneers like Guilford (1950) and Vygotsky (1978, 2004) that there is a connection between creative teaching and improved learning and performance. Vygotsky (1978, 2004) asserts that if a main objective of education is to prepare students for the future, then the cultivation of the creative imagination should play a key role in the attainment of that goal. The prophetic words by Albert Einstein (1929) are still of essence in the fast-moving 21st Century: "Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world" (Einstein 1929:117).

Creative skills (like imagination) are thus needed if new knowledge is to be created in the fast-moving Conceptual Age (Pink 2005; McWilliam 2008). Deeper conceptual understanding and creative imagination work together within the learning experience. That is, the creative imagination both depends on knowledge and experience and, at the same time, creative thinking can serve as the means by which a student's learning experience can be expanded. In this view, learning and the development of creative potential play complementary and

reciprocal roles and teaching and learning methods that emphasise creativity can also have strong beneficial effects on students' motivation, self-image, as well as their attitudes to their education (Jackson 2006; Cropley & Cropley 2007; Beghetto 2010).

It is evident in literature that many teachers lack the training and incentives needed to promote creative thinking in ways that develop their pedagogical skills in teaching for creative thinking (Beghetto 2005; Skiba, Tan, Sternberg & Grigorenko 2010). Furthermore, findings about teachers' attitudes and beliefs about creativity have suggested to some researchers that teachers, like many people, may not have a clear understanding of creativity (Plucker, Beghetto & Dow 2004). As a result, without proper training, teachers interested in enhancing creativity may feel left with only intuitive approaches that have not been empirically validated (Sternberg & Kaufman 2010). Hence, what student teachers need are guidelines on what is meant by creativity in the classroom and on what to do to foster its future development to enhance deeper learning and the ultimate creation of new knowledge.

ITE programmes at university could equip student teachers with the knowledge and skills to be able to apply creativity to their own learning in order to first enhance their own learning experiences. This might ultimately enable them to foster and develop creativity in their future classrooms. The more teachers know and understand about creativity and the factors that provoke or inhibit their own creativity, the more they would be able to overcome obstacles and recognise and pursue creative opportunities in their own lives, and the more competence they will have to recognise and foster creativity in those around them (Ward 2007). Importantly, in order for student teachers to be able to adopt genuinely creative approaches to their subject, they need to observe lecturers who employ creative pedagogies and take part in creative learning experiences (Grainger, Barnes & Scoffham 2004). Student teachers need lecturers who are fast moving and energetic, who question what they are doing and who are lifelong learners capable of meeting new demands (McWilliam 2008; Illingworth 2012).

Although scholars like McWilliam (2008) and Beghetto (2014) observe that there seems to be a growing international trend in recognising the importance of creativity and a willingness to experiment and provide opportunities for more creative teaching and learning, this must be seen against the backdrop of existing resistance towards creativity in higher education (HE) curricula and external accountability mandates and pressures experienced by lecturers (Beghetto 2013). Also, student teachers bring with them beliefs, assumptions and images which were formed over many years in the educational environments they experienced, of which problematic and potentially creativity-stifling beliefs can be difficult to alter (Runco 2004). Consequently, such beliefs can carry over into current beliefs and, in turn, influence actual classroom practices (Malmberg 2006; Beghetto 2013). Beghetto (2013) warns that it is important to understand the nature and genesis of these inherited practices since they often serve as a roadblock to teachers (and lecturers) interested in cultivating creativity in their classrooms. Jackson (2006) concludes that, if we are to make a difference to students' lives by helping them develop their creative talents as well as their intellectual abilities, then students must believe this. They have to be active partners in co-creating this new world in which creativity is more valued than at present. By paying attention to how students are experiencing classroom routines, procedures and tasks, lecturers will be in a better position to foster student learning and creativity (Beghetto 2013).

Students who are willing to take intellectual risks (e.g. sharing novel ideas and insights, raising new questions and attempting to do and try new things) have a better chance of developing their academic and creative proficiency. However, when the learning environment of the university undermines students' interest and discourages intellectual risk-taking, students are much less likely to take the risks necessary for sharing and developing their ideas because they fear making mistakes, appearing inferior, or looking less competent in comparison to their peers (Beghetto 2007a, 2007b, 2013).

Beghetto (2010) concludes that there is a need for creativity researchers to assist in the development, testing and implementation of new pedagogical models that simultaneously support the development of creative potential and academic learning.

1.2.4 The problem to be studied

As stated in the opening paragraph of this dissertation, to improve basic education in South Africa, there is a need for creative teachers who can cope with systemic and official demands while effectively mediating the curriculum to 21st Century learners.

Little is known about how the pre-service teachers of geography perceive creativity as mediator between content knowledge and pedagogical practice in the South African context. In Chapter 2, reference is made to a South African study by Golightly and Raath (2015) whereby evidence is provided that the implementation of pedagogies like problem-based learning could help foster deeper learning amongst first-year geography education students; however, the focus was on the fostering of deep learning alone, rather than on the development of creativity as mediator between content knowledge and pedagogical practice. In a study that closely focused on pedagogical content knowledge (PCK), the growing importance of technology in the 21st Century educational landscape is accentuated by the work of Koehler and Mishra (2009) as discussed in Section 2.6, where the TPACK framework for teacher knowledge is put forward as a complex interaction among three bodies of knowledge namely content, pedagogy and technology. However, no reference is made to creativity *per se*.

My (the researcher's) study therefore poses to provide some insight into how creativity in initial teacher education (ITE) is being perceived within a specific group of student teachers, as is reported on in the rest of this dissertation. In doing so, I (the researcher) acknowledge the fast-growing nature of the related fields of knowledge and only claim to provide my interpretations of the results found in this research as was the purpose of the study as explained below.

1.3 PURPOSE OF THE STUDY

The purpose of my research was to explore, analyse, interpret and describe the perceptions of a selected group of twelve Postgraduate Certificate in Education (PGCE) students at a particular university in the Western Cape Province of South Africa who took part in a purposeful developmental creativity programme and who reflected on their implementation of acquired

creative competencies during their practice teaching sessions in schools. As central part of the research process, there was a close alignment of the academic programme (geography) with practical application of creative teaching skills.

My qualitative research study reports on my (the researcher's) interpretation and understanding of the individual respondents' perceptions and perspectives about creativity as mediator between content knowledge and pedagogical practice as an attributing factor in initial teacher education (ITE). The research is delimited to this population and although the results cannot be generalised to a broader population, the knowledge generated from this inquiry may provide new insights that can inform ITE in higher education institutions in South Africa.

My research study focused on the following central research question:

How can the development of geography student teachers' use of creativity act as mediator between their acquired content knowledge and their related applied pedagogical practice?

I formulated the following sub-questions to strengthen the search for a substantiated response to the central research question and also direct the data collection process:

- What are the student teachers' perceptions of creativity at the onset of the research project?
- How do the student teachers integrate pedagogical content knowledge and creativity during their institutional practicum and in their practical teaching sessions at schools?
- What are the student teachers' perceptions of creativity at the completion of the research project?
- How can creativity be contextualized within initial teacher education to improve teaching and learning?

1.4 RESEARCH DESIGN AND OVERVIEW OF METHODOLOGY

Chapter 3 provides an in-depth report on the research process and methodology employed in this study. For the purpose of this introductory chapter, I therefore only give a short overview thereof. At the onset of the research project, written consent was obtained from the university and the individual respondents. The goal, procedures and methodology of the research were explained and strong emphasis was placed on the anonymous status of the respondents before permission was obtained, as advised by Babbie and Mouton (2001). This was done by labelling the individual respondents numerically, such as “Respondent 1” to “Respondent 12”. Prior to conducting and recording the personal interviews, I obtained approval to do so from the respondents. The consent was formalised through a written agreement between me and each respondent (Appendix 1).

This interpretive study employed a case study methodology where the perceptions of a group of student teachers formed the unit of analysis. The contexts of the respondents and the way they interpreted and made meaning of their personal experiences formed the study’s point of departure. I reported on my interpretations and understandings of the individual respondents’ perceptions of creativity as mediator between content knowledge and pedagogical practice as an attributing factor in initial teacher education. I have made use of qualitative data gathered by means of

- questionnaires (Appendix 2),
- observation, especially during the institutional and school practicums (Appendix 3), and
- individual interviews (Appendix 4).

I was able to gain a more nuanced and in-depth understanding of the respondents’ perceptions through the processes of content analysis (as learnt from O’Donoghue 2003; Henning, Van Rensburg & Smit 2004; Seale, Gobo, Gubrium & Silverman 2004; Shank 2006; Bodgan & Biklen 2007; Saldaña 2013). I agree with Merriam (2009) and Yin (2014) who explain that data collection and analysis is a coinciding activity in research that uses qualitative data. I found that

analysis began with the first observation, the first interview, the first document read. Ultimately, I constructed themes that captured some recurring patterns that cut across the data which related to the conceptual framework of the study. I could then break down, examine, compare, conceptualise and categorise the data (Strauss & Corbin 1990; Saldaña 2013). I was able to identify common themes and point out significant differences that emerged from the examination of each respondent and thereby tried to provide thick, rich descriptions of the respondents' perceptions, feelings, experiences and the meanings they have made. I was therefore able to report on what the respondents' perceptions of creativity were at the beginning and at the end of the research project. I was also able to report on the respondents' perceptions of their ability to apply creativity to their pedagogical practice during their practical teaching sessions at schools, as well as their ideas on how creativity may be contextualised within initial teacher education to improve teaching and learning.

1.5 OPERATIONAL DEFINITIONS USED IN THE STUDY

Key concepts used in this study are clustered as *creativity* and *pedagogical content knowledge* (PCK). I will now reflect on the concepts as it is discussed in literature, but also within the context of this study, which is initial teacher education.

Creativity

According to the definition by Trumble and Stevenson (2002:550), the word "create" stems from the Latin *creāre* and has something to do with producing or causing; to create something is to produce new and original things. Shi, Qu and Liu (2007:65) refer to Chinese philosophy that holds that creativity emerges from what already existed. In the English language, Chaucer used the word "create" as early as 1393 (Runco & Albert, 2010:6).

Creativity is thus not a new concept. What is relatively new is the deliberate application thereof in academic disciplines. Guilford (1950) is generally regarded by creativity researchers as the key author who brought creativity under the attention of psychologists and teachers. Tan (2007) reminds that we now know more about the nature of creativity than in 1950 and McWilliam

(2008) goes further by claiming that enough is known about observed creativity for criteria to be established to formalise regimes to assess it.

When analysing different definitions of creativity by scholars like Vygotsky (1978), Barron (1988, 1995), Csikszentmihalyi (1988, 1996a), Sternberg and Lubart (1991), Amabile (1996), Simonton (1999), Fisher and Williams (2004), Plucker *et al.* (2004), Runco (2004), Sternberg (2006), McWilliam (2008), Kaufman and Beghetto (2009) and Beghetto (2013), there are a few prevailing elements which I present in *italics*: It is said that creativity is an *observable* and *valuable* component of all social and economic enterprise through a mental and imaginative *process* of *bringing into being* something (a product, idea or behaviour) *novel or original*, and of *appropriate* personal, social and/or cultural *value as judged* by experts in the field or as interpreted by the creative individual. The Four-C Model of Creativity (Kaufman & Beghetto 2009) explains that creativity is essentially developmental in nature (see Section 2.4). The definition put forward by Plucker *et al.* (2004:90) provides a synthesis appropriate to this study of what creativity in education encompasses:

... the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context.

From the above definition, it is important to note that the highlighted elements of creativity as presented earlier, namely *novelty* (or originality) and *appropriateness* (or usefulness), have to be *valued* (or judged) as such in order to be deemed creative. In other words, an idea or product is creative with respect to the ideas or products with which it is compared within a particular sociocultural group at a given point in time. This does not only refer to eminent or extraordinary creativity (or Big-C creativity) displayed by creative geniuses like Albert Einstein, but includes every day or little-c creativity (Craft 2001b, 2002, 2003; Kaufman & Beghetto 2009; Beghetto & Kaufman 2007, 2010) as discussed in Section 2.4.

Pedagogical content knowledge (PCK)

Pedagogical content knowledge (PCK) is comprised of two interwoven concepts, namely pedagogical knowledge and content knowledge. Pedagogical knowledge refers to the knowledge of teachers and lecturers such as knowledge of how to organise a classroom and manage learners and students during instruction (Gess-Newsome & Lederman 1999:148), including knowledge of learners and students, learning, curriculum and general instructional and assessment strategies (South Africa 2011a:8). Content knowledge refers to the knowledge held by a content specialist (Gess-Newsome & Lederman 1999:148), or the study of specific specialised subject matter that is relevant to the academic disciplines underpinning teaching subjects or specialisations (South Africa 2011a:8).

Shulman (1986a, 1986b, 1987) introduced the concept pedagogical content knowledge (PCK) as the manner in which subject matter is transformed for teaching. This occurs when the teacher or lecturer interprets the subject matter, finds different ways to represent it and employs different analogies, illustrations, examples, explanations, demonstrations, and other ways of representing and formulating the subject that makes it comprehensible to learners and students. It includes knowing how to represent the concepts, methods and rules of a discipline in order to create appropriate learning opportunities for diverse learners and students, as well as how to evaluate their progress (South Africa 2011a:8). PCK also includes an understanding that specific content may be easy or difficult to different learners and students, and awareness of the conceptions and preconceptions that students and learners of different ages and backgrounds bring with them to the learning environment (Shulman 1986 in Gess-Newsome & Lederman 1999:147).

1.6 RATIONALE AND SIGNIFICANCE

This study emanated from my passion for education and accompanying interest in creativity. My position in this research study is that of an experienced teacher, school principal,

postgraduate student (De Waal 2010⁷), creativity practitioner and writer (Neethling, Rutherford, Schoeman, De Waal & Quass 2014). My fascination with the research topic is embedded in my experience (over two decades) of attending and presenting at international creativity conferences in South Africa and the USA, as well as conducting numerous in-service developmental creativity training programmes to teachers (as well as professionals from other disciplines) from different provinces in South Africa. During these sessions, many participating teachers aired the challenges and frustrations they experienced in their day-to-day implementation of the national curriculum. They mentioned that a great deal of creativity was implicitly expected of them to stay abreast with the ongoing changes in the national curriculum. They also commented that they struggled to cope because they were never formally trained with creativity in mind.

Various international scholars agree that teachers lack the training and incentives needed to promote creativity (Beghetto 2005, 2013; Skiba *et al.* 2010; Sternberg & Kaufman 2010; Robinson & Aronica 2015), while the importance of purposefully applying creativity in education is stressed by Sir Ken Robinson:

As we face a very uncertain future, the answer is not to do better what we've done before. We have to do something else. The challenge is not to fix this system but to change it; not to reform it but to transform it. The great irony in the current malaise in education is that we actually know what works. We just don't do it on a wide enough scale. We are in position as never before to use our creative and technological resources to change that. We now have limitless opportunities to engage young people's imaginations and to provide forms of teaching and learning that are highly customised to them (Robinson & Aronica 2015:xx).

The implications of my study might pose significance for theory, policy and practice, and for future research in the field of initial teacher education in South Africa.

⁷ My surname has since changed from De Waal to Traut.

1.7 ORGANIZING OF DISSERTATION

In this first chapter, I gave an introduction to and broad overview of the study. I explained the relevance of the study, provided the research purpose and scope of the research and explained the research question and sub-questions. The key concepts that will steer the argumentation in this dissertation, namely creativity and PCK, were defined. The next chapter will provide in-depth discussions thereof and will also report on the literature studied with relevance to the different aspects of the research. Chapter 3 will explain the research methodology applied in the study. Results from the research will be discussed in Chapter 4, while Chapter 5 will draw some conclusions and highlight implications for theory, policy, practice, and future research.

CHAPTER 2 – CREATIVITY AS MEDIATOR BETWEEN CONTENT KNOWLEDGE AND PEDAGOGICAL PRACTICE: A THEORETICAL PERSPECTIVE

2.1 INTRODUCTION

The previous chapter highlighted the need for improvement in basic education in South Africa and the important role that initial teacher education ultimately plays in the standard of basic education. The literature review provided in this chapter lays a theoretical foundation for this study in which the notion of creativity as mediator between student teachers' acquired content knowledge and pedagogical practice was investigated. This chapter researched theories in the fields of creativity and pedagogical content knowledge with a focus on the developmental nature of creativity and specifically in pre-service teachers, as it is argued that creative teachers may contribute to the general improvement of basic education on the one hand, and to the ultimate development of a future creative workforce on the other (Pink 2005; McWilliam 2008). Geography as a subject area provided the academic setting to this study since the respondents comprised PGCE students who chose geography as curriculum speciality. It has to be noted that the relevance of creativity in initial teacher education is not limited to the teaching of geography – creativity has relevance for all curriculum subject areas.

I embarked on a fact-finding journey that was both enlightening and frustrating. While I enjoyed reading about the history of creativity research, the daunting fact that it was impossible to “know it all” was frustrating. As my study progressed and I searched for recent and emerging theoretical points of departure, I became increasingly anxious that I would not be able to “keep up” with the momentum of the expanding knowledge available in printed media and on the Internet. As part of my quest to reach out to international experts in the field of creativity, I attended the 60th and 61st International Creativity Conference at The State University of New York at Buffalo (June 2014 & 2015). This annual conference hosted by the Creative Education

Foundation focusing on three main areas – creativity, innovation and leading change. Meeting with scholars like Ronald Beghetto (University of Connecticut), Theresa Amabile (Harvard University), Gerard Puccio, Cynthia Burnett and Susan Keller-Mathers (The State University of New York at Buffalo) was enriching, but at the same time unsatisfactory – I wanted to learn more, but had a schedule to follow and return home. I frequently fell into the trap of reading too widely and struggled to focus and narrow down the selection of literature to be used in my study. I therefore do not claim that “I know it all”, but rather that I tried to stay true to the focus of my study, which is creativity as applicable to initial teacher education and specifically its role in marrying content knowledge and pedagogical practice in geography teaching.

2.2 WHY CREATIVITY?

Since prehistoric times, human creativity continuously evolves to meet emerging and future needs. Where initial examples of human creativity revolved around solving individual problems to survive and to grow in skill and craft (Pringle 2013), contemporary human creativity seemingly engages with the complexities of creating a better future for all (DiChristina 2013; McWilliam 2015). Creativity is the wellspring of change and an essential life skill; the significance thereof in education is emphasised by the need for a new generation of creative thinkers and doers, enabled to stay ahead of the fast-moving and ever-changing technologically advanced global economies (Puccio & Keller-Mathers 2007; McWilliam 2008; Wagne 2008; Beghetto 2013; Robinson & Aronica 2015). McWilliam (2015) points to the need for ongoing creative enterprise when she predicts that, in the light of the technological revolution, the speed at which data moves is also growing exponentially and will be 10,000 times faster than today if it is to meet the needs of entrepreneurial businesses in the next decade. It is hard to envisage even one decade into the future, which opens up the debate about the effectiveness of existing pedagogies insofar as preparing young people for an unknown future. Therefore, this study highlights the need to explore creativity in initial teacher education.

Creativity in education is not a new concept, but one that has grown in importance worldwide. Imagination in human thought was recognized since the mid-1500s and in the mid-1700s, the

idea of “creativity” was separated from concepts like “genius” and “talent”. Intellectuals and artists of the Romantic Period (1700s) differentiated themselves from other people with their eccentric behaviour, resulting in the stereotyping of creative people as artistic and “different” (which in some cases is still true today). By the end of the 18th Century, it was concluded that creativity came out of “nowhere”, out of reach of education, and immune to the rules and obligations fitting mere talent. Creativity was thus regarded as something abstract (Runco & Albert 2010). In the 19th Century, Darwin’s (1859) historical work on natural selection directed human creativity towards concepts like successful adaptation through problem-solving (Gruber & Wallace 2001). Early 20th Century creativity research includes Patrick’s (1941) various investigations of artists and other creative groups and Binet’s inclusion of a task requiring ideation in his seminal work on intelligence and the intelligence quotient (IQ) (Binet & Simon 1905). Soon after World War II (1939-1945), creativity research focused on the personalities, values, talents and intelligence of exceptionally creative people, mainly excluding ordinary day-to-day creativity.

Guilford (1967) was the first to develop a taxonomy of human abilities, called the Structure of Intellect (SOI), in which creative thinking was prominently featured as a part of intellectual functioning. He also argued that intelligence was different from creativity and that a highly-intelligent person was not necessarily highly creative. The importance of creativity in human accomplishment as advocated by Guilford (1950, 1967) had become visible and real through, for instance, the “space race” between the USA and the Soviet Union, which led to the National Defence Education Act (USA) to accept creativity as important for the prosperity and survival of society (Esquivel 1995).

Recently, creativity research had gone through many stages and levels of importance. Only a decade ago, Sternberg (2006) reported that creativity was still at the margin in psychology and education. Also, Runco and Albert (2010) documented that not long ago, there were few empirical articles and scholarly books specifically on the subject of creativity, while Cropley and Cropley (2005) and Shaheen (2010) found that creativity was neglected in schools and universities worldwide. Beghetto and Kaufman (2010) even expressed their concern that

creativity had been squeezed out of many educational arenas and concerns about the demise of creativity in both teaching and learning have been widely voiced (Prentice 2000; Sedgwick 2001; Jeffrey & Woods 2003). Contrary to this, according to Simonton (2003) and Livingston (2010), creativity is seen as an international concern. Plucker and Makel (2010b) asserted that throughout the world there seems to be a focus on the research of applied creativity in educational, economic and political areas of research. Evidence from literature indicates that creativity is being integrated in curriculum frameworks internationally (Burnard 2006; Shaheen 2010; South Africa 2011). Runco and Albert (2010) claimed that creativity research “is booming” (p. 4) and even described the renewed interest in creativity as “explosive” (p. 5). According to them, current empirical research which mainly focuses on creative persons, not only mentions observed respect for the exceptional creative, but also for everyday creativity, which had not always been the case. It is thus clear to me that the question should not be “*Why* creativity?” but rather “*Why not* creativity?” The shift away from creativity being perceived as only for the exceptional, eccentric and artistic opened up the possibilities for creative thinking to be purposefully incorporated into all spheres of life, inclusive of education.

The rest of this chapter will explore the purposeful development of creativity in the context of initial teacher education focusing on the role creativity may play as mediator between content knowledge and pedagogical practice in geography teaching.

2.3 DEFINING CREATIVITY IN THE CONTEXT OF INITIAL TEACHER EDUCATION

The importance of creativity in education has been identified as a key educational goal by Guilford (1950) and Vygotsky (1978, 2004). Psychologists have confirmed that all people have the potential to be creative, that creative abilities are found in nearly everyone, and that creativity can be enhanced (Osborn 1953; Guilford 1975; Gardner 1993a, 1993b; Csikszentmihalyi 1997; Ward, Saunders & Dodds 1999; Ward 2007; Sternberg 1985, 2010). Although creativity is ubiquitous and a core human competency (Simonton 2003; Livingston 2010) and a learnable and teachable high-level skill, it is not something that is genetically programmed or that can be purchased (McWilliam 2008) – it is even beyond talent or gift and

can and has to be nurtured and developed with practice and experience within supportive pedagogical frameworks and settings by using appropriate processes in enabling learning environments (Osborn 1953; Finke, Ward & Smith 1992; Ward, Smith & Finke 1999; Amabile 2001; Craft 2001a, 2002, 2003; Sternberg 2003; Fisher & Williams 2004; Russo 2004; Hunsaker 2005; Chong 2007; Piirto 2007; Ward 2007; Weston 2007; Howell 2008; McWilliam 2008; Beghetto & Kaufman 2010; Gibson 2010; Sternberg 2010; Kokotsaki 2011; Beghetto 2013; Scoffham 2013).

For decades, authors like Rhodes (1961), Torrance (1963), Cropley (2001), Runco (2004), Boldin, Harries and Newton (2010), and Beghetto (2013, 2014) recognised the classroom as a privileged context for promoting creativity, while Niu and Sternberg (2003) and Rubenstein, McCoach and Siegle (2013) agreed that teachers needed to be creative themselves before they could teach others to be more creative. This notion relates to the emphasis that this study places on the importance of creativity in initial teacher education programmes. As argued by Livingston (2010), what universities teach and the ways they teach impact the future of education and public understanding, not only about specific knowledge and skills required for graduation, but also about the content and nature of knowledge and skills development. If universities are to prepare young people for a fast-moving future, they need to equip them with content knowledge *and* creative skills to be able to create new knowledge and solve yet unknown problems. Initial teacher education programmes at universities (in South Africa too) share the responsibility of ensuring that student teachers are taught and encouraged to be creative so that they will be able to use creativity in their future classrooms. The meaning ascribed to creativity by teachers is vital in its effective implementation, because the way creativity is taught will be highly dependent on their ability to recognise, understand and support learners' creativity (Torrance 1963; Cropley 2001; Morais & Azevedo 2011).

Recurring themes emerged when revisiting scholarly definitions of creativity to contextualise it in initial teacher education, where creativity is ultimately positioned as a human capability or skill which:

- can be developed;
- requires action;
- needs both divergent and convergent thinking and processes;
- results in novel, appropriate and useful responses or products; and
- needs to be assessed within a specific social context when appropriate observers independently agree that the outcome is creative.

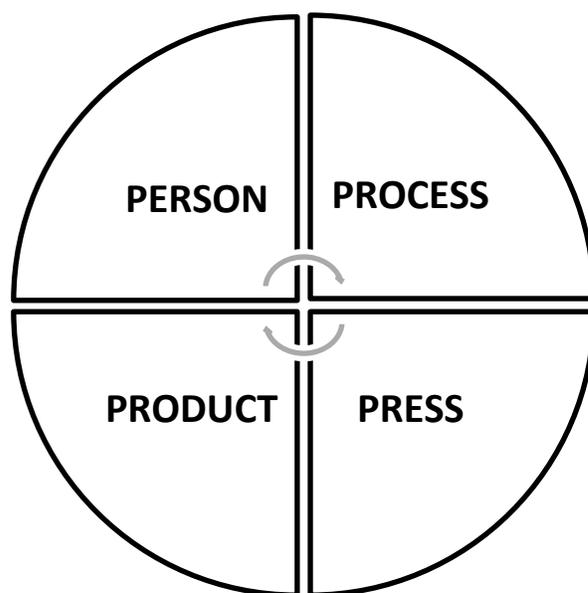
These themes have steered my study which investigated the notion of creativity in initial teacher education focused on the following research question:

How can the development of geography student teachers' use of creativity act as mediator between their acquired content knowledge and their related applied pedagogical practice?

Creativity is embedded not only in geography teaching, but in the teaching of all subjects and it enables students and learners to generate and extend ideas, suggest hypotheses, apply imagination, consider problems or opportunities from alternative viewpoints, and look for alternative outcomes. It develops through practice and involves the creative use of the techniques, skills and processes of a subject discipline along with the use of general features of creative thinking that apply across all subjects areas. To be effective, the teaching of creative thinking skills must be systematic, intentional, and accompanied by the modelling and reinforcement of the dispositions and habits of creative thinking (Torrance & Safter 1999, 2009; Fisher & Williams 2004; Fairweather & Cramond 2010).

In order to understand what student teachers might need to learn to be able to purposefully use creativity and improve their own levels thereof, literature was researched on themes like the qualities of highly creative individuals, creative learning environments, creative teaching and learning, and creative learning outcomes. These themes can be fittingly placed in Rhodes's (1961) multifaceted structural framework of creativity, consisting of the well-known Four Ps (person, process, product and press), which is still relevant in educational creativity programmes (Hunsaker 2005). This framework or construct of creativity (Figure 2.1) explains that a creative *person* needs a variety of cognitive abilities, and biological, biographical and personality traits, while the creative *process* describes the mental processes used in creating ideas, which can be summarised as divergent and convergent thinking processes. Further, creative *products* manifest in ideas expressed in the form of language or craft, and *press* (or place) refers to the relationship between a person and the environment in the context of creative endeavour. The interconnectedness of the Four Ps in this framework provides structure to developmental creativity theories and frequently forms the basis of creativity research and practice. This is also the case in my study.

Figure 2.1: Structural Framework for Creativity (Rhodes 1961)



A synthesis of theories by scholars like Amabile (1982, 1983, 1996, 2001), Csikszentmihalyi (1988), Sternberg and Lubart (1991, 1999), Sternberg (2007, 2010) and McWilliam (2008) enhance the argument for the need to include creativity in initial teacher education. Amabile (1982, 1983, 1996, 2001) devised the Componential Framework of Creativity, which identifies three major components that are necessary for creativity in any field: domain-relevant skills, creativity-related processes and intrinsic task motivation, which interact with a fourth element, the external social environment. Csikszentmihalyi's Systems Theory (1988) conceptualises creativity in the personal and socio-cultural milieu, as supported by McWilliam (2008) who concludes that what is needed for creative productivity, is both the separateness of individual talent and the togetherness of team collaboration, all working as seamlessly as possible within and across processes of production and distribution. This view puts emphasis on collaborative creativity where the creative process emerges when three components interact: the domain, or body of knowledge that exists in a particular discipline at a particular time; the individual, who acquires domain (content) knowledge and creates alternatives to the existing knowledge; and the field, comprised of other experts and members of the discipline field or society (Csikszentmihalyi 1988). Sternberg and Lubart (1991, 1999) developed the Investment Theory, which suggests that intelligence, knowledge, thinking styles, personality, motivation, and the environment are elements that are necessary for the realisation of human creativity. Sternberg (2007, 2010) suggests that creativity has to be developed and supported in such a way that it ultimately becomes part of a person's way of life. He believes that creativity is a habit that is cultivated through an attitude towards life that enables creative people to respond to problems in fresh and novel ways. Further, this habit can be encouraged or discouraged and is promoted by opportunities to engage in it, by encouragement when people avail themselves of these opportunities, and by rewards when people respond to such encouragement and think and behave creatively. Amabile (1990) provides similar structure to what is needed in a creative learning environment: to provide models, both immediate and remote, of creative behaviour; to provide regular opportunities for students (teachers) to practice creative thinking; and to appropriately reinforce creative thinking and behaviour.

The synergy of these theories sits well with the line of reasoning of this study, namely the relevance of the development of intrinsically motivated student teachers with creativity-related skills to master pedagogical processes in order to acquire deep understanding of domain-related content knowledge within a supportive social environment, while the ultimate purpose for them is to be able to create alternatives to existing knowledge and practice within their fields of subject expertise and the teaching thereof. From these theories, it seems possible that student teachers (and other people) can become skilled in creativity in such a way that it becomes a natural, habitual and purposeful way of thinking and doing on a day-to-day basis.

2.4 THE DEVELOPMENTAL NATURE OF CREATIVITY

The developmental nature of creativity is a cornerstone of this study. Feldman (1999:170) describes the developmental nature of creativity as follows:

Creative accomplishment, after all, is nothing if not a developmental shift, a significant reorganisation of knowledge and understanding, which can lead to changes in products, ideas, beliefs, and technologies. Creativity is quintessentially a developmental matter.

Steve Jobs (in Wolf 1996) put the development of individual creativity into perspective as something that does not happen overnight, but that comes with experience and insight and eventually becomes a habit of doing (Sternberg, 2007, 2010), although at different levels of competence (Kaufman & Beghetto 2009).

Creativity is just connecting things. When you ask creative people how they did something, they feel a little guilty because they didn't really do it, they just saw something. It seemed obvious to them after a while. That's because they were able to connect experiences they've had and synthesise new things. And the reason they were able to do that was that they've had more experiences or they have thought more about their experiences than other people (Jobs in Wolf 1996).

On the one hand, creativity can change and develop the world we live in, while on the other hand, creative capacity can develop and grow in individuals.

Creativity is a normal and day-to-day phenomenon experienced or observed by everybody, inclusive of students who enter lecture halls, bringing with them a life history of creativity. The challenge is to explore the means by which this existing creativity can be anchored and developed in educational institutions (Livingston 2010) and, in the context of this study, within initial teacher education. As inherently creative human beings, we confront and deal with issues large and small through our capacity to invent and produce solutions as a means of negotiating life on a day-to-day basis. Craft (2001b, 2002, 2003) emphasises that creative endeavour is not limited to only exceptional or Big-C creativity, but includes little-c or every day, life wide creativity. Kaufman and Beghetto (2009) expanded on Craft's notion of Big-C versus little-c creativity and proposed the Four-C Model of Creativity (Figure 2.2) to illustrate how determinations of creativity can range from the immediate inner eye of the creator to the future eyes of critics and connoisseurs who stand in judgment of creative contributions that span beyond spatial and temporal boundaries (Beghetto 2013).



Figure 2.2: The Four-C Model of Creativity (Kaufman & Beghetto 2009)

The Four-C Model of Creativity (Kaufman & Beghetto 2009; Beghetto & Kaufman 2010) provides “building blocks” from elementary to legendary creativity and is summarised as follows:

- mini-c or interpretive creativity focuses on the novel and personally meaningful interpretation of experiences, actions, and events that often occur during the process of learning and it can, under the right conditions, lead to larger-c contributions;
- little-c or every day creativity is a reminder that creative expression is possible for any student, in any curricular subject area, on almost any given day;

- Pro-C or non-eminent, professional creativity, makes room for professional-level creators who have not yet attained (or may never attain) eminent status, but who are well beyond little-c creators; and
- Big-C or legendary creativity typically emerges through the application of a domain-specific, expert knowledge base acquired over a decade or more of intensive study, like observed in great creators like Einstein, Da Vinci, etc.

The Four-C Model of Creativity can help clarify the categories of creativity that occur in everyday teaching and learning. This distinction is helpful as it allows lecturers and teachers to recognise that the creative expressions of their students and learners (or themselves) do not have to be on the same scale of legendary creators (Big-C) to still be deemed creative (Beghetto 2013). In addition, lecturers who understand different levels of creative impact can draw on that understanding to determine what level of creativity might best be suited for their own classrooms to ultimately develop the next generation of creative teachers. The mini-c category makes room for the more personal or subjective forms of creativity and represents the creative insights, ideas and interpretations that occur any time we learn something new and meaningful. Little-c or every day creativity plays an essential role because learning and adaptation depend on discovery and new construction. It is thus within the levels of mini-c and little-c creativity that the purposeful development of creativity in students of all ages practically resonates, with the possible attainment of Pro-C creativity as goal, while Big-C achievement is reserved for those who persevere beyond the norm (Stein 1953; Vygotsky 1978, 2004; Runco 1996; Bateson 1999; Craft 2001b, 2002, 2003; Kaufman & Beghetto 2009; Beghetto 2013).

In order to purposefully develop individual creativity, a number of factors need to be considered. For the purpose of this study, the following will be unpacked in the context of initial teacher education (see Figure 2.3): (1) the importance of a creative learning environment; (2) stimulating the qualities of highly creative individuals in student teachers; (3) creative teaching and learning; and (4) creative learning outcomes. These four factors relate to the Four Ps of Rhodes (1961) namely place or press, person, process, and product (see Figure 2.1) and are

interrelated and dependent on one another in the development of student teachers' use of creativity (Figure 2.3).

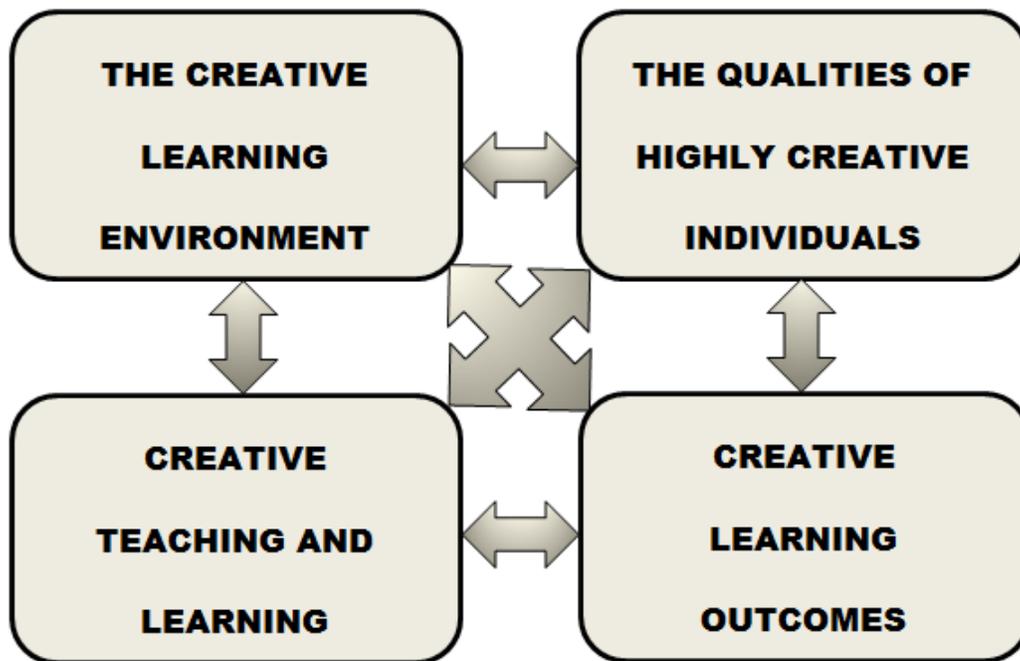


Figure 2.3: The development of student teachers' use of creativity

2.4.1 The creative learning environment

If initial teacher education programmes would pursue the development of creative teachers, it should pay attention to providing creative learning environments. Creative development depends on having a fertile ground where new ideas and activities can take root, an environment in which ideas can be generated, considered, shared and tried out in order for new knowledge and practice to emerge. The development of creative potential starts with individuals having the confidence and willingness to share their ideas – without this self-belief and willingness to take risks they will most likely only reproduce what has already been done. Creativity does not thrive on anxiety, fear of failure, negativism, apathy, prejudices, complacency or pressure. Rather, lecturers are expected to be open in accepting diversity and

uniqueness of multilingual and multicultural students of all backgrounds with diverse learning needs and socioeconomic histories; to develop their talents and explore their potential competencies in a socio-culturally enriched environment; and let students feel safe from ridicule by others, accepted for who they are, willing to take risks, and free from excessive pressure. Students need positive people around them who fully accept and warmly support them. They need positive experiences of social interaction, the encouragement and support of others in the classroom and at home, as well as positive feedback on efforts made and goals achieved (Amabile 1989, 2001; Fisher & Williams 2004; Tan 2007; Tan & Wong 2007; McWilliam 2008; Beghetto 2013; Newton 2013).

Although lecturers cannot change the heredity of their students and although there is little they can do about the social circumstances into which they were born, there is much they can do to contribute to the students' disposition to learn. It has to be kept in mind that student teachers, like their university lecturers, have personal theories through which they perceive the art of teaching. This theory is a systematic set of beliefs based on family background, past experiences, values and understanding, and works as a lens through which they interpret situations in the classroom. If lecturers are hesitant in the face of change or if they seem paralysed by what they do not control or cannot do, then they are teaching lessons that are unhelpful when it comes to creative futures, as lecturers embody for their students what a lifelong learner looks like. It is therefore vital that lecturers of student teachers model the qualities that will promote positive attitudes towards creative pedagogical approaches (Levin & He 2008; McWilliam 2008; Fairbanks, Duggy, Faircloth, Levin, Rohr & Stein 2010; Sternberg 2010).

The role of the lecturer in students' motivational orientation cannot be underestimated. Amabile (1990, 1996), Ward (2007), Fairweather and Cramond (2010), Runco (2010b) and Sternberg (2010) agree that the most powerful way for lecturers to develop creativity in students is to role model creativity. Students will often internalise the values demonstrated by people they respect – they develop creativity not when they are told to, but when they are shown how or by closely observing creativity in action. The importance of lecturers' expression of their own creative

qualities as well as their open valuing of creativity as a means of influencing students' creativity, are stressed by Torrance (1965, 1987). When lecturers exhibit passion and a productive personal power that translates into active engagement, risk-taking and experimentation, while allowing students to witness the disappointment and confusion experienced when experiments or research tasks fail, they provide an environment in which students have a much greater chance to develop creatively (McWilliam 2008). Physically (or virtually), the ideal environment for creative teaching and learning would be one rich in a variety of resources, with room for movement and varying workspaces, and places for active, interactive as well as quiet and personal learning (Fairweather & Cramond 2010). When students are forced into stagnant learning environments, they usually resent the constraining structure of the classroom, the excessive rules and the pressure to conform, and ultimately become despondent (Davis & Rimm 1994; Scott 1999; Rudowicz & Yue 2000; Rudowicz 2003). Nowadays, technological and digital advancements in online education and resources allow for limitless possibilities to enhance the creative learning environment. Classroom (or virtual learning) environments should be attractively decorated, cleverly designed, comfortable, safe and welcoming. Within such classrooms, students are often cooperative, friendly, excited, motivated and interested (Lilly & Bramwell-Rejskind 2004).

Lecturers who enhance student creativity by purposefully encouraging, nurturing and inspiring students to be willing to take sensible risks are optimistic, open-minded, flexible and have a sense of humour. They value interpersonal relationships, want to understand individual students and therefore interact with their students. They express enthusiasm for teaching, generally conduct classes in an informal manner and have the confidence to be spontaneous in the classroom. They provide academic structure while allowing students freedom of thought and action as well as greater choice in the selection of topics and projects within the curricular framework. They also provide opportunities for discovery as well as imagination and fantasy, welcome unorthodox views, and appreciate and acknowledge creative thinking (Esquivel 1995; Fryer 1996; Claxton 1999; Prentice 2000; Fisher & Williams 2004; Schacter, Thum & Zifkin 2006; Runco 2010a; Kim, Cramond & Van Tassel-Baska 2010). Unfortunately, these lecturers are confronted with the tension that persists between traditional educational goals (such as the

possession of large numbers of facts, accurate recall of memorised material and correct application of standard techniques) and creativity-orientated goals (such as discovering problems, producing original answers and linking traditionally separate areas) (Cropley & Cropley 2007).

Although it is possible to design learning environments and activities specifically aimed at fostering and strengthening those attitudes and skills which are believed to be at the heart of creative expression, it may require a change in institutional educational settings and practices to be able to do so (Ott & Pozzi 2010; Beghetto 2013). Fisher and Williams (2004) explain that creative students need creative lecturers, creative lecturers need professional learning conversations with colleagues, and universities need to maximise creative partnerships in the community. Also, creative lecturers flourish in environments where education management allows them the freedom, permission and time to express their individual and collaborative creativity and where they can provide creative inspiration for their students. Adding to this, being able to teach creatively and develop student creativity could be motivating factors for some lecturers, and their occupation could then provide them their creative outlet (Csikszentmihalyi 1991; Freund & Holling 2008; Rubenstein *et al.* 2013). There may thus be a need for a departmental or institutional change in mind-set that facilitates collaboration within academic and research communities and that increases administrative flexibility to accommodate creative strategies to inspire and challenge students to think in new ways, to apply their expertise to explore and solve problems, and to share creative thinking and new knowledge (Hill, Kneale, Nicholson, Waddington & Waverly 2011; Beghetto 2013).

Finally, lecturers of student teachers need to have the courage to purposefully create a climate that acknowledges the changing nature of knowledge and that supports creativity (Gibson 2010). Within such an environment, lecturers need to identify the knowledge and creative skills student teachers need to acquire, and ultimately create opportunities in the curriculum to facilitate the development of the desired attitudes, knowledge and skills of their students to become creative teachers (Alughaiman & Mowrer-Reynolds 2005). In this regard, the *Revised*

Policy on the Minimum Requirements for Teacher Education Qualifications “allows for institutional flexibility and discretion in the allocation of credits within learning programmes, and encourages teacher educators to become engaged in curriculum design, policy implementation and research” (South Africa 2015:8). Adding to this, the *Faculty of Education Calendar 2012 Part 6* of Stellenbosch University, where this study was conducted, provides for flexibility within the PGCE curriculum.

2.4.2 The qualities of highly creative individuals

In my search to identify relevant creative skills which could possibly be included in initial teacher education programmes, I visited literature on eminent creative individuals. The qualities of highly-creative individuals may therefore serve as a guideline to which skills and attitudes need to be stimulated and developed in the context of initial teacher education curricula⁸. The attributes of creative people in general and specifically of creative teachers, have been researched and proposed as attitudes and skills to be promoted in student teachers. If this could be achieved, student teachers’ use of creativity as mediator between their acquired content knowledge and their related applied pedagogical practice may develop and be reinforced simultaneously. Thus, when these students enter the education profession, they may be better equipped to face the challenges that await them, and they may also find more personal fulfilment and job satisfaction.

A summary (although not claimed to be all-inclusive) of the personality traits, mental skills, and intellectual abilities of historic distinguished creative persons that is well-presented in literature, serves as guidance insofar as teaching student teachers to become creative individuals is concerned (Guilford 1956; Taylor 1975; Sternberg & Lubart 1991; Simonton 2000; Amabile 1982, 1983, 1996, 2001; Fisher & Williams 2004; Sternberg 2007, 2010; Tan 2007; Tan & Wong 2007; McWilliam 2008). Creative people:

⁸ To be supportive of the ‘Basic Competencies of a Beginner Teacher’, as put forward in the *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015:8).

- are intrinsically motivated and able to motivate others;
- are curious with wide interests and passion for knowledge and learning;
- have an attitude that embraces chance and opportunity and tolerates ambiguity;
- are willing to overcome obstacles and to take sensible risks with vision and hope;
- have a high energy level and enthusiasm for living along with playfulness, optimism and positive emotions;
- are fair-minded and intuitive towards other people while respecting their opinions;
- are flexible and open to experience, possibilities and perspectives, while fluently generating new and original ideas;
- are committed to excellence with the moral courage to defy the crowd and to habitually approach problems in novel ways with a positive attitude towards presenting ideas and products in a variety of ways;
- are willing to be unorthodox, question, challenge, make connections and see relationships to create meaning while making mistakes, along with perseverance to work on a project or task for a long time without immediate or interim rewards;
- are willing to be critical towards their own creative work and to reflect and learn from errors; and
- are capable of evaluating different scenarios with the insight that there are times to question and try to reshape the environment or to rather adapt to it.

The observation of school-based teachers in creative action provides evidence of personality characteristics similar to those of creative achievers in other fields. Guilford (1956, 1959), Woods (1995), Fryer (1996), Banner, Cannon and Cannon (1997), Diakidoy and Kanari (1999), Hickey (1999), Grainger *et al.* (2004), Lilly and Bramwell-Rejskind (2004), Jeffrey and Craft (2006), Cheng (2011), Morais and Azevedo (2011), and Reilly, Lilly, Bramwell and Kronish (2011), put forward that creative teachers and lecturers:

- are intrinsically motivated by a value-based orientation;

- view fostering their own creativity as a precursor to fostering the creativity in learners and students;
- are curious, energetic, original, independent, humoristic, complexity seeking, open-minded, intuitive and passionate;
- have well-developed intra- and interpersonal awareness and skills;
- are supportive of learner and student interests;
- accept diversity and promote learner and student inclusivity;
- encourage learners' and students' self-confidence and self-regulation, individuality and independence;
- encourage a safe environment for curiosity and possibility thinking, while balancing risk with secure structures;
- have grounded subject knowledge across disciplines;
- have the ability to tolerate ambiguity of factual knowledge and leave space for uncertainty and the unknown;
- exercise control over the teaching processes involved while presenting existing knowledge in fresh, spontaneous, improvised effort of mind and spirit;
- improvise when learners and students ask unexpected questions, or fail to understand the scripted lesson;
- consistently reflect, revise and update their materials and teaching methods;
- provide regular feedback; and
- model flexibility and self-confidence.

Generally, these personality characteristics, values and instructional positions are synthesised into creative teaching which includes curriculum preparation, teaching methods, connection with learners and students, shaping of the environment, and reflection on practice (Woods 1995; Jeffrey & Craft 2006). In my opinion, the qualities of creative *people* and creative *teachers/lecturers* are similar, while the above-mentioned qualities of creative teachers/lecturers are merely placed in the context of applied creativity in education.

In academic as well as popular literature and webpages on the Internet, a multitude of creative thinking techniques and developmental programmes can easily be sourced. It is not the purpose of this study to select, list or describe such programmes. It is appropriate, however, to refer to authentic scholars from whose original work many programmes of developing creativity have grown. It is also evident how relevant these authentic skills seem to be in current literature on learning theories like constructivism, active learning, collaborative and cooperative learning, problem-based learning, and project-based learning. These will be elaborated on in the sections to follow.

2.4.3 Creative teaching and learning

The positive effect of creative teaching and learning on learners and students' personal development has been well documented. Craft, Cremin, Burnard and Chappell (2007) explain that creative learning develops students' capacity for imaginative activity, leading to outcomes which are judged by appropriate observers to be original and of value. Baeten, Kyndt, Struyven and Dochy (2010) explain that creative teaching and learning encourages students' creative abilities, individuality and independence, and provides a safe climate where deep learning can occur and where students can risk and explore new frontiers. It also has an impact on self-esteem, social skills and strategies that are valuable for life-long learning (Craft 2002; Sternberg 2003). Cheng (2011) reports on a study in which a set of methods for infusing creative learning elements were used in regular classrooms. The results showed that students perceived improvement in their attitudes, conceptions, abilities and behaviours towards the subject being taught. Students reported that the active and playful nature of the learning activities encouraged them to think broader and wider, to appreciate creative ideas, and to develop their curiosity, confidence and initiation in learning. They also considered better understanding of subject knowledge and positive attitudes towards learning as their major gains, while they became more self-initiated and self-confident in learning.

From my own experience as a student and teacher it is easy to remember incidents of creative learning and teaching. I vividly recall a poetry lesson in which we had to compose haikus while

watching a motion picture with beautiful scenes of autumn leaves drifting in a clear stream, accompanied by serene classical music. On the other hand, I also remember why I learned to resent maths when my teacher made fun of the learners who had struggled. One of the most creative classes I have presented as a teacher was when I ventured outside the constraints of the system. According to the school's policy at the time, it was expected of the Sotho-speaking learners to only converse in English (their second language) inside the classrooms. As part of my post-graduate studies at the time, I learned about the importance of mother-tongue education and I decided to conduct an experiment. I therefore allowed the Sotho-speaking learners to discuss a science problem in small groups in their mother-tongue and then expected them to give feedback in English (which the rest of the class and I could understand). The excitement under the Sotho-speaking learners was exhilarating. And the results even more so – the standard of their thinking rose dramatically and they were able to exhibit enhanced insight into the problem discussed. The benefits were twofold: I, the teacher, enjoyed the lesson and the outcome thereof, while the learners enjoyed the learning activity and proved that they had learned deeper than before.

Neuroscience advocates an urgent need to eschew explanation through instruction and replace it with a more experimental and error-welcoming mode of pedagogical engagement with an interplay of learning and de-learning (Bauman 2004; Zull 2004; McWilliam 2008). Learning from scholars like Mayer (1989) and Reilly *et al.* (2011), creative teaching and learning occurs when original and appropriate ways are used to combine existing knowledge and convey it to students by means of constructive, active, student-centred, collaborative and reflective pedagogies, while new learning processes and instructional techniques are introduced to cultivate both cognition and metacognition (see Section 2.4.3.2). Cognitive abilities constitute the development of intellectual abilities and cognitive skills (Bloom, Englehart, Furst, Hill & Krathwohl 1956; Tan & Wong 2007), while metacognition is the awareness and understanding one has about one's own cognitive processes and how one can control them (Flavell 1976; Aydin 2011). Adding to this, creative teaching and learning considers the development of individual creativity as a precursor to enhanced student achievement (see Section 2.4.3.1). It

furthermore encourages an environment of curiosity, models flexibility, and is characterised by reflection, regular feedback and dialogue.

Importantly, lecturers need to allow mistakes within the confines of the construct and have tolerance for imaginative and even wild ideas. Great thinkers made creative contributions because they allowed themselves and their collaborators to take risks, make mistakes and learn from their mistakes. Contrary to this, in hundreds of ways and in thousands of instances over the course of a school and university career, students learn that it is not acceptable to make mistakes (Robinson & Aronica 2015). The result is that they become afraid to risk the independent and the sometimes flawed thinking that leads to creativity. Sternberg and Kaufman (2010) add that there are always constraints on creativity in the real world. They even warn that there are times when the risk-reward ratio of a creative idea is simply too great and it is therefore unwise to pursue such an idea. In any field, including initial teacher education and geography which is the focus of this study, it is important to balance the risks that creative endeavour might bring. Therefore, when students make mistakes, lecturers should guide them to analyse and discuss these mistakes and teach them to take responsibility for both successes and failures and to learn from that. For instance, creativity and risk-taking needs very strong class management skills by teachers and lecturers. Sternberg and Kaufman (2010) conclude that the most creative people are those who can be original and yet work within the constraints of the construct.

Creative learning activities should be playful and enjoyable, leading to students' intrinsic fulfilment and self-actualisation through self-expression, problem solving and reflection. Student-centred teaching methods encourage students' independence and active, collaborative involvement. Also, in creative learning environments, models of creativity are shared and celebrated, lecturers and students ask unusual and challenging questions, there are fresh approaches to problems, new connections are made, ideas are represented in different ways – visually, digitally, physically and verbally – and the effects of ideas, actions and solutions to problems are critically evaluated and even rewarded. Ultimately, students learn that gathering and mastering large volumes of knowledge is not regarded an absolute aim, but

instead a tool to be used to create new knowledge with the specific purpose of utility (Amabile 1989; Hickey 1999; Fisher & Williams 2004; Chong 2007; Runco 2010a; Cheng 2011).

2.4.3.1 The development of individual creativity

As my study is based on the principle that student teachers' levels of creativity can and should be purposefully developed, some structure is needed. In Section 2.4.2, the qualities of highly-creative people have been highlighted. We all have those inborn qualities to different degrees – the challenge put forward in this section is to link these qualities with tangible skills that can be taught and mastered. In my literature research, I found common building blocks that set up individual creative ability and clustered it into three groups (Figure 2.4): cognitive abilities (Section 2.4.3.1), metacognitive abilities (Section 2.4.3.2) and emotional and affective elements (Section 2.4.3.3).

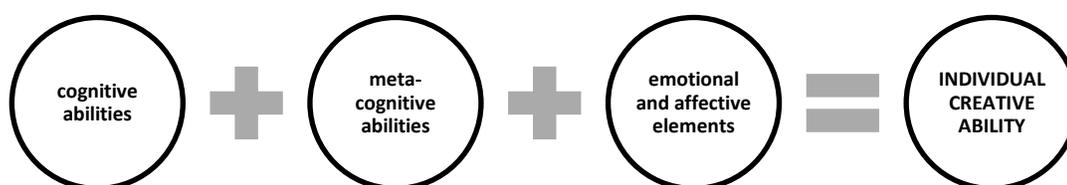


Figure 2.4: Individual creative ability

Cognitive abilities constitute the development of intellectual abilities and cognitive skills (Bloom *et al.* 1956; Tan & Wong 2007) which may lead to what Bloom's revised taxonomy calls the ultimate educational objective, namely the ability to create (Anderson & Krathwohl 2001). Importantly, the ability to create is not limited to people who have been blessed with high intelligence. Sternberg and Lubart (1991) found that although some IQ is needed for creative thinking, a high IQ (e.g. above 120) is not all that necessary. However, creative accomplishment becomes more difficult at low levels of IQ, because creativity is not only about coming up with

original ideas, but also about analytically evaluating whether the ideas are good and appropriate (Sternberg & Kaufman 2010).

The cognitive skills used in creative endeavour can be summarised as divergent and convergent thinking skills, while creative achievement requires a complex combination of both divergent and convergent thinking (Guilford 1959, 1967; Rhodes 1961; Torrance 1963, 1965, 1972, 1995; Cropley 2001; Runco 2010a). According to Craft (2005), the blending of divergent and convergent thinking results in occupying both sides of the brain, as accumulated experimental evidence has proven that the left hemisphere of the brain is responsible for convergent thinking processes and the right hemisphere for divergent thinking processes⁹. Divergent thinking happens when thoughts are defocused, intuitive, and receptive to a broad range of associations to a given stimulus, and as a result new and original ideas may be found. Furthermore, divergent thinking means looking at the known from different perspectives, to find new relationships between ideas unrelated before, to be open to one's environment and to find in the given frame, new alternatives (Landau 2007). On the other hand, convergent thinking is the capacity to analyse, focus, synthesise and evaluate. Convergent thinking occurs when cognition is used to identify correct or conventional answers, or to ultimately judge the value of ideas and outputs (Guilford 1959; Fisher & Williams 2004; DeHaan 2011). Although creative ideas often result from divergent thinking, too much divergence may lead to irrelevant ideas that are not creative in the sense of being regarded both original and appropriate. Also, while convergent thinking is important, it should not occur too early in the creative process as it can

⁹ It is not within the scope of this study to dwell on neuroscience, but nevertheless important to refer to neuropsychologist and neurobiologist Roger Sperry who cast some light on the specialised nature of the left and right sides of the brain. He, together with David Hunter Hubel and Torsten Nils Wiesel, received the 1981 Nobel Prize in Physiology or Medicine. They operated on patients with epilepsy during the 1960s. In layman's terms, it means that they split the two hemispheres of the human brain to put an end to the patient's severe and disabling convulsions. Amongst other facts, they found that the left side of the brain examines details and processes them logically and analytically, but lacks a sense of overriding, abstract connections. The right side of the brain is more imaginative and intuitive and tends to work holistically, integrating pieces of an informational puzzle into a whole. Ned Herrmann's (1981, 1996) research about the brain and its link to creativity and learning was inspired by these findings of Sperry *et al.* Herrmann eventually developed the Whole Brain Model and Whole Brain Teaching and Learning process, which has been in operation since 1979 (Herrmann 1996).

stifle originality. Ultimately, creative people have the ability and skills to switch back and forth between divergent and convergent thinking at different points in the creative process (Runco 1996; Cropley 2001; Beghetto & Kaufman 2010).

According to Guilford (1950, 1967) and Torrance (1963, 1965, 1972, 1995), thinking skills that can be purposefully taught and practiced to improve divergent thinking, include fluency or the ability to generate many ideas; flexibility or the ability to generate many different types of ideas, or ideas from many different perspectives; novelty or the ability to generate unusual and original ideas; elaboration or the ability to add details to improve ideas; openness or the ability to consider other people's opinions and ideas without premature conclusions; sensitivity or the ability to be observant, intuitive, quick and capable in discovering changes, differences and problems; and imagination or the ability to think metaphorically and to visualise the future, the impossible and the unknown. Thinking skills that can be purposefully taught and practiced to improve convergent thinking, include analysis or problem-finding; logical and evaluative thinking or the ability to make independent and accurate judgments or decisions on the quality of ideas generated; and synthesis or the ability to integrate divergent and convergent thinking with basic knowledge and project management skills to produce new and useful products or knowledge. Beghetto (2013) argues further that these skills can be developed in day-to-day learning activities within the curriculum and have to be planned for accordingly. Lecturers of student teachers therefore need to provide instruction and explanation of content, form and technique if they want the students to use these creative thinking skills to understand the creative process and to think or act creatively. When these creative thinking skills are purposefully incorporated into the day-to-day learning activities within the initial teacher education curriculum, students will be enabled to experience heightened immersion in the subject content, problem or task at hand; to experiment with alternative options; to suspend judgment in order to generate creative ideas or solutions by linking existing elements and making hypotheses, thus constructing new meanings to accomplish the task at hand; and to ultimately create a knowledge product that is new and appropriate (Gardner 1993a; Starko 1995, 2010; Sternberg & Lubart 1999; Craft 2002; Sternberg 2010).

While the above creative thinking skills are being mastered, it is important that students learn to reflect on their learning to make sense of it. In other words, they have to learn to think about their thinking (also called metacognition). This is also a learning process which should be purposefully managed in the initial teacher education programme.

Flavell (1976) and Aydin (2011) explain that **metacognition** is the awareness and understanding one has about one's own cognitive processes and how one can control these processes. Metacognition strategies are the sequential processes a person uses to learn how to control him- or herself in order to reach a goal (Aydin 2011). In other words, metacognitive abilities refer to the skill demonstrated by the student to take the overall learning process under control, either during or at the end of the learning activity.

Skills that can be purposefully taught and practised to improve metacognitive abilities in student teachers include awareness of the learning process, planning and selecting strategies, controlling the strategies used, monitoring the learning process, and correcting errors. According to Murphy (2008), the student's metacognitive abilities can be observed according to three main indicators. Firstly, it involves the student's capabilities of monitoring the enacted learning process, which implies the attitude and the ability of recalling and evaluating one's own thinking. Secondly, it relates to regulating one's own behaviour on the basis of the perception or understanding of previously performed action, and thirdly, it is shown by reflectively evaluating one's own activities and performance from the viewpoint of the final outcome. In short, it means to reflect and think about one's thinking and to respond in an appropriate manner to improve the learning outcome.

Without honouring and accommodating vital **emotional and affective elements**, the above-mentioned cognitive and metacognitive objectives of creative teaching and learning may not be accessible.

Risking creative exploration calls for more than cognitive and metacognitive abilities. In his popular book *Emotional Intelligence: Why it Can Matter More Than IQ*, Daniel Goleman (2006), explains the importance of personal and social competence, where personal competence refers to self-awareness (knowing one's internal states, preferences, resources and intuitions) and self-regulation (to manage one's internal states, impulses and resources), while social competence refers to social awareness (awareness of others' feelings, needs and concerns) and social skills (adeptness at inducing desirable responses in others). These emotional and social skills can and should be developed because without it, it will be hard to persevere in resolving the difficulties that may be presented on the road towards creative development.

It is well documented in literature that people in general have always resisted creative activity or creativity displayed by others. Sternberg and Kaufman (2010) explain that the more creative a contribution is, the more likely it is to engender resentment and opposition. Creative contributions are even sometimes actively discouraged, as it challenges or defies the crowd or general population (Sternberg & Lubart 1991, 1999). Amongst other reasons for this phenomenon are general misconceptions about what creativity is or what challenges will be encountered when one moves out of one's comfort zone to be(come) creative. Fisher and Williams (2004) remind that it may involve physical movement out of familiar locations as well as a capacity to work within diverse cultural contexts. And this, in turn, draws on the capacity to leave the familiar behind and embrace the unfamiliar which is not always easy (McWilliam 2008). Thus, for student teachers to willingly risk to be(come) more creative, they need to be emotionally strong enough to know and manage themselves with confidence, while exhibiting the skills to positively influence and persuade other people of their creative contributions or to collaborate with and support others in the creative process.

Gardner's multiple intelligences theory furthermore points to students' unique multiple learning preferences and strengths (Gardner 1993a). Higher-level cognitive, affective and interpersonal engagement is unlikely to be successful unless students have a personal interest in the topic or task at hand, which they regard as relevant and aligned with their academic and career interests (Heron, Le Baker & McEwen 2006; Hill *et al.* 2011). Instruction that is designed to help

students develop their strengths can also trigger their confidence to develop areas in which they are not as strong, which motivates students to enthused engagement in the learning process. Motivational orientation marks the dividing line between what a creative individual is capable of doing and what he or she actually will do in a given situation (Goleman 2006; Hennessey 2010). Intrinsic and extrinsic motivation co-exists within the environment in which we find ourselves, where intrinsic motivation is conducive to creativity while extrinsic motivation might be detrimental to creativity (Amabile 1983, 1996; Amabile, Hennessey & Grossman 1986; Hennessey 2010). Intrinsic motivation is the motivation to engage in an activity for its own sake, for the sheer pleasure and enjoyment of the task, while extrinsic motivation is seen as motivation to do something for some external goal, a goal outside the task itself (Amabile 1996; Baeten *et al.* 2010; Hennessey 2003, 2010). Creative achievement is not likely without motivation and students with intrinsic motivational orientation are self-efficient, confident and independent, free of external control because they are doing what they love to do (Amabile 1983, 1996; Amabile *et al.* 1986; Sternberg & Lubart 1991; Hennessey & Amabile 1998; Hennessey 2000; Hennessey 2003). On the other hand, students who are dependent on extrinsic motivation will fear failure and they will resort to rote memorisation and exhibit a narrow-syllabus-bound attitude (Baeten *et al.* 2010). Yet, there is space for both extrinsic and intrinsic motivation in the creative learning process (Hennessey 2010). Extrinsic motivation may improve core knowledge and skills if space and time is allowed for intrinsic motivation and creativity. As Deci, Koestner and Ryan (2001) explain, any extrinsic factors that support a sense of competence without undermining self-determination, should positively contribute to intrinsic motivation. Also, competitive environments are not necessarily detrimental to the creative expression of all students and can have a positive effect for some individuals and work teams (Amabile 1996; Beghetto 2007a). Amabile (2001) reiterates the importance of intrinsic motivation and argues that, without personal involvement, interest, enjoyment and passion, creativity is not likely to flourish in any person. Taken together, intrinsic and extrinsic motivational orientations have been shown to play a major role in determining whether a creative product will be produced or a creative solution to a problem will be found (Beghetto & Kaufman 2010). Because motivation is largely determined by the social environment in which we find ourselves, it is the responsibility of higher education institutions to provide a supportive learning environment in which student teachers may experience support and freedom to be

powered by their intrinsic motivation, while extrinsic motivation is provided in carefully considered and appropriate moderation.

When people feel good, their thinking becomes more creative, flexible, integrative and open to information (Isen, Daubman & Nowicki 1987; Tan 2007). Hence, the role of the lecturer is to motivate, challenge, entice, engage and stimulate positive emotions and creative responses (Howell 2008; Newton 2013). The lecturer's level of commitment, energy, and motivation is essential in cultivating students' feel-good emotions, curiosity and imagination, their choice of complexity and challenges, and their willingness to take sensible risks. Also, affective objectives of creative teaching include students' interest in and opinions about the subject matter or content. If students are interested in and value the content or subject matter and are actively engaged in the learning activity, the resultant positive emotions can broaden their thinking and prepare students for generating creative ideas (Bloom *et al.* 1956; Rovai, Wighting, Baker & Grooms 2009). Affective elements of creative teaching and learning also refer to students' motivation for, confidence in and appreciation of creative thinking, and deals with the attitudes and emotions that students show while accomplishing the learning task (Krathwohl, Bloom & Masia 1964; Kearny 1994; Anderson & Krathwohl 2001). Learnable attitudes and values like fair-mindedness, openness to evidence, a desire for clarity, and respect for others and their opinions play a critical role in creative teaching (Grainger *et al.* 2004). Lecturers of student teachers therefore need to purposefully engage students in more than cognitive and even metacognitive ways – they need to also provide the metaphoric spark that ignites the flame of passion towards the subject matter and learning tasks in their students by provoking positive emotions.

It is thus necessary to look at pedagogies with fresh eyes to explore ways in which to deliberately cultivate student teachers' creativity while teaching content, which is the focus of the next section.

2.4.4. Creative pedagogies

In South Africa, initial teacher education is primarily a function of universities (South Africa 2015). The importance of content knowledge (the prospective teachers' knowledge about the subject matter to be learned and taught) cannot be overemphasised. Qualified teachers need to be content specialists in the specific subject matter that is relevant to the academic disciplines they teach (Gess-Newsome & Lederman 1999; South Africa 2015). In the context of this study, it is fair to assume that student teachers enrolled in the PGCE¹⁰ programme have mastered the required content knowledge and skills of their field of speciality during their three-year Bachelor's degree course (which was geography in the case of the respondents in this study), although at different levels of competence (second- or third-year level).

The question being asked in this study is how to approach and implement the acquired content knowledge to improve and promote creative insights in the teaching of the subject, geography. This “brings the importance of inter-connections between different types of knowledge and practices into the foreground, as well as the ability of teachers to draw reflexively from integrated and applied knowledge, so as to work flexibly and effectively in a variety of contexts”, as promulgated by the *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015:11).

2.4.4.1 Rationale

In my literature research, the point of departure was that *creativity be utilised as mediator between content knowledge and pedagogical practice* and that student teachers' individual creativity be developed to become creative teachers who are masters of their subject. Pedagogies suitable to reach this goal should be sourced, if such pedagogies do exist; or developed by learning from the past, the present and the future. I have looked at traditional pedagogies as well as modern and emerging pedagogies, but do not claim that what is

¹⁰ Professionally-focused Postgraduate Certificate in Education which caps an undergraduate Bachelor's degree (South Africa 2015:22).

presented is all inclusive. The discussion to follow should therefore be envisaged within the context of this study alone and serves to explore ways in which to purposefully include creativity in pedagogies related to initial teacher education programmes, while it has to be noted that South African literature in this field is scarce. Although Golightly and Raath (2015) refer to their own research and that of a few other South African researchers into the use of different teaching and learning strategies (like problem-based learning), the focus was on the fostering of deep learning alone, rather than on the development of creativity as mediator between content knowledge and pedagogical practice. Existing international research and theories may add to the discourse about the topic and the relevance of and growing need for creativity in initial teacher education in South Africa and elsewhere.

Pink (2005) explains that in the Conceptual Age, new technologies and the vast improvements in access to information, data, knowledge and opinion, both enable and urge fresh approaches to creativity in the context of education. Traditionally, higher education has focused on imparting content knowledge rather than on considering how different students learn and which strategies might in fact promote deeper learning (Gibson 2010). Illingworth (2012) maintains that lecturers should teach students how to think and learn, rather than transferring a set body of knowledge, while Hansen (2004) encourages a curriculum model that invites lecturers to prepare the attitudes, dispositions, outlooks and orientations of students. Furthermore, Beghetto and Kaufman (2010) explain that the acquisition of content knowledge while enhancing creativity may be accomplished by teaching divergent thinking skills, while balancing intrinsic and extrinsic motivation. Lecturers need to facilitate spaces for (physical, conceptual and even virtual) creativity, while retaining structure in order for this to be successful.

Today, with the shift from an industrial to a knowledge economy, where students live in a world of access and second-by-second networking in an ever-expanding sea of knowledge, one of the main aims of education is for students to gain skills and strategies that they may use throughout their lives to access and create new knowledge, rather than the mastery of lower-order facts and skills that leads to the reproduction of existing information. The gap between the knowledge embedded in our everyday environment and what we individually know is

greater than ever and the evolving international context demands new approaches to learning and creative types of learning environments, as well as different institutional structures to support the acceptance of different educational practices (Heron *et al.* 2006; McWilliam 2008; Reilly *et al.* 2011). All students can develop creativity through different modes of learning. The issue under investigation therefore is whether initial teacher education programmes provide the space for student teachers to be(come) creative participants of the future and if not, how this could be promoted.

Essentially, pedagogical approaches should never become stagnant, but be adapted creatively to serve the changing needs of students and societies in a particular context and time. For instance, in the 21st Century classroom, the use of modern technology has become essential (Koehler & Mishra 2009) and is evolving by the minute, along with the vast advances in digital and online sources (Baller *et al.* 2016). Approaches like The Flipped Classroom, Blended Learning and MOOCs (massive open online courses) are recent examples of how technology and the Internet are being utilised in modern classrooms (Sharma 2010; Waha & Davis 2014; Abeysekera & Dawson 2015; Brahim & Sarirete 2015). To stay relevant in and ahead of changing times, it is thus necessary to let go of the need to replicate old pedagogical models and teacher-dominated, convergent teaching approaches as educational anchors that leave little or no room for creative experiences (Fisher & Williams 2004; Beghetto 2010; Livingston 2010; Robinson & Aronica 2015).

Adding to the changing needs of students, Mayer (2004) found that students' approaches to learning depend on the context in which learning takes place. As a consequence, a student can adopt one approach in a certain context and another approach in another context, depending on the characteristics of that context and the student's interpretation thereof. This emphasises the importance of the lecturer to be able to flexibly blend pedagogy and content appropriately. This is important, for when students' needs are not met, they often become underachievers and are more likely to drop out (McWilliam 2008). Emphasis is therefore placed on the creative abilities of the lecturer and future teachers, rather than on catalogued pedagogies.

2.4.4.2 Pedagogies revisited

It is clear that we may need to rethink the role of traditional pedagogical constructs such as the classroom lecture ... constructs that have long stood as absolutes in the university catechism. In fact, much of what is presented in the typical university lecture can be and is easily acquired on the Internet (Gilbert 2011).

McWilliam (2009:8) suggests a paradigm shift and that 21st Century lecturers could extend their pedagogical repertoire beyond “sage-on-the-stage” (lecturing) or “guide-on-the-side” (facilitating), to include a third role as a builder of creative capacity – that of “meddler-in-the-middle”. The “meddler-in-the-middle” is an active interventionist pedagogy in which lecturers and students engage in creative collaboration and students are invited to become active producers of disciplinary and interdisciplinary knowledge, rather than passive recipients of the knowledge of academics (Sawyer 2004; Tan 2007; McWilliam 2008). In this way, lecturers and students become co-directors and co-editors of their social world and participate in deciding what content is considered worthy of engagement, how the value of the learning product is to be assessed, and who the rightful assessor is to be (McWilliam 2009; Renzulli & De Wet 2010). Integral to this interventionist pedagogy is the notion of Csikszentmihalyi (1996b) that creative achievement is dependent on social interaction and acceptance.

Pedagogical processes in favour of the development of creativity are thus not those in which fixed knowledge is passed down from the top (teacher/lecturer with “all the subject knowledge”) to the bottom (learner/student as a clean slate or “tabula rasa”). Instead, lecturers and students act as co-creators of knowledge, aware of the possibilities of combining and transforming different knowledge domains and drawing on a network of people and ideas that is fluid and organic, as well as on the awareness that creativity enters all curricular areas and disciplines (Claxton 1999; Davies 1999; McWilliam 2009; Boden 2001). As Sternberg (2003:333) suggests, “... in teaching students to process information creatively, we encourage them to create, invent, discover, explore, imagine and suppose”. Thus, if students are to be creative co-constructors

of knowledge, then lecturers need to find creative ways to facilitate the associated learning process (Reilly *et al.* 2011).

2.4.4.3 Pedagogical strategies to promote creative learning

Beghetto (2013) agrees with Felder and Brent (2009) that finding space for creativity in curriculum implementation is seen as a challenge by many lecturers and therefore they propose that even only a few minutes of creative student-centred activity during each lesson will make a substantial difference in the learning that occurs. As was mentioned in Section 2.4.1, the *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* allows for institutional flexibility (South Africa 2015:8). Cheng (2011) and Beghetto (2013) accentuate that creativity should be infused in every lesson rather than being regarded as a separate set of skills to be acquired. Creativity should thus not be seen as an add-on that takes up already limited academic time, but rather as a means to negotiate learning in a more constructive, productive and effective style that paves the way for student teachers to eventually become creative teachers who are masters of their subject, and flexible pedagogues equipped with different strategies and teaching methods.

Strategies to elicit creativity in day-to-day lessons resonate with what is underpinned by the constructivist learning theory, which defines learning as an "... active process in which learners are active sense makers who seek to build coherent and organised knowledge" (Mayer 2004:14). Student teachers therefore need to be given the opportunity to be active participants in the learning process, rather than passive recipients of knowledge. Under the umbrella of the constructivist learning theory, different creative pedagogical strategies and approaches are possible. These include active learning, collaborative and cooperative learning, problem-based learning, and project-based learning. There may be many more, but for the purpose of this study, I had to keep my search within manageable parameters and therefore chose to put forward the above mentioned as an illustration of what is meant by strategies that may enhance creative learning in the context of this study.

Active learning is generally defined as an overarching instructional method that engages students in the learning process. It requires students to do meaningful learning activities and think about what they are doing (Prince 2004; Cheng 2011). **Collaborative** and **cooperative learning** emphasise student interactions rather than viewing learning as a solitary activity, and cooperative incentives rather than competition to promote learning outcomes (Prince 2004). Heron *et al.* (2006) emphasise that students can learn from each other and also by listening to or conversing with experts in the field. Therefore, time needs to be made available in the curriculum to work in collaborative small-group formats to address issues both relevant and timely, by seeking creative solutions to problems that cut across a battery of subjects or disciplines. Furthermore, time and space should be provided for students to mentor each other (Livingston 2010).

Problem-based learning is an instructional method where relevant problems are introduced at the beginning of the instruction cycle and used to provide the context and motivation for the learning that follows (Golightly & Raath 2015). Problem-based learning allows students to learn through generating and applying ideas (Prince 2004). Problem solving becomes the driving pedagogy and is a technique that can be advanced through practice (Osborn 1953; Livingston 2010). Tan and Wong (2007) call problem-based learning liberating, humanistic and revolutionary, while lecturers and students collaborate through dialogical relations. A study at a South African university provided evidence that the implementation of problem-based learning could help to foster deeper learning amongst first-year geography education students (Golightly & Raath 2015).

Krajcik and Blumenfeld (2006) claim that **project-based learning** as a form of situated learning based on the constructivist learning theory, allows students to gain a deeper understanding of material when they actively construct their understanding by working with and using ideas. Project-based learning allows students to engage in real-world activities and meaningful problems that are important to them and that are similar to what professionals engage in. Unlike traditional methods of instruction, this student-centred pedagogy provides participants with an opportunity to learn from doing by investigating questions, proposing hypotheses and

explanations, discussing their ideas, challenging the ideas of others, and trying out new ideas, as opposed to merely accumulating knowledge that is then regurgitated at the end of the semester as part of a test (Krajcik & Blumenfeld 2006; Worwood 2015). Research has demonstrated that students in project-based learning classrooms get higher scores than students in traditional classrooms (Williams & Linn 2003; Rivet & Krajcik 2008).

What active learning, collaborative and cooperative learning, problem-based learning and project-based learning have in common is that students become active creators of knowledge through discovery activities that call for relevant cognitive, metacognitive and emotional skills (see Section 2.4.3). These skills should then be purposefully encouraged during the active learning process and will require appropriate and imaginative lesson planning as well as on-the-spot creative intervention as may be needed in the learning environment.

Runco (2010a) explains that creative thinking can be taught to individuals through a variety of exercises to develop divergent and convergent thinking skills (as was mentioned in Section 2.4.4). As alluded to before, creative thinking skills should not be taught as a separate module, but rather form a fundamental part of the methodology used by the lecturer to impart content knowledge for deep and creative learning. Schwartz (2014) explains that deep learning reaches beyond knowledge of content and, apart from knowing and applying the knowledge, reflecting on one's own learning, both individually and with peers, that is where the real power lies, because students learn to understand their own learning in a metacognitive way.

Scholars seem to agree that, through practice, cognitive models such as the Osborn-Parnes Creative Problem Solving Model (CPS)¹¹ are the most effective at deliberately improving

¹¹ More information on the CPS Model can be sourced on the official website of the Creative Education Foundation: [<http://www.creativeeducationfoundation.org>]. I have received formal training in this model and am qualified as a specialist facilitator of the process. Similar to other sets of skills, e.g. sports skills, it becomes second nature after prolonged involvement and practice.

creative thinking skills by balancing divergent and convergent thinking, and by enhancing intrinsic motivation, problem solving and creative performance (Torrance 1972; Torrance & Presbury 1984; Anderson & Krathwohl 2001; Scott *et al.* 2004; Plucker & Makel 2010a). Although models of this kind are being deliberated at conferences and in professional development programmes, the purpose of this study is not to promote any specific model or process. Rather, it is proposed that one may tap into and learn from models like the CPS and others as resources to find ways in which to promote the development of student teachers' creativity.

In order to establish a climate in which student teachers' levels of individual creativity may improve from mini-c to Big-C as claimed by Kaufman and Beghetto (2009) and Craft (2001b, 2002, 2003) (as mentioned in Section 2.4), it is important that students be reminded in day-to-day active learning sessions that there may be other ways to view information, a problem or situation than the way it is presented. This could be facilitated by means of creative thinking techniques and activities like lateral thinking, questioning, brainstorming, mind mapping, imagining, visualising, design thinking, dialogue, reflecting, group work, role-play, drama, free writing, drawing, sculpting, movement, music, and the use of interactive and online electronic and digital devices, to mention but a few¹². They also need, within the context of the subject matter or content knowledge under discussion, to be guided through a process of listing the facts or variables and then try to rearrange or restructure them or look at them from different perspectives, and to generate many ideas before beginning to evaluate which of them may be most suitable to solve the stated problem (Sternberg 2010; DeHaan 2011) or reach the desired outcomes as indicated by the lesson assessment criteria (South Africa 2011). Hereby students are encouraged to generate multiple and novel ideas in making observations, doing classifications, asking research questions, forming hypotheses, designing experiments and measurement methods, using equipment or tools, and making inferences from empirical data. In doing this, students are empowered to creatively use the acquired knowledge when they are

¹² This study does not have as purpose to list creative learning techniques and activities as such. Rather, the few mentioned in this section pose to create awareness of such possibilities. (There are many examples freely available on the Internet.)

confronted with unfamiliar or novel situations and when they have to explore new ways in which to explain phenomena, make predictions, solve problems, suggest inventions, produce a product, or even imagine the unknown (Cheng 2011). In the context of this study, student teachers will then be enabled to draw on the above skills to be able to creatively adapt pedagogical approaches to stay abreast of emerging knowledge as well as curricular and other challenges awaiting them in their careers.

As mentioned before, this study does not have as its purpose to promote individual or specific educational models, but rather consider astute instances to learn from in the quest of tailor-making creative pedagogies that may be adapted or combined to suit the learning needs of a specific individual or group within a specific context and time. Pedagogies should never become stagnant but rather be like those put forward by Paul E. Torrance. Torrance's scholarship in the field of applied creativity is renowned. He developed The Incubation Model of Teaching (Torrance & Safter 1999, 2009) where the contention is that creative learning is equal to self-motivation (or intrinsic motivation, as referred to by Amabile 1983, 1996). This model contains elements and provides guidelines to be used to arouse and to sustain intrinsic motivation (i.e. creative learning) in the day-to-day classroom within any curricular setting. In the context of this study which is initial teacher education with geography as academic subject, this model may provide some guidance towards finding suitable pedagogies in which to promote the development of student teachers' individual levels of creativity while mastering deep knowledge of content, as well as their use of creativity in applying pedagogical practices in their own teaching. The purpose of this model is to provide lecturers and student teachers the tools necessary to go beyond simply good practice by becoming able to inspire, arouse and motivate students and learners, and to ultimately keep them thinking, learning, exploring and creating. According to Keller-Mathers (2011), The Incubation Model of Teaching (Torrance & Safter 1999) is a good example of how both content knowledge and creativity are taught in support of one another. The model involves three stages to be applied in each lesson and requires proper lesson planning to be applied successfully (Figure 2.5):

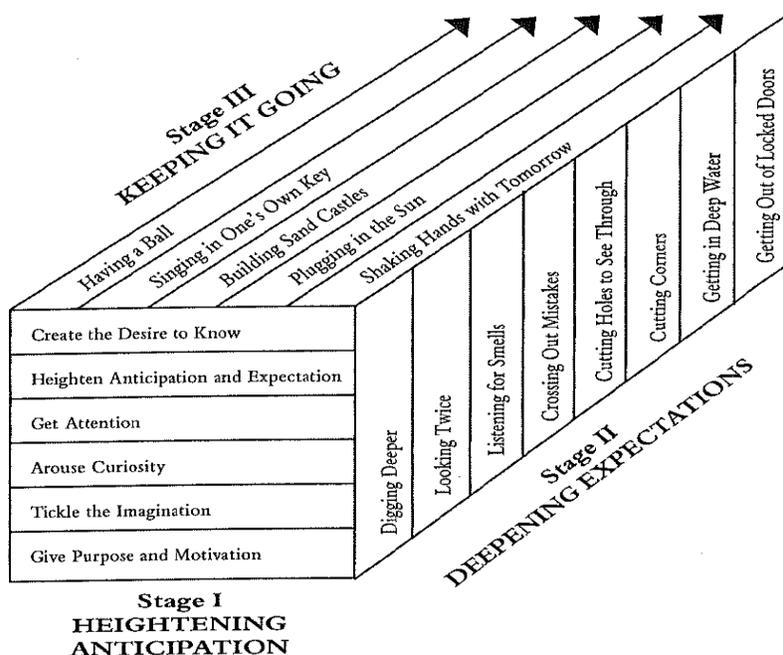


Figure 2.5: The Incubation Model of Teaching (Torrance & Safter 1999:39)

STAGE 1 – Before the lesson: The purpose is to heighten anticipation in order to create the desire for learning, engaging students' attention, stimulating curiosity and imagination and as a result enhancing intrinsic motivation.

STAGE 2 – During the lesson: The purpose is to deepen expectations. What was anticipated in the first stage must be fulfilled. Also, new expectations are created so that students will want to go deeper into what is being taught and learnt. To add to the purposeful stimulation of creative thinking in each lesson, the creative thinking skills and other factors that enhance creativity are also evident in this stage.

STAGE 3 – After the lesson: The purpose is to develop and implement strategies to keep the creative and the learning processes ongoing, even years after the lesson is over. This stage may in particular demonstrate the ongoing quest for deeper learning and higher levels of creative achievement.

Parallel to The Incubation Model of Teaching, consideration could be given to the structure that Lilly and Bramwell-Rejskind (2004) provide to put creative pedagogical approaches into practice. They describe the process according to three categories: preparation, connection, and reflective teaching (Figure 2.6).

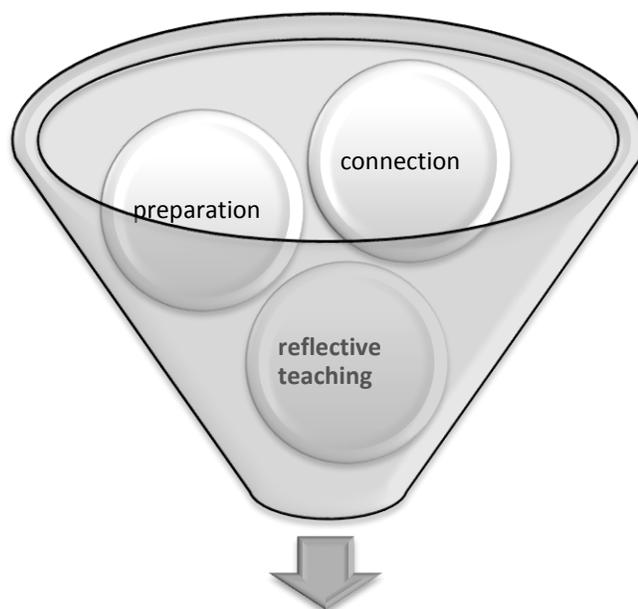


Figure 2.6: Creative pedagogical approaches into practice (Lilly & Bramwell-Rejskind 2004)

- a) **Preparation** involves the lecturers'¹³ consistent restructuring and adaptation to curricular and task constraints and demands like time, energy, resources, as well as overarching intellectual organisation of content, materials and activities, while considering students' needs and selecting best suited strategies and techniques. It also comprises metacognitive energy to choreograph anticipated classroom schemas to fit into the curricular demands.

¹³ The argument of this study is that initial teacher education students may learn from their lecturers in applying these strategies in their future professional conduct.

- b) The **connection** process requires lecturers to understand themselves and the way they want to communicate information to their students. Connection describes the relationship between the lecturer and students and how the lecturer's personality characteristics and self-awareness build and maintain the communication necessary for collaboration, feedback and rapport with students and other colleagues. Making connections is a process in which lecturers and students learn together. This process requires an alert cognitive and socio-emotional understanding of interpersonal relationships and situations. It begins with the lecturer's willingness and ability to devote a great deal of physical, emotional, intellectual and psychological energy to the creative teaching task. It normally involves passion, intuition, intimacy, challenge and an attitude and ability to be embracing, trusting and even vulnerable.
- c) **Reflective teaching** describes a deliberate continuous process by the lecturer of growing into a more effective one. This is done by maintaining records of past and present teaching methods and strategies, an awareness of best practices, task constraints of time and resources, and implementation strategies. By being aware and sensitive to the above, the reflective lecturer is likely to select areas for self-development and act proactively to improve on past performance in order to become more creative and effective.

In other words, when lecturers put creative pedagogical approaches into practice, they will be(come) more flexible and sensitive to challenges and opportunities within and outside of curricular boundaries. They will also connect more easily with their students in cognitive, metacognitive and affective ways without compromising either systemic standards or individual needs. Creative pedagogical approaches furthermore result in lecturers' ongoing and purposeful personal development and improvement by reflectively staying open to influences and self-critique. However, it is not within the scope of this study to elaborate on possible professional development of ITE lecturers; it should rather be regarded as a suggestion to improve future ITE programmes (see Section 5.5.3). Within the context of this study, the hope is that student teachers will be able to become creative teachers by tapping into the above-mentioned acquired strengths modelled by their lecturers.

To summarise: Pedagogical strategies that promote creative learning which may be borrowed from the literature and adapted to fit the needs of a specific learning environment, can be applied in the day-to-day teaching of the curriculum, while student teachers' intrinsic motivation and curiosity is purposefully enhanced by a lecturer who makes use of creative pedagogies to facilitate deep learning of content knowledge.

2.4.4.4 Creative learning outcomes

In most parts of the world, as is the case in South Africa, curricula are outcomes driven (South Africa 2011) – a reality which cannot be ignored when creativity is promoted in teaching and learning. It would therefore be counter-productive and could even be a waste of time if creativity is not included in the learning outcomes and assessment criteria of subject content.

It has to be noted, however, that evaluating or assessing creativity has always been a point of contention. Several tests have been developed to identify and measure creative potential, like that of Guilford (1950, 1967), Wallach and Kogan (1965) and Torrance (1963, 1965, 1972, and 1995). Of all, Torrance is best known for developing the most commonly used measure of divergent thinking, the Torrance Test for Creative Thinking (TTCT)¹⁴, which was developed in 1966 and adapted since (Kim 2006). It is not suggested that these tests be used in initial teacher education programmes. Rather, the relevance of the recognition of these tests lies in the premise that creativity is developmental in nature and as such, growth can be observed by the self or others.

¹⁴ These tests are based on many aspects of Guilford's Structure of Intellect battery (Guilford 1967). Candidates are asked for multiple responses to either figural or verbal prompts, and are scored for fluency, originality, and elaboration of ideas, abstractness of titles, and resistance to premature closure (Runco 1996; Plucker & Makel 2010a). There seems to be a renewed interest in Torrance's tests and according to Cramond *et al.* (2005) and Fryer (2006), these test scores are three times better than IQ test scores in predicting adult creative achievement. This claim is supported by results of longitudinal research of 49 people over a seven-year period (Kim 2007:125).

Sternberg (2010), in emphasising the importance of assessing and evaluating creativity, argues that to be deemed creative (in any context) one must be able to convince others of the value of the creative contribution. In other words, no matter how creative an idea or product is, if the novelty and relevance thereof in the particular field is not accepted or recognised in comparison to something of the same nature by someone else in the field, it cannot claim to be creative to a larger audience than the subjective creator (Csikszentmihalyi 1996a; Beghetto 2013; Rubenstein *et al.* 2013). Nevertheless, subjective assessment of creativity by the creator is a steppingstone in the creative developmental process. Kaufman and Beghetto (2009) call this interpretive or mini-c creativity, which is the first stage of the Four-C model of creativity (see Section 2.4). In this context, it is important that students are encouraged to be critical of and to evaluate their own creative contributions (Aydin 2011).

Furthermore, unless lecturers include creativity in their assessment criteria, students will likely not take the risk of being creative and instead simply reproduce what the lecturer expects to see or hear from them (Beghetto 2013). Lecturers need to make explicit the expectation that, in addition to being required to accurately represent their understanding of subject matter, students are required to provide their own unique examples, uses, applications, adaptations of and contributions to the subject matter (Landau 2007; Beghetto 2013). The expectation by the student that his or her creative contribution will be evaluated will only be detrimental if the interpersonal atmosphere of the evaluative setting causes the student to feel intimidated or self-conscious. In situations in which the student feels in control of his or her own destiny, intrinsic motivation and creativity need not suffer. In fact, evaluation expectation can actually enhance the creativity of performance (Hennessey 2007, 2010).

The developmental nature of creativity should be kept in mind during the teaching, learning and assessment process. While students are expected to be creative, they also need guidance to become (more) creative. Rubenstein *et al.* (2013) and Niu and Sternberg (2003) established that when students were given direct instructions to be creative and/or guidance on how to be

more creative, their creativity increased. The lecturer should develop a habit of exploring students' creative contributions and then working with students to assess the appropriateness of those contributions and providing informal and informative feedback as students reflect on, evaluate and refine their own creative products (Diakidoy & Kanari 1999; Balchin 2006; Beghetto 2007; Fairweather & Cramond 2010; South Africa 2011; Schwartz 2014).

McWilliam (2008) directs that since creativity can be systematically observed over time, criteria can be established for formalising such systematic observations into an evaluation strategy or regime of assessment. Students should ultimately be expected to and rewarded for contributing creative and appropriate knowledge products within the constructs of the domain. The *Curriculum and Assessment Policy Statement for Geography, Grades 10-12* (South Africa 2011:51) directs that the criteria for assessing each task should be discussed and negotiated with the students beforehand. This study thus argues that this should include criteria for assessing creativity. Criteria naturally emerge from an understanding of the domain, and knowledge of the skills needed to produce something which may be valued as creative (Boden 1996; Howell 2008). As referred to throughout this study, a product or contribution may be regarded to be creative to the degree that it is both original (or new and novel), appropriate and useful to the task and in the specific social context, as agreed to by appropriate observers in the field¹⁵.

When considering whether something is creative, the question to be asked is creative for whom and in what context (Csikszentmihalyi 1997; Plucker *et al.* 2004; Beghetto 2013). Beghetto (2013) advises that lecturers have to rely on their professional judgment when determining what level of creative contribution is appropriate for a given assignment, task or situation (as embodied in the Four-C Model of Creativity of Kaufman & Beghetto 2009). It is useful to differentiate between the more subjective versus objective levels of creative expression. A new

¹⁵ This study does not have as purpose to propose assessment criteria for the evaluation of creativity, but rather to raise an awareness of the importance thereof. It is suggested that lecturers develop criteria which are appropriate to the lesson outcomes, keeping in mind the definition of creativity as discussed in this study (see Section 2.3).

and personally meaningful idea, insight or experience would be considered creative even if no one but the person who had this idea, insight or experience recognises it as creative (Vygotsky 1978, 2004; Kaufman & Beghetto 2009). When this happens in the context of the classroom, self-assessment by the student may be appropriate. Problem-based or project-based pedagogies may expect students to solve a relevant problem or create a knowledge product for a real client, which may require higher levels of creativity. In this case, peer assessment or formal assessment by the lecturer may be appropriate. In instances where students present creative contributions of ground-breaking standard, experts in the field may be involved to evaluate and academically appraise the creative product of the student.

In the context of initial teacher education, creative contributions by students to be assessed and evaluated would, apart from the above, also refer to the way students apply knowledge of their academic subject of expertise (which is geography in the case of the respondents of this study), as well as how they adapt and apply pedagogical practices to convey subject matter to learners during teaching practicums. It is suggested that in addition to assessing student teachers' performance according to set standards, there is much to be learned from standards found in examples like The Incubation Model of Teaching (Torrance & Safter 1999) and the work of Lilly and Bramwell-Rejskind (2004) as discussed in the previous section. In other words, by including the student teacher's capability of enhancing creative teaching and learning when preparing the lesson, connecting with the learners, sustaining intrinsic motivation before, during and after the lesson, and reflecting on the lesson outcomes.

2.5 THE IMPORTANCE OF CREATIVITY TO UNDERSTAND PEDAGOGICAL CONTENT KNOWLEDGE

Creativity in education and specifically initial teacher education, has been contextualised in previous sections. The manner in which content knowledge is being conveyed is of essence in this study; as is the relevance of creativity in initial teacher education as mediator between acquired content knowledge and pedagogical practice to enhance the teaching and learning

experiences - and the outcomes thereof - of both the lecturer and student, as well as that of the future teacher and his or her learners. The purpose of this section is to explain the link between creativity and pedagogical content knowledge (PCK)¹⁶.

It is important to bear in mind the interconnectedness of content knowledge and pedagogical knowledge. Koehler and Mishra (2009:63) describe content knowledge as “teachers’ knowledge about the subject matter to be learned or taught”. They further highlight that “[k]nowledge of content is of critical importance for teachers”. According to Shulman (1986a:9), content knowledge “refers to the amount and organisation of knowledge per se in the mind of the teacher”. It is thus expected of teachers to be experts of the content to be taught and to be able to organise subject matter for instruction. This brings to the fore the importance of teachers’ pedagogical knowledge to be able to successfully convey the knowledge to learners. Shulman (1986a:9) explains that pedagogical knowledge “goes beyond knowledge of subject matter per se to the dimension of subject matter knowledge *for teaching*”. Koehler and Mishra (2009:63) elaborate that pedagogical knowledge “is teachers’ deep knowledge about the processes and practices or methods of teaching and learning” and continue that “[a] teacher with deep pedagogical knowledge understands how students construct knowledge and acquire skills and how they develop habits of mind and positive dispositions toward learning. As such pedagogical knowledge requires an understanding of cognitive, social, and developmental theories of learning and how they apply to students in the classroom” (Koehler & Mishra 2009:64). Shulman (1986a, 1986b, 1987) consequently introduced pedagogical content knowledge (PCK) to explain the relationship between content knowledge and pedagogical practice (see Figure 2.8). He (Shulman 1987:8) defines PCK as:

¹⁶ The *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* refers to “specialised pedagogical content knowledge, which includes knowing how to present the concepts, methods and rules of a specific discipline in order to create appropriate learning opportunities for diverse learners, as well as how to evaluate their progress” (South Africa 2015:12).

... the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organised, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction.

Koehler and Mishra subsequently illustrated that PCK exists at the intersection of content knowledge and pedagogical knowledge (Koehler & Mishra 2009:63).

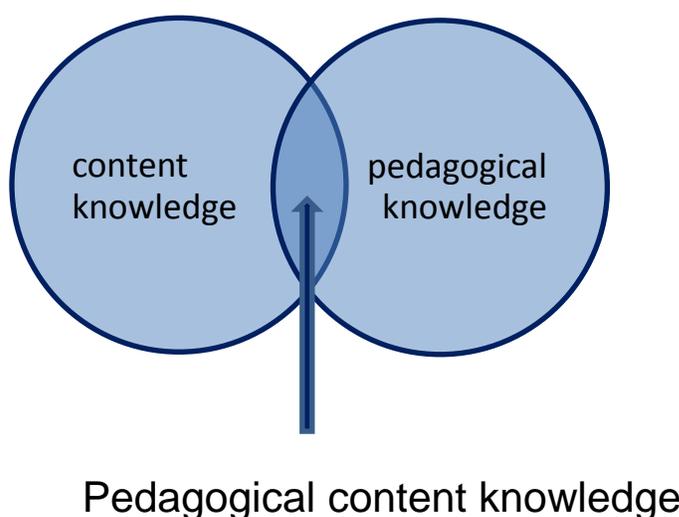


Figure 2.7: PCK at the intersection of content knowledge and pedagogical knowledge

In other words, PCK refers to how subject matter is transformed for and in/during teaching, steered by the teacher's interpretation thereof. Emphasis is therefore put on the teacher's depth of content knowledge and flexible ability to make connections among different content-based ideas. Furthermore, PCK refers to exploring various pedagogical avenues and strategies of adapting and restructuring teaching methods and materials to convey subject matter to learners or students in ways that acknowledge their prior and current knowledge, as well as the changing learning environment in general, which includes changes in the curriculum as well as assessment and reporting strategies. However, scholars like Gess-Newsome (1999) and Segall (2004) agreed that research was unable to agree on how PCK is developed and therefore the concept is difficult to understand. Brooks (2011) comments that there seemed to be a lack of reference to the process needed to be able to develop PCK as explained by Shulman (1987:9):

Within the category of pedagogical content knowledge I include, for the most regularly taught topics in one's subject area, the most useful forms of representation of those ideas, the most powerful analogies, illustrations, examples, explanations, and demonstrations – in a word, the ways of representing and formulating the subject that make it comprehensible to others. Since there are no single most powerful forms of representation, the teacher must have at hand a veritable armamentarium of alternative forms of representation, some of which derive from research whereas others originate in the wisdom of practice.

Creativity seems important to understanding pedagogical content knowledge when considering the teacher's ability to come up with a variety of *alternative forms of representation*. In order to explain the pertinent role of creativity in PCK, I will use the analogy of a match. A match needs to be rubbed or stroked against a rough surface in order to provide a spark that produces a flame to provide light or to start a fire. Similarly, creative effort is needed to provide the spark that operationalises the understanding of the content through the use of flexible targeted and productive teaching strategies and approaches. Sometimes teachers have sufficient content and pedagogical knowledge (thus PCK) but lack the creative spark needed to ignite the transformation of “understanding, performance skills, or desired attitudes or values into pedagogical representations and actions” by means of “talking, showing, enacting, or otherwise representing ideas so that the unknowing can come to know, those without understanding can comprehend and discern, and the unskilled can become adept” (Shulman 1987:7).

It becomes apparent that, on the one hand, a creative teacher without deep content knowledge may be counterproductive in the teaching of essential subject matter and skills; and, on the other hand, a teacher with deep content knowledge alone may not be able to creatively engage students who are to contribute new knowledge and insights and who are to solve current and future problems. This study is therefore grounded on the purposeful development of creativity in initial teacher education, which is to allow for deeper pedagogical content knowledge. These two pillars (creativity and PCK) and the interrelatedness thereof may form a foundation and provide an encouraging environment for student teachers to explore and implement flexible pedagogical approaches and practices (Figure 2.8).

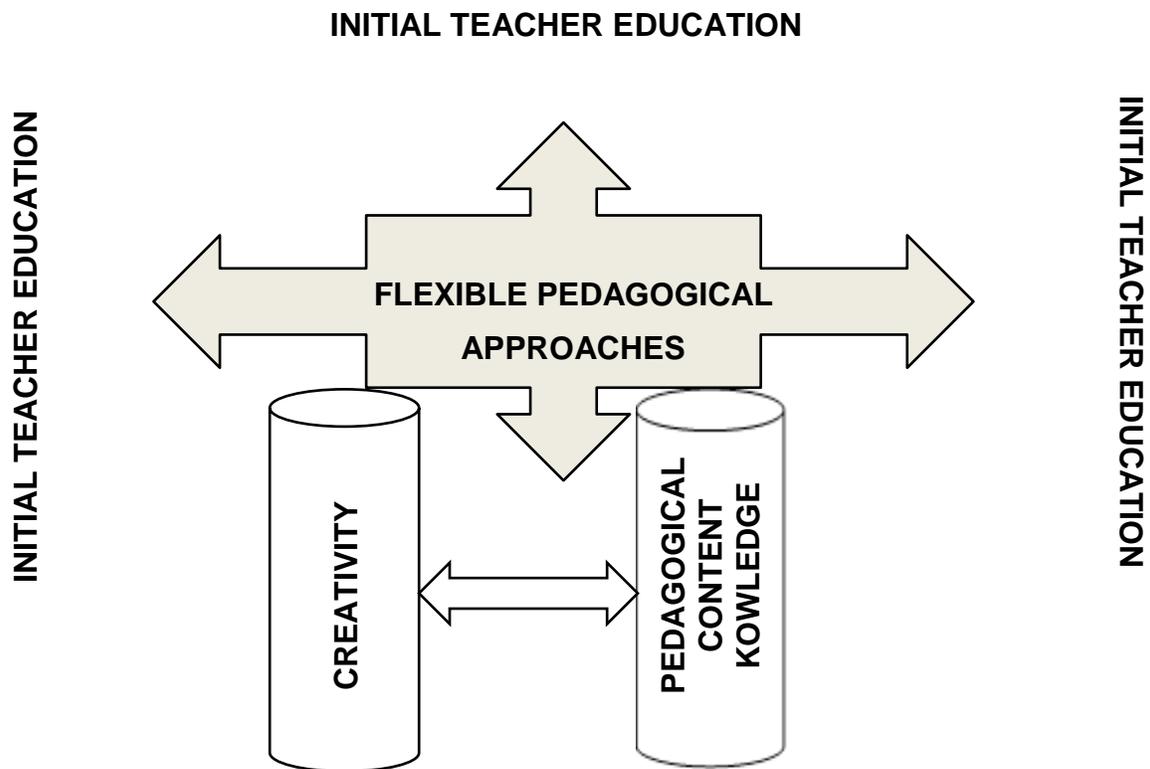


Figure 2.8: Foundation and environment for exploring and implementing flexible pedagogical approaches and practices in initial teacher education

The literature on creativity theories furthermore reveals the need for balance between creativity and content knowledge. Csikszentmihalyi (1997), Cropley and Cropley (2005) and Sternberg (2010) agree that one cannot be creative without knowledge as many original ideas are based on what already exists, and creative products frequently result from a combination of unrelated fields of knowledge. McWilliam (2008) adds that creative people need to be well educated and utilise high levels of knowledge and skills in order to work across the domains of the conceptual and the aesthetic. This allows them to produce something different and useful by way of networked communication, big picture translation and finding new purposes for information by making connections across different fields of knowledge and activity. On the other hand, Sternberg and Kaufman (2010) warn that one can become a prisoner of one's own expertise

and it can become increasingly difficult to have a different view of a topic, which may lead to the demise of creativity. Balance between creativity and content knowledge is therefore needed and McWilliam (2008) provides an alternative by suggesting that thinking creatively about a topic helps to deepen one's knowledge of that topic. Creativity is a common human skill that can be developed to a level of competency within any number academic domains and can also be practiced and developed in the course of teaching content (Skiba *et al.* 2010; Beghetto 2013). Ultimately, creativity and pedagogical content knowledge work in support of one another. Beghetto (2010, 2013) provides the perspective that both students' creative potential *and* their knowledge of academic subject matter can be developed, rather than viewing teaching as developing academic knowledge *or* creative potential. Many creativity-relevant skills, such as divergent thinking (see Section 2.4.3), can be used in ways that increase both creativity and knowledge of specific content (Baer & Garrett 2010). Grainger *et al.* (2004) add that teachers need much more than a working knowledge of prescribed curriculum requirements, but also need to secure pedagogical understanding and strong subject knowledge, supported by intrinsic motivation and a passionate belief in the potential of creative teaching to engage and inspire the hearts and minds of their learners. Schwartz (2014) concludes that the ultimate test of how much or deep students have learned is their ability to transfer knowledge to a new setting. If they can do this, they will be able to solve problems they have never encountered before. In the context of this study, this refers to the flexible abilities exhibited by student teachers during their teaching practicums and eventually in their future classrooms.

Focus is therefore put on deepening student teachers' pedagogical content knowledge by and while developing their creative skills so that they may be able to cope with ever-changing demands, challenges and opportunities of the 21st Century on the one hand and on the other hand meet the desired standards promulgated by the *Curriculum and Assessment Policy Statement, Grades 10–12, Geography* (South Africa 2011). Amongst other standards, it (South Africa 2011) refers to and promotes an active and critical approach, rather than rote and uncritical learning of given truths (when teaching the curriculum to learners). These standards in essence also refer to promoting individual creative abilities as discussed earlier in this chapter when it aims to produce learners that are able to identify and solve problems and make

decisions using critical and creative thinking; work effectively as individuals and with others as members of a team; organise and manage themselves and their activities responsibly and effectively; collect, analyse, organise and critically evaluate information; communicate effectively using visual, symbolic and/or language skills in various modes; use science and technology effectively and critically showing responsibility towards the environment and the health of others; and demonstrate an understanding of the world as a set of related systems by recognising that problem solving contexts do not exist in isolation (South Africa 2011:4,5). Initial teacher education programmes should therefore provide the opportunity for the development of creative teachers who are able to increase learners' creativity. Ultimately, creative teachers may be able to more effectively enact creative pedagogical strategies in line with current and evolving theories of the information and conceptual age and flexibly adapt and implement modern curricula (Florida 2002, 2005; Fisher & Williams 2004; Reilly *et al.* 2011; Rubenstein *et al.* 2013). Student teachers therefore may be(come) able to purposefully provide the spark that is needed to operationalise the understanding of the content through the use of flexible targeted and productive teaching strategies and approaches.

2.6 LINKING CREATIVITY TO PEDAGOGICAL CONTENT KNOWLEDGE IN GEOGRAPHY

Although geography as a subject area provides the academic context to this study, the relevance of creativity in initial teacher education is not limited to the teaching of geography, as creativity is not bound by subject or curriculum area. Scoffham (2013), however, supports Hill *et al.* (2011) and Butt (2002) in arguing that creativity is central to geography education and add that as a discipline, geography offers a variety of opportunities for students to develop and apply creative skills to real-world issues when faced by a variety of challenges during their lives in the twenty-first century. The relevance of creativity in geography teaching in South Africa (South Africa 2011:4, 5) has been alluded to in the previous paragraph.

The purpose of this section is to focus on geography teaching in the exploration of the possible practical manifestation of creativity as mediator between content knowledge and pedagogical

practice. In my literature research on the definition and nature of geography, I used the policy documents of the Department of Basic Education (South Africa 2011) as directive because of its relevance to this study. Accordingly, geography examines the relationships between people and earth, and combines topics related to physical and human processes over space and time (Heron *et al.* 2006; Aydin 2011; South Africa 2011; Barnes & Scoffham 2013). The synthesis between the natural world and how people live is at the heart of the subject. Physical geography leans towards the sciences (natural processes and features like the atmosphere, landforms and ecosystems), while human geography leans towards the humanities (the activities and impact of people on the earth). Geography is also about the contemporary world and how it might change in the future, and about what people are doing and what they can contribute to the balance between people and the earth (Lambert, 2004; South Africa 2011; Scoffham 2013). Jackson (2006a) holds that thinking geographically is a powerful way of seeing the world and Butt summarizes that “geography provides students with dynamic, inspirational, relevant and powerful ways of visualizing the world” (Butt 2011:1). Any topic in geography can be explored within geography’s four big ideas or organising **concepts** central to geographical knowledge, namely place, spatial processes, spatial distribution patterns, and human and environment interaction (South Africa 2011:8). Jackson (2006a) interlinks these basic concepts when he refers to relational thinking and the porous boundaries and borders of space and place as it evolves within the changing realities of scale and connection in the technological age. Proximity and distance is not fixed as the internet and modern technology allows for zooming in and out from local to global perspectives and provides for diverse perspectives on physical, social and even imagined realities. Geography involves learning from the world as well as learning about it. It includes drawing on different sources of information, offering alternative explanations, speculating about trends and acknowledging diversity and different cultural viewpoints (Lambert 2004; Scoffham 2013). Geography actually helps to find solutions related to political and social problems that occur all over the world in asking questions and discovering possibilities (Lambert 2004; Aydin 2011; Scoffham 2013). Ultimately, geography helps us to better understand our complex world (South Africa 2011). The nature of applied geography lends itself to many forms of active and collaborative learning and the acquisition of valuable communication skills for multi- and interdisciplinary working with different disciplinary specialists

like engineers, geologists, ecologists, climatologists, environmental scientists, social scientists and landscape architects (Heron *et al.* 2006; Jackson 2006a).

Within the context of this study which is initial teacher education, the diverse nature of geography as subject is portrayed by the *Curriculum and Assessment Policy Statement Grades 10–12, Geography* (South Africa 2011). Content knowledge to be taught in South African schools includes topics like population distribution and density, HIV and AIDS, the structure of the earth, map work, energy management in South Africa, geographical information systems (GIS), trade and development, structure of the economy, mining and agriculture (South Africa 2011), to mention but a few. Clearly, geography (student) teachers are expected to master a wide array of knowledge and skills. Heron *et al.* (2006) conclude that geography is a multi-faceted domain that opens up space for creative teaching and learning.

Budke, Schiefele and Uhlenwinkel (2010) posit that lecturers have to question how students are led to understand complex concepts in geography – concepts like location and distribution, place, people-environment relationships, spatial interaction and region. At the same time, the emphasis on university students' mastering of research skills cannot be ignored. Walkington, Griffin, Kyes-Mathews, Metoyer, Miller, Baker and France (2011:315) report that a survey of 52 international geography faculty identified critical thinking, framing research questions, reflectivity and creativity as the most challenging research skills to teach. They also provide the insight that there is strong correlation between research skills and creative problem solving, which include identifying problems and generating and framing questions, collecting information and generating ideas, evaluating information and ideas, organising information and ideas, analysing and synthesising information and ideas and ultimately reflecting, evaluating and communicating the results or product (Osborn 1953; Walkington *et al.* 2011). This therefore furthers the argument for the purposeful development of creative skills in initial teacher education. The inclusion of creativity in initial teacher education in geography is not limited to content knowledge of geography and research skills, but also speaks to the development of student teachers' pedagogical skills and practice. The *International Charter on Geographical Education* (Kolossoff, Van der Schee & Lidstone, 2016:13) urges that "[n]ational and local

education policy makers and geography teacher associations should ... develop innovative and effective pedagogic practices in geographical education.”

Many key educational thinkers have suggested that creativity, the arts, and imaginative thinking, are central to learning and thinking across diverse disciplines (Dewey 1934; Vygotsky 1978; Eisner 2004; Bruner 1990). To stay relevant in the fast-moving Conceptual Age (as discussed in Section 2.4.4), geography lecturers and teachers are challenged to look at pedagogical practices from a new perspective by revisiting areas of traditional strength and reframing these in the 21st Century to maximise co-learning opportunities among diverse stakeholders (Heron *et al.* 2006). Learning from Piaget (1976), to understand is to invent – and for students to understand geography or any other subject in a creative way, they need to be encouraged to seek new, alternative examples, analogies, descriptions, elaborations and explanations of the lesson content. Scoffham (2013) proposes that if the content of geography offers rich creative possibilities, the way that it is delivered and promoted in the learning environment can be equally fruitful. Providing students with opportunities to engage in creative thinking through scientific inquiry could be a way for them towards deeper understanding of content knowledge that may ultimately lead to creative contribution. Barnes and Scoffham (2013) reiterate that learning and teaching require the active construction of knowledge, because simply memorising facts is not enough. Students also need to be encouraged to understand, question, challenge and reconstruct their previous conceptions by introducing them to conflicting ideas, engaging them in the debate, and by confronting their beliefs with opposing evidence for them to be able to make connections and see relationships (Cheng 2011). Rawling (2001) highlights the importance of balance between imaginative and creative responses to geographical concepts and the more descriptive, explanatory and scientific approaches. Therefore, students should be encouraged to question and criticise the knowledge in textbooks, to find alternatives to them or to develop new ways to integrate them in interdisciplinary ways. As has been argued throughout this chapter, students have to constantly, throughout the learning process, practice skills like critical and creative thinking, problem solving and collaboration (Schwartz 2014).

It is found that active, creative and cooperative learning (i.e. creative teaching) in geography education has a positive effect on the academic success of the student, as well as on the student's attitude towards geography as a subject, the student's level of geographical skills, motivation and participation, retention and social skills (Aydin 2011). Section 2.4.4.3 highlighted the relevance of active, collaborative, cooperative, problem-based and project-based learning in the creative teaching of geography (and other subjects), while The Incubation Model of Teaching (Torrance & Safter 1999) was suggested as a model with proven success in facilitating creative learning. Theories, frameworks and models like these (and many more traditional and emerging examples¹⁷) can be seen as conceptual lenses through which to view the world and to provide insights into the nature and relationships of the issues under scrutiny. In the case of this study, the issue under scrutiny is creative ways in which to convey content knowledge in geography to student teachers, while simultaneously developing their levels of personal creativity and promoting creative pedagogical practice. It is thus proposed that creative synergy must be found between different theories, frameworks, models, teaching strategies and the like, to address specific learning needs within the specific context of purpose, timeframe and learning environment.

As one of the major teaching and learning approaches in the geography class, fieldwork in itself is a good example of active and creative learning. However, fieldwork needs to stay truly enquiry driven and learner centred and should not be used merely as a "look-and-see" excursion. Learning from scholars like Butt (2002), Heron *et al.* (2006), Cook (2010) and Barnes and Scoffham (2013), fieldwork is the process of observing and collecting data about people, cultures and natural environments. This allows students to collect data about the dynamic places, people and species around them and enables them to examine the way scientific theories interact with real life. It involves students studying geography outside the classroom rather than in the semi-controlled environments of a laboratory or classroom, by observing, questioning, planning, collecting, recording, evaluating, representing, analysing, concluding,

¹⁷ The Flipped Classroom (Abeysekera & Dawson 2015); Blended Learning (Sharma 2010); the TPACK Model (Koehler & Mishra 2009); STEM and STEAM (Henriksen 2014); MOOCs (massive open online courses) (Brahimi & Sarirete 2015); etc.

communicating, reflecting and responding. Also, activity and conversation in the “real world” can provide collaborative and cooperative learning opportunities and promote purposeful discussion, creative thinking and genuine engagement. A key to the pedagogic value of fieldwork is thus the way it brings together people from different worlds. Its multi-sensory nature is valuable for an exploration of students’ emotional and sensory engagement with and personal experiences of geography and can provide students with powerful and immediate feedback. It also allows for a neutral and inclusive space in which informal and formal learning may be brought together. Apart from conducting fieldwork by physically visiting sites and people, the digital and information age we live in provides for unlimited ways for students to explore, learn and create knowledge. For example, websites like www.google.com/earth/ and www.youtube.com can be visited to gain access to remote sites and to learn from a variety of specialists. This opens up creative pathways for students to do fieldwork by virtually “visiting” a number of sites (rather than physical visiting just a few) and by being able to question, analyse, compare and synthesise information in order to arrive at deeper learning. Also, students can communicate online with specialists, their lecturers and peers. Individual or group websites of students can be utilised to share digital photography, videos, diagrams and sketches as part of individual or group fieldwork activities (Hill *et al.* 2011) and students can participate online in submitting individual research proposals, literature reviews and reflective diaries, while they discuss and critique each other’s contributions (Clarke, Lodge & Shelvin 2012). Traditional fieldwork combined with the vast possibilities provided by the Internet is thus an example of how creativity can be brought into the classroom or lecture hall without taking up already limited curriculum time while at the same time providing students the opportunity to have different rather than single learning experiences of a specific topic, which may lead to deeper learning. It is clear that by positioning fieldwork in the technological information age we live in, higher levels of creativity are promoted and expected.

Part of geography’s distinctive contribution is its role in developing young people’s social and emotional development through exploring ethical, social and citizenship issues to engage with a more values-related perspective (Butt 2001; Lambert 2004; QCA 2008). In this context, Jenkinson (2010), Lambert and Balderstone (2000), Leat (2000), Butt (2001, 2002), Heron *et*

al. (2006), Leeder (2006) and Golightly and Raath (2015) suggest some more active learning strategies that may bring passion, enjoyment and creativity to the learning process. Encouraging students to examine the lives of others and to empathise with those lives can be an extremely motivational tool that also enables creativity to flourish (see the link between motivation, affective involvement and creativity as advocated by Amabile 1983, 1996; Gardner 1993a; Goleman 2006; Sternberg 2007, 2010; Hennessey 2010). Placing emphasis on empathy rather than on factual recall can help encourage students' creativity and motivation by creating a more personal response and understanding. Collaborative and cooperative learning activities may include interviews with different stakeholders, inclusion of guest contributors, panel discussions involving local politicians, organisational representatives or community gatekeepers, group reporting of findings to peers and the communities that they are researching and co-learning with, and debates over conflicting observations and opinions. These are rich opportunities for collaborative and cooperative learning within a heterogeneous learning community. It may also provide important learning opportunities for communities being visited when reporting opportunities are given for both visitors and hosts to reflect on what they have learnt. In instances like these, the creation of new knowledge could result from creative learning.

Students' understanding of a topic may be improved by providing them opportunities to talk in a range of contexts and for a variety of purposes in geography. Extended writing provides students with a similar opportunity. The exploratory nature of extended writing will include description and explanation, but can be developed further by encouraging students to incorporate other linguistic features of writing such as negotiation, persuasion and justification. As students justify their geographical thinking, they reflect and gain a more complex understanding of the subject matter while providing the reader insight into their critical and creative thinking and understanding of different geographical concepts. By talking or writing about their understanding and findings, students can get an opportunity similar to producing a creative product through the process of creative thinking and problem solving. This may enable students to transfer what they have learned in order to solve problems and to create new knowledge (Lambert & Balderstone 2000; Butt 2001; Jackson, 2006a).

The active, collaborative and cooperative nature of creative teaching and learning allows for continuous assessment and assistance by the lecturer while observing students when they are busy working on their projects – how they understand the content, demonstrate their knowledge, work together, think critically and creatively and reflect on their own work. Learning happens over time and cannot be evaluated in its fullness when content alone is being examined. Section 2.4.4.4 stressed the importance of assessing for creativity; students need to be informed that creativity is expected of them. Creative teaching allows for feedback from the lecturer to help students gain valuable input on how they can expand on an idea or project to ultimately come up with a creative response or product that is both original within the context of and appropriate to the task (McWilliam 2008, 2009; Torrance & Safter 1999, 2009).

Holistically seen, a project-based approach designed for ongoing student motivation and involvement may drive real-world engagement and active learning processes to solve realistic and actual problems within the constraints of the geography curriculum, as identified and agreed upon by the lecturer and students. Students work cooperatively with the materials and content from lectures, their own research and readings, fieldwork and group discussions. They also collaborate with other stakeholders from diverse disciplines in person or by using online technology – trans-disciplinary thinking allows for ideas from one area to inspire creativity in another. Participants engage in deep conversations about their practices through opportunities to experiment and play with ideas, tools and subject matter. Creative thinking and problem solving techniques and skills are utilised to solve the identified problem by incorporating different forms of art, design and technology to ultimately create something (an educational artefact, teaching tool, lesson, video, presentation or anything that will be useful in their own learning or teaching). The process of designing and creating something may help students internalise the knowledge they acquire along the way, while learning occurs more organically. Creativity may also be elicited when students reflect on their own learning and present their understanding, findings and new knowledge through various forms of expression like writing, role-play, drama, presentations, artefacts, song, drawing, poetry, storytelling, answering open-ended questions and by creating digital media products – for assessment or for the real world

and a real audience. In other words, the creative learning outcome is more than the student being able to understand and apply content knowledge, but rather being able to produce something new and appropriate by creatively synthesising a combination of elements – a generative activity that transcends the information upon which it is based, from the simple combination of sources to the synthesis of meaning. In this way, creative learning transforms information in new ways, and leads to new knowledge and understanding.

To summarise, this section explained that geography as subject lends itself ideally for the inclusion of creativity as mediator between content knowledge and pedagogical practice in initial teacher education. It was further argued that when creativity is purposefully included in teaching the curriculum to students, their personal levels of creativity will develop while deep and transformative learning takes place. Ultimately, student teachers will not only gain deep content knowledge, but will also be equipped with creative thinking and problem solving skills to be employed in their pedagogical practices in their future classrooms.

2.7 SUMMARY

This chapter researched theories in the fields of creativity and pedagogical content knowledge in geography within the context of initial teacher education. The developmental nature of creativity stood out as a positive attribute within the context of the ever-changing Conceptual Age we live in. The importance of creativity in understanding pedagogical content knowledge has been highlighted by specifically linking creativity to pedagogical content knowledge in geography. Pedagogical strategies to promote creative learning were explored and the importance of assessing students' work for creativity was acknowledged. It has been argued that creativity should not be seen as an add-on to the curriculum, but should rather act as mediator between content knowledge and pedagogical practice. Creativity is seen as a skill that can be taught and developed – from everyday creativity to exceptional creativity. Within the context of this study, if creative ways were utilised to convey content knowledge in geography to student teachers, the outcome could be that their levels of personal creativity would be simultaneously developed, while their applied pedagogical practice would be creatively

inspired. Ultimately, this may lead to future teachers who are better equipped to provide in the need for improvement in basic education in South Africa.

The theoretical framework provided in this chapter guided the data collection and analysis processes in the quest for finding answers to the research questions.

The next chapter will provide an overview of the research process employed in this study and explain the methods used to collect and analyse the data in order to understand and describe the experiences and perceptions of the respondents related to the research questions.

CHAPTER 3 – RESEARCH METHODOLOGY

3.1 INTRODUCTION

In Chapter 1, I gave a short overview of the research process and methodology used in this study. In this chapter, I elaborate on the interpretive paradigm that underpins the research, the case study research design using qualitative data, the assurance of research quality, the data collection, and the data analysis techniques employed.

3.2 THE INTERPRETATIVE RESEARCH PARADIGM

The interpretive research paradigm is applicable to my study as my overall goal was to collect the richest possible qualitative data by means of empirical observation, which would represent as wide and diverse a range of information possible within the scope of the research (Henning *et al.* 2004; Bogdan & Biklen 2007). The aim of my study was not to explain, predict, control, prove or test a hypothesis but to rather explore the meaning the respondents have constructed and how they made sense of their experiences within the context of the study (Merriam 1988, 1998; Babbie & Mouton 2001). I tried to understand and interpret the experiences and perceptions of the respondents related to the research questions driving this study and to describe it from their point of view (Burrell & Morgan 1979; O'Donoghue 2003; Henning *et al.* 2004). An inductive approach was followed, which means that I collected rich qualitative data within a natural setting and used it to report on the respondents' observable activities by employing their own written or spoken words to write a thick description of events together with the respondents' interpretations of their experiences (Merriam 1988, 1998, 2002, 2009; Denzin & Lincoln 1994, 2003, 2008; Babbie & Mouton 2001; Bodgan & Biklen 2007).

Babbie and Mouton (2001), Clough and Nutbrown (2002) and Henning *et al.* (2004) highlight that the researcher, especially from an interpretive point of view, is the main instrument of research by making meaning from being engaged in the research project and by interpreting

the data collected. The role of the researcher is thus critical because social phenomena do not have uncomplicated existences and must be interpreted and ascribed meaning (Merriam 1988, 1998, 2002, 2009; Babbie & Mouton 2001; Henning *et al.* 2004). I was ideally placed in the research process as I worked closely with the respondents over the period of an academic year and where I interacted with them in a variety of ways, which I will refer to in this chapter.

Cresswell (1998), Bogdan and Biklen (2007) and Yin (2014) warn that the personal beliefs or biases of the researcher need to be acknowledged. I have explained my position as researcher in this study in Chapter 1 (see section 1.6) and conclude that I agree with Bogdan and Biklen (2007) insofar that I cannot claim to be completely objective, as "... you cannot divorce your research and writing from your past experiences, who you are, what you believe, and what you value" (Bogdan & Biklen 2007:38). I therefore consciously tried to become more reflective and stay honest throughout the study by recording my thoughts in field notes, which I visited and evaluated throughout the research process.

I tried to construct knowledge by means of multiple perspectives by using different methods of gathering qualitative data to enable me to interpret and describe the respondents' perceptions, beliefs, values and reasons, meaning making and self-understanding (Hudson & Ozanne 1988; Guba & Lincoln 1994; Henning *et al.* 2004). The methods employed focused on exploration and understanding reasons behind certain phenomena or behaviours. The data collection process was interactive and involved me, the researcher, and the respondents within the actual setting within which the respondents found themselves. Throughout the research I was mindful that people are shaped by the social worlds they inhabit (Henning *et al.* 2004) and that researchers study people or phenomena in context while the realities and knowledge are constructed by both the researcher and the respondents as they interact and work together as partners during the research process (Guba & Lincoln 1994; Merriam 2002; O'Donoghue 2003). The hands-on, in-depth observations I made by means of lesson observations and personal interviews, along with information gathered by means of questionnaires, provided for thorough immersion into the experiences of the respondents and enabled me to better understand and interpret why

and how the individual respondents made meaning of their experiences in relation to my research questions (Merriam 1988, 1999, 2002, 2009; Denzin & Lincoln 1994, 2003, 2008).

3.3 THE CASE STUDY RESEARCH DESIGN

Philliber, Schwab and Samsloss (1980) explain that a research design is a “blueprint” for a research study. It has as purpose to identify what questions to study, the unit of analysis, which data to collect, which data is relevant and how to analyse the results and interpret the findings (Yin 2014). Yin (2014:38) concludes that “... the complete research design embodies a ‘theory’ of what is being studied”.

I decided to employ a case study research design. It allowed me to gain an insider’s viewpoint during the research process for a detailed, in-depth examination of the case, and the generation of an understanding of and insight into the particular unit of analysis or case that I was exploring (Merriam 1988; Stake 2005; Bogdan & Biklen 2007; Aaltio & Heilmann 2010; Rule & John 2011). The case was limited and focused within a setting with identifiable boundaries (Henning *et al.* 2004).

The unit of analysis in my single case study was a specific group of twelve PGCE students at one South African university. As argued throughout this study, creativity is not bound by any subject and therefore any group of PGCE students could have been selected. However, I decided to focus on one academic subject to narrow the scope of the research and had to find a lecturer who was willing to accommodate my study. This is how the complete group of twelve geography PGCE students was identified as the unit of analysis.

True to a case study research design, my study was about a contemporary rather than a historical phenomenon (Yin 2014). Furthermore, case study research is applicable to studies where the main research questions are “how” and “why” questions and where the researcher has little or no control over behavioural events, which was the case in my study (Yin 2014).

The flexible nature of the case study allowed me, through a rigorous and multi-method process of data gathering and analysis, to answer my research questions and to provide a thick and rich description of the case (Aaltio & Heilmann 2010; Rule & John 2011). I did this by utilising only data applicable to the single case that was studied (Henning *et al.* 2004). The data collection and analysis processes employed in my study will be discussed in Sections 3.5 and 3.6.

At the onset of my study, I utilised researched theories of creativity, pedagogical content knowledge and initial teacher education to help formulate my research purpose and refine my research questions. These theories, along with qualitative research theories and methods, assisted me in defining and selecting the case to study, as well as deciding on appropriate methods to collect and analyse the qualitative data in the quest of finding answers to my research questions (Rule & John 2011). As advocated by Yin (2010), I made known from the onset of my study the pertinent argument that creativity is developmental in nature and could serve as mediator between content knowledge and pedagogical practice. This was done in relation to existing research literature. This higher conceptual level was used to justify the research importance for studying the chosen case.

According to Yin (2014:40), the purpose of case study research is "... to shed empirical light about some theoretical concepts or principles". I learned from Gillham (2000) and Rule and John (2011) that theories are explanations that the researcher creates by either modifying existing theory or by inductively developing theory grounded in the evidence found by means of qualitative data collected, interpreted and analysed. Henning *et al.* (2004) reminds that powerful data is needed for strong theory to be developed; this is dependent on the researcher's ability to analyse and synthesise the empirical findings of the research. This was true in my study. I used existing theories from the literature to situate my study and then progressively allowed for the collected qualitative data to steer the development of theory grounded in empirical evidence (Gillham 2000). I was steered by Yin's (2014) claim that the single case can represent a significant contribution to knowledge and theory building by confirming, challenging or extending the theory and that such a study can even help to refocus future investigations in an entire field. As explained by Mills, Durepos and Wiebe (2010), I used the insights that I

gained about the interactions between contextual relationships and the entity in question to generate theory and contribute to researched theory. In my study, this refers to the respondents' experiences and perceptions of creativity in education within the contextual boundaries within which they found themselves prior to and during the course of the study. I remained sensitive to the fact that the case is a complex entity located in a milieu or situation embedded in a number of contexts or backgrounds. Stake (2005) reminds us that a case study concentrates on experiential knowledge of the case and close attention to the influence of its social, political and other contexts. Each respondent's experiences and perceptions were observed and interpreted with this in mind.

Yin (2014) concludes that theoretical propositions come to play when the researcher has to generalise the lessons learned from the case study. I did not use the case analysis to aim at generalisation in a statistical sense but rather to understand and interpret the individual cases thoroughly in their own special contexts. Yin (2014:40) calls for *analytic generalisation* as opposed to *statistical generalisation*. Analytic generalisation consists of a carefully posed theoretical statement, theory or theoretical proposition, and takes the form of a lesson learned, working hypotheses, or other principle that is believed to be applicable to situations other than those examined as part of the single case study (Yin 2010, 2014).

To conclude this section, in this single case study I collected qualitative data by means of multiple methods (interviews, observation and questionnaires) to be able to better understand and interpret the respondents' experiences and perceptions. After data collection and analysis, propositions and suggestions were made on how this new knowledge might be applied and further explored (see Chapters 4 and 5).

3.4 RIGOUR, TRANSFERABILITY, CREDIBILITY, TRIANGULATION AND INTER-SUBJECTIVITY

According to Saumure and Given (2008), rigour refers to the quality of the research process. Morse, Barrett, Mayan, Olson and Spiers (2002:14) argue that "without rigour, research is worthless, becomes fiction, and loses its utility". Babbie and Mouton (2001) and Shank (2006)

agree that sound research is driven by rigour, which refers to issues like meticulousness, thoroughness, carefulness and attention to detail. A number of features are thought to define rigorous qualitative research. I have focused on aspects like transferability, credibility, triangulation and inter-subjectivity to ensure a more rigorous research process that will result in trustworthy findings.

Because statistical generalisability – where the researcher is responsible for ensuring that the findings can be generalised to a larger population – is not the purpose of case study research, transferability is used as an alternative to measure the quality of the research (Rule & John 2011; Yin 2014). Transferability refers to the extent to which the researcher presents a full account of the research findings that can be transferred by the reader to another, similar context or situation, while still preserving the meanings and inferences from the completed study (Jensen 2008b; Houghton, Casey, Shaw & Murphy 2013). In order for findings to be transferable, the contexts must be similar. It is the role of the researcher to identify key aspects of the context from which the findings emerge and the extent to which they may be applicable to other contexts. This is accomplished by means of analytical generalisation whereby research findings are generalised to a broader theory (Lincoln & Guba 1985; Rogelberg 2006; Yin 2014). The transferability of my study was enhanced by the contextual boundaries of the findings as well as by the fact that the respondents represented the research design, limitations and delimitations of the study, and were closely linked to the context that was studied (Jensen 2008b). I also used thick descriptions of the case by vividly portraying the fullness and essence of the case reality and context to provide readers with a full and purposeful account of the respondents, context and research design so that readers could draw their own, informed conclusions about the transferability of the research (Jensen 2008b; Rule & John 2011).

Credibility can be defined as the methodological procedures and sources used to establish a high level of agreement between the participants' expressions and the researcher's interpretations of them (Jensen 2008a). Howe and Eisenhardt (1990) and Yin (2014) propose that for this to happen, it must be proven that the methodology provides data that can answer the question(s) of the study and that the research methods applied provide trustworthy results.

Credibility also refers to the extent to which a case study has recorded the fullness and essence of the case reality, and to which extent a research account is believable and appropriate, with particular reference to the level of accord between respondents and the researcher (McGinn 2010; Rule & John 2011). I tried to increase the credibility of my research by means of triangulation across multiple sources of data to support the propositions and findings generated in my case study (Denzin 1978; Lincoln & Guba 1985; Stake 2005; Jensen 2008a; Rothbauer 2008; Rule & John 2011; Yin 2014). This included interviews, lesson observation and questionnaires (Figure 3.1). Each type of source of data yielded different evidence that in turn provided different insights regarding the case. Yin (2014) iterates that case study findings or conclusions are likely to be more convincing and accurate if it is based on several different sources of information.

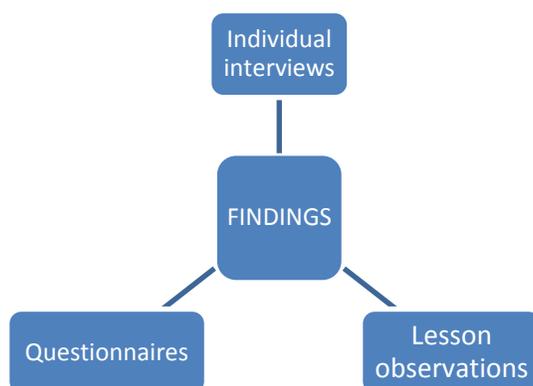


Figure 3.1: Triangulation of multiple sources of data

I was involved with the study and the respondents for a period of one academic year in which I had ample contact time with them as a group as well as with them individually. Part of my research project was four tutoring sessions on campus, where I introduced the respondents to creativity theories and practice (Appendix 5). The size of the sample of respondents was beneficiary to the study because of the interactive and reflective nature of the tutoring sessions. I also observed the lessons they presented on two different occasions during the course of the study and had individual informal conversations with each of them. This allowed me the opportunity to get to know each respondent on a personal level and to gain a better understanding of them before I conducted the individual interviews at the end of the study.

Through this process of prolonged engagement, a strong rapport was built between me and the respondents, which proved to be beneficial to the interview process (Lincoln & Guba 1985; Cresswell 1998; Anfara, Brown & Mangione 2002; McGinn 2010).

I stayed mindful of the inevitable subjective position of the case study researcher (Babbie & Mouton 2001; Henning *et al.* 2004; Grbich 2007; Yin 2014). I therefore tried to be honest in approaching the data openly in a spirit of enquiry and to truthfully report on my perspectives of what has been observed or revealed (Shank 2006). I did not only rely on my understanding of the data in isolation, but in an intersubjective manner recognised that meaning is socially mediated through interaction between the researcher and the respondents (Babbie & Mouton 2001; Anderson 2008). I continually interrogated my responses to the data to stay truthful to the respondents' contributions (Hollway & Jefferson 2002).

I was able to gain thorough and descriptive information from the respondents during the individual interviews. The interviews were lengthy and revealing, leaving me with more than sufficient data to use in producing rich, thick descriptions of the respondents' experiences and perceptions. In presenting the data, I did so by using the respondents' own words through direct quotations. I therefore stayed as close as possible to what has actually been revealed by the individuals in my study, holding back my own voice as far as possible. In writing my report, I could provide a thick description of my interpretations of the research findings (Lincoln & Guba 1985; Bradley 1993; Patton 2002; Rule & John 2011). Rich, thick description is considered one of the most valuable techniques for allowing the reader of the study to make an assessment of how well the researcher has interpreted the findings (Cresswell 1998; Patton 2002; McGinn 2010; Rule & John 2011; Yin 2014).

I preserved my collected data in original as well as digital format as a chain of evidence (Yin 2014). This includes the questionnaires completed by the respondents, my field notes on observations made, and audio-recorded lessons and interviews which are stored and easily retrievable on my computer.

3.5 DATA COLLECTION

Shank (2006) reminds that data gathering is a crucial part of empirical research because, without data, there is no evidence. In Section 1.5 I gave an overview of the data collection techniques used in this study. First, the literature review (Chapter 2) helped me to form a logical argument by using relevant research to guide my thinking and the research process (Shank 2006). My overall goal was to collect the richest possible data, which would represent as wide and diverse a range of information possible within the scope of the research (Babbie & Mouton 2001). Qualitative researchers like Caffarella (1994), Bodgan and Biklen (2007) and Yin (2014) name various techniques and methods to gather data. I made use of three methods of collecting information from my respondents. Following, I present it in chronological order as it appeared throughout the study.

3.5.1 Questionnaires

At the onset of the study, before the respondents and I became familiar with one another, they completed a questionnaire to provide me with some insight into their perceptions of creativity at that stage (Appendix 2). The questionnaire contained both closed-ended and open-ended questions to get qualitative data from the respondents (Flowerdew & Martin 1997; Kanjee 2006; Johnson & Christensen 2008). The respondents completed the questionnaires in silence without any time restrictions. Their responses were not influenced by other persons or resources and it is thus fair to assume that the respondents' comments in the questionnaires were valid and true representations of their perceptions at the time. The information gathered from the questionnaires and the early analysis thereof was valuable in different ways. It gave me an insight into the respondents' perceptions of creativity before I presented the creativity tutoring sessions to them. It also got them thinking about creativity and thus prepared them for what was to follow. It furthermore provided me with sufficient insight to steer the construction of further data (Van den Hoonaard & Van den Hoonaard 2008). During the analysis stage of the study I used the information gathered from the questionnaires in determining whether the respondents' perceptions about creativity changed during its course. The individual interviews which were conducted at the end of the study provided the comparative information needed.

3.5.2 Observation

Yin (2014) notes that because a case study takes place in the real-world setting of the case, opportunities for direct observations will occur. According to DeWalt and DeWalt (2002), observation enhances the quality of data obtained during fieldwork through any method of data collection. Also, respondent observation serves the purpose of both data collection and analysis. I found that the impressions I recorded while observing the respondents to be insightful and useful during the analytical stages of the research. DeWalt and DeWalt (2002) furthermore claim that observation encourages the formulation of new research questions and hypotheses. I used these newly formulated questions during the individual interviews I conducted with the respondents at the end of the study. The real-world-setting of the case (Yin 2014) allowed me insights into new hypotheses which I employed during the analysis stages of the research.

As directed by the *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015), student teachers like my respondents gained experience in practical teaching and I had the opportunity to observe each respondent during their institutional and school practicums. The first of two opportunities for student teachers to gain experience in teaching practice took place during the first part of the first semester when they did not yet have any formal exposure to teaching practice. It is known as the so-called “fishbowl” lesson because the student teacher’s lecturer and peers typically observe and critique the lesson in front of a small group of high school learners. When the learners dispersed after the lesson, the observers commented on aspects of the lesson, which led to a reflective discussion. My role was that of a “complete observer” (Baker 2006:174), to only observe and not to comment. I made use of a classroom observation schedule (Appendix 3) to assist me in recording my observations of the lesson and I kept a journal on my observations of the discussions after the lesson was presented. It was not a natural setting and took place in lecture halls at the university; learners from high schools in the area were brought to the university for this exercise. The learners comprised groups of 8 to 15 (not a normal class size in the typical South African public school context that has a class ratio of 1:35), while they were acutely aware of the

observers in the classroom (lecture hall). The setting and the audience combined for a stressful experience for the student teachers (including my respondents). The respondents who were first in line to present their lessons were under even more pressure, as they did not have the advantage of reflecting on others' mistakes and successes. Seemingly, these respondents had to mainly fall back on their memory of how they were taught at school. Also, the respondents had two formal sessions of introductory training in basic teaching techniques like blackboard writing or how to use the overhead projector and interactive whiteboard. Most of them had some prior experience in *MS PowerPoint* and used it mostly to good effect. After the lesson was presented and the learners left, the lecturer and respondents discussed the lesson collaboratively. My role was to observe the lessons and discussions in silence and to record my observations in field notes. Within a few days after the lesson, I had an informal conversation with each respondent. I gained insight into their reflections, which I recorded in my field notes. During these individual meetings early in the research I elaborated on my position as researcher and as observer of the lessons they were to present during their school practicum later in the programme. The respondents were comfortable with my presence because they knew and understood that I was not part of the official PGCE programme and therefore had no influence on the evaluation of their practical teaching sessions. I also iterated that for the purpose of my study I needed them to be honest about their reflections and perceptions about creativity in ITE. They were assured that they were not expected by me to include creativity in their lessons. The same applied to the personal interviews. I explained the (PhD) research process to them and that it is not expected of the researcher to empirically prove his or her line of reasoning, but rather to report on the findings of the empirical study as it is presented. This was necessary to avoid the possibility of a "power relationship" between the researcher and respondent.

Typically, PGCE student teachers at this particular South African university are placed at secondary schools for the full duration of the third school term (nine weeks), where they get the opportunity to learn from serving teachers and by experiencing the practical aspects of teaching through presenting lessons themselves. The university put strong emphasis on the importance of diversity and therefore the respondents did not have the final choice regarding the schools they were placed at. In some cases these placements added challenges to the respondents as

they had to teach learners from cultures and even home languages different to their own. The student teachers' (like my respondents) lecturers visit them and formally assess a lesson presented by the individual students in the particular school subject. After the lesson, the lecturer and student discuss the lesson and the outcomes thereof¹⁸. Again, my role was to only observe and not to comment. I made use of a classroom observation schedule (Appendix 3) to assist me in recording my observations of the lesson. I also recorded the lessons on a digital voice recorder as advocated by Merriam (1998). Although I did not transcribe these audio tapes, I visited the raw data for clarification during the analysis stage of the study. I used both the journal and classroom observation schedules during the data analysis process. The theoretical framework of this study (as explained in Chapter 2) shaped the lens through which I observed the respondents' lessons. I therefore consciously referred to my understanding of pedagogical content knowledge (PCK) as was discussed in Section 2.5. I furthermore looked for the occurrence or absence of creative elements (see Section 2.4.3.1) during the lesson, as well as in the reflective discussion after the lesson. I also looked for evidence of the individual respondents' development in teaching competence and especially in creative teaching (or the lack thereof) (see Section 2.4.3.2). I had to be aware of my own biases and keep in mind the limited exposure the respondents had to creativity theories and practice during the four hour-long introductory interactive creativity tutoring sessions I presented to them over a period of nine weeks after the completion of the questionnaires. After each session I recorded my reflections and observations of the respondents' actions, interactions, questions, responses, interest and general conduct (Van den Hoonaard & Van den Hoonaard 2008). These field notes were informative and of use when I composed the observation schedule (Appendix 3) and interview guide (Appendix 4) to be used later in the study. I visited my field notes during the final analysis stages of the study in relation to the qualitative data found during lesson observations and personal interviews through a process of data triangulation (Yin 2014). While these sessions were going on, I also observed the lessons the respondents presented on campus, as discussed above.

¹⁸ I regarded the lecturer's responses as a crucial part of my research as it was indicative of the learning environment in which this particular group of student teachers had found themselves.

3.5.3 Individual interviews

I agree with Yin (2014) that the interview is one of the most important sources of case study evidence and I regard the in-depth personal interviews as the main source of data collection employed in my study. Scholars like Morgan (1997), Arksey and Knight (1999), Babbie and Mouton (2001), Patton (2002), Henning *et al.* (2004) and Merriam (2009) explain that an interview is an interaction and a form of conversation between the interviewer and interviewee and a process in which a researcher and respondent engage in a discussion focused on questions related to a research study. Data is generated by asking respondents to talk about their experiences, focusing on what they think, know and feel and how meaning is constructed within the confines of the social structure specific to the historical period within which they live.

I conducted the individual interviews at the end of the study, which provided the opportunity for the respondents to reflect on their experiences through the course of the study. At this late stage of the study and having shared experiences with the respondents during the course of the study, I found myself to be an insider during the process of conducting the interviews, as Henning *et al.* (2004) describe the position of the qualitative researcher. The interviews were semi-structured (Merriam 1998; 2009; Arksey & Knight 1999), although relatively open-ended and focused around particular researched topics. By the time of the interviews, I had reasonable insight in what the key issues in my research investigation could be (Gillham 2000).

According to Shank (2006), the semi-structured interview allows the interviewer some latitude in how questions are asked and in what order, but it is still necessary that all interviewees be asked the same basic questions. I used open-ended and “how” questions in the interviews as described by Hollway and Jefferson (2002), Henning *et al.* (2004) and Yin (2014) to allow respondents to elaborate and make meaning of their thoughts in a metacognitive way. The interview questions as recorded in the interview schedule (Appendix 4) were designed within the main themes that steered this study (as has been discussed in Chapter 2) and were guided by the research question and sub-questions. Certain general questions assisted me when particular information was required from each respondent (Merriam 1988, 2009; Patton 2002;

Bodgan & Biklen 2007). Some questions arose as a result of my interaction with the respondents during the study and lesson observations. I also rephrased some of the questions that were used in the questionnaire at the beginning of the study to be used during the interviews.

As proposed by Yin (2014), the interviews resembled guided conversations rather than structured queries. Each interview was conducted in the same room on campus – a boardroom with a large table and comfortable chairs. The interviews took place after working hours and away from any disturbance or interference. At the time of the interviews I had already established a strong rapport with each respondent, which allowed for the information gathered during the interviews to be authentic and honest. The privacy of the room added to mutual trust and the respondents' openness and eagerness to share their thoughts and reflections. The respondents were willing to share their experiences, opinions and emotions with me. This was a position which I treated with caution and respect. I therefore put no time limit on the interviews and some lasted longer than an hour. I opened each interview by reading aloud a prepared introduction to them in which I gave a brief holistic overview of the research programme up to that stage. I reminded them of the questionnaire they completed at the beginning of the study; the four creativity tutoring sessions I presented; their "fishbowl" lessons that I observed, and the lessons they presented during their school practicums that I also observed. I asked their permission to record the interviews on a digital voice recorder and assured them that the interview data would be processed anonymously and collectively. I furthermore assured them that I was the only person with access to the data and that I was the only person who would transcribe the data – confidentiality was thus ensured. I also explained to them that the interview would be semi-structured and open-ended – all respondents would be asked the same questions, although there would be no limitations to their individual contributions. I urged them to feel free to express their thoughts without any fear whatsoever. Lastly, I informed them that they could at any time refuse to answer a question or to terminate the interview for whatever reason. I thanked them for taking the time and for their willingness to participate in the study.

Merriam (1998) and Shank (2006) agree that it is critical to transcribe one's own research data, because it allows one to obtain new and fresh insights into the data. I therefore transcribed the recorded interviews verbatim (Creswell 1998; Yin 2014) and translated the Afrikaans into English where applicable, for the purpose of using direct quotations in my research report (Appendix 6). Lastly, I reflected on the interviews and interpreted the gathered data during the analysis stage of the study (Henning *et al.* 2004).

3.6 DATA ANALYSIS

Henning *et al.* (2004) call the process of analysis the heartbeat of qualitative social research and maintain that the researcher's quality of thinking is to be displayed through the analytic process. It is an essential steppingstone toward both gathering data and linking one's findings with higher order concepts (Van den Hoonaard & Van den Hoonaard 2008). Through the process of content and thematic data analysis (see Section 4.3), I purposefully scrutinised the different sources of data collected from questionnaires, lesson observation and semi-structured interviews, in order to identify, categorise, analyse and report patterns within the data to find substantiated answers to the research questions and to provide thick descriptions of the respondents' experiences and perceptions in relation to the questions (Gillham 2000; Braun & Clarke 2006; Van den Hoonaard & Van den Hoonaard 2008; Saldaña 2013).

Hollway and Jefferson (2002), O'Donoghue (2003) and Shank (2006) agree that qualitative analysis should focus on the essence and importance of what is noticeable in the data and how it can be interpreted in the most eligible way by means of identifying significant segments of data. Layder (1998:166) explains that "prior concepts and theory both shape and inform the analysis of data which emanates from ongoing research at the very same time that the emergent data itself shapes and moulds the existing theoretical materials". In order to identify and categorise segments of data to be able to generate codes that attribute interpreted meaning to the research data (Saldaña 2013), I learned from Layder (1998) and Yin (2014) to rely on the theoretical propositions derived from literature that led to my case study and research questions. I was thus guided by my research questions, observation schedule and interview guide, which were backed by concepts and ideas derived from literature, to identify codes and

themes found in the data. As advocated by Saldaña (2013), I found that one of the most critical outcomes of qualitative data analysis is to interpret the synergy between the individual components of the study.

In concluding this section, I learned from Yin (2014) how to ensure that my analysis of the research results was of the highest possible quality within the limitations of my study. First, I showed that all the data had been attended to. Second, the analysis addressed the most significant aspects of the case study, which are the developmental nature of creativity and its mediating role between content knowledge and pedagogical practice within the context of initial teacher education. Third, I used my own prior, expert knowledge in the case study. I therefore made use of all the data gathered by means of data triangulation (Yin 2014). During the process of analysis, I stayed focused on my research questions and did not deviate from the essence of my study. I therefore could find answers from the collected data to interpret the perceptions of and meanings made by the respondents in relation to the overall aim of the study (see Chapter 5).

3.7 SUMMARY

The purpose of this chapter was to give an overview of the research design and research methodology used in this study.

In order to understand how creativity in education was experienced and perceived by a selected group of geography PGCE students from one university in South Africa, I conducted a qualitative case study research from an interpretative perspective. Although the research findings do not pose to be generalised to a larger population, it may provide new insights that can inform initial teacher education in higher education institutions in South Africa.

Data was gathered by means of questionnaires, lesson observation and semi-structured interviews. The individual interviews were audio-recorded and transcribed. During the lesson

observation, written field notes were taken and the lessons and discussions thereof were also audio-recorded, although these recordings were not transcribed. The qualitative data was analysed, which involved the coding and classification of the data into categories and themes to build grounded theory.

In the next chapter (Chapter 4), the results of the research will be discussed. Hence, the analysis process will be unpacked to explain what steps were taken to find answers to the research questions. The final chapter (Chapter 5) will discuss and interpret the results of the study and draw some conclusions and highlight implications for theory, policy, practice, and future research.

CHAPTER 4 – RESULTS AND DISCUSSION

4.1 INTRODUCTION

The purpose of Chapter 4 is to record the analysis of the data and present and discuss the findings that were generated during this process. This study followed a case study methodology and the qualitative data was generated by using questionnaires at the beginning of the study period, lesson observations during the course of the study, and in-depth individual interviews at the end of the study period. The data was analysed by means of content and thematic analysis. I identified significant segments of data and then developed an organising scheme to sort and organise the data (Table 4.1). Although I was primarily guided by the emergent data during the process of analysis, I relied on the theoretical propositions derived from literature (see Section 3.6) that had led to my case study and research questions when I examined, compared, conceptualised and categorised the data.

The results obtained in the process and which is presented here, focus on what the respondents' perceptions of creativity were at the onset and the end of the research period; how they integrated pedagogical content knowledge and creativity during their institutional practicum and in their practical teaching sessions at schools; and how, according to the respondents, creativity can be contextualised within initial teacher education to improve teaching and learning. This outline provides a structure for the interpretation of the data.

The rest of the chapter is organised as follows: demographic information about the respondents that serve as a backdrop for the actual findings are presented in Section 4.2 to provide context to the analysis process as described in Section 4.3.

4.2 A DEMOGRAPHIC OVERVIEW OF THE RESPONDENTS

Some explanation of the unique South African context in which the respondents found themselves seems necessary at this point. The university where this study is situated used to cater for white Afrikaans-speaking students only during the pre-1994 Apartheid regime. Currently, students from diverse cultures, languages and backgrounds share the same learning space and accompanying privileges. It is with this as background that I refer to certain residential areas and status of schools in the sections to follow. I regard this particular historical influence to be an important contextual factor, because it refers to influences that shaped the respondents' perspectives and therefore to some degree influenced their experiences at university and at the schools they completed their teaching practicums. The respondents are representative of different population groups, namely white, black and coloured. Some of them grew up and attended schools in so-called previously disadvantaged communities, while others grew up and attended schools in middleclass areas.

All of the respondents completed a BA degree with geography as one of their majors, while one also holds an honours degree in geography. Early in the first semester of the academic year, I invited each respondent for a cup of coffee and an informal conversation. These were not deemed as formal, structured interviews and thus there were no apparent structure to these conversations. Each conversation lasted for about 30 minutes and I made field notes after the respondent had left – I purposefully did not take notes during the conversation as to provide for a relaxed and open atmosphere. The purpose was to get to know my respondents and their prospects for the rest of the year. I asked them to tell me about their background and future plans. Some of the respondents provided only basic information, while others provided me with more in-depth information. I allowed the conversations to flow as directed by the respondents. The information gathered in these conversations situated the respondents as individuals within their different backgrounds. I will now refer to the information recorded in my field notes to introduce the respondents and in order to ensure their anonymity I refer to them as Respondent 1 (R1) to Respondent 12 (R12).

Respondent 1 (R1) is a coloured female student who grew up in the Eastern Cape Province of South Africa. She attended a well-resourced ex-model C school¹⁹ in an urban area. She described her schooling experience as negative and explained that she decided to take the PGCE course as a “back-up”, as she actually wanted to find employment as a municipal inspector. She mentioned how the negative feedback she received from her friends who were serving teachers influenced her low levels of motivation for the profession. She explained that she had a low self-esteem and that she was studying drama²⁰ to become more confident.

Respondent 2 (R2) is a white male student who grew up in a small coastal town on the west coast of the Western Cape Province in South Africa. He matriculated at a local high school in a small farming community. He presented himself as a confident, motivated and well-mannered young man who smiled frequently. He explained that his first choice was to do an honours degree in geography, but he was not accepted into this programme. His second choice was the PGCE programme and he mentioned that he wanted to specialise in sports training²¹ for disabled learners²², as he had a disabled cousin who lived in a neighbouring country. He also wanted to teach abroad eventually.

Respondent 3 (R3) is a white female student who grew up in a town in the Western Cape Province close to the university where this study is situated. She attended a well-resourced primary school and matriculated at a prestigious high school. She was a provincial sports player at the time and wanted to specialise in sports coaching. She dressed accordingly and her physical condition was that of an athlete. She at first wanted to do an honours degree in sports

¹⁹ Ex-model C schools were public schools that were for whites only during the Apartheid regime.

²⁰ PGCE students have at least two curriculum specialization areas – in this case, Respondent 1 had geography and drama.

²¹ Respondent 2 and Respondent 3 had geography and life skills as curriculum specialization areas. (Sports coaching is a division of life skills.)

²² A *learner* refers to a school-going child (Grades R to 12) in the South African context, while a *student* refers to a tertiary or university student.

science, but was not accepted for the programme. Her passion was sports coaching rather than geography teaching.

Respondent 4 (R4) is a coloured male student who grew up and matriculated in a small rural town in a farming community in the Northern Cape Province of South Africa. His father worked as a foreman on a farm, while his mother was a housewife. He had one younger sibling. He initially wanted to study law and one of his undergraduate subjects was political science. Seemingly, his parents directed him to become a teacher – even though that was not his first choice. He seemed rather unsure of himself and his overt dress code and hairstyle (that would not be acceptable in a professional teaching context) indicated to me that he was still somewhat immature. It seemed that he was still getting to grips with the transition from his rural background to the different lifestyle of a university student, even though he was already in the fourth year of his post-school studies.

Respondent 5 (R5) is a white male student with a strong Dutch accent. His Dutch parents moved to South Africa before his birth – he had never lived in the Netherlands himself. He came across as well mannered, religious and conservative. He attended a Christian primary school and matriculated at a highly acclaimed ex-model C school in an urban suburb of the greater Cape Town metropolis of South Africa. Contrary to my first impressions of him, he was talkative, open and engaged easily during our conversation. He seemed excited to become a teacher and mentioned that he enjoyed languages, history and geography as fields of interest.

Respondent 6 (R6) is a white female student who grew up in an urban suburb of the greater Cape Town area of South Africa and matriculated at a highly acclaimed ex-model C school in that area. During her school career, she also attended a school for learners with special educational needs as she needed speech therapy, but during our conversation she did not present with any difficulty in this regard. What stood out from our conversation was the friendly manner in which she had made and kept eye contact. She grew up as part of a family that was regularly mentioned in the media, as her father was a well-known national sportsman from a

few decades ago, while her sister was a well-known international model and sportswoman at the time of the study. She, on the other hand, took more after her mother, who was an artist. She emphasised her interest in the arts and explained that she wanted to work in advertising and only enrolled for the PGCE as a “back-up”.

Respondent 7 (R7) is a black female student who had lived in a mainly coloured suburb in the Cape Town area since the age of four. While isiXhosa was her first language, she was fluent in both English and Afrikaans. Her father was a crane operator and her mother a domestic worker. She was the youngest of five children. She matriculated at a high school with Afrikaans and English as languages of instruction. During our conversation she spoke excellent English and at times spontaneously switched to Afrikaans. She was excited to tell me that she was head girl of her primary school and that she had excelled in public speaking at high school. She also contributed to the school newspaper and viewed herself as a good performer. She asserted that she was very independent and came across as a driven, ambitious and confident young woman. She decided to enrol in the PGCE programme as she did not qualify for an honours degree in geography.

Respondent 8 (R8) is a 30-year-old coloured female student. She lives in an urban area in the greater Cape Town area with her parents and her six-year-old daughter. Her parents assisted in raising her child, as she was not married and had no relationship with the father of her daughter. Although the father had access to the child, he did not support her financially. She completed a BA in Drama in 2004, and in 2008 completed Geography III. She worked as a data capturer at a retail store and saved money to pay for her PGCE studies. During the conversation she frequently referred to her daughter. She seemed determined to empower herself. She also expressed her dream to establish a theatre in her community. She referred to her, as she called it, “manipulative personality” and also indicated that she was aware that she did not react positively to critique. She mentioned that she was headstrong and that she did not like to make mistakes. During our meeting, she took over the conversation and I therefore listened most of the time.

Respondent 9 (R9) is a white female student. She grew up in a neighbouring country where her divorced parents still live. Her father was a farmer who struggled financially and rented out some of his land for extra income. Nevertheless, she had a supportive family who had funded her studies. She told me that she had a very strong interest in geography and that her mother was a geography teacher. She needed two more modules in geography to be accepted for honours in geography and therefore decided to enrol in the PGCE course. She also mentioned that she was starting to enjoy teaching. Her ultimate goal was to become an academic and she wanted to continue her studies to doctorate level. She seemed like a determined person with a strong vision of the future. She was confident and smiled a lot.

Respondent 10 (R10) is a white female student. She grew up in a rural town in the Western Cape Province of South Africa, a farming community in the semi-arid Karoo area. Her father was a minister in an Afrikaans church, while her mother was a teacher. She seemed driven, focused and task orientated. She was head of the student council of the university residence where she stayed and was also head girl of the high school she had attended. Our conversation was short and direct. She told me that she always wanted to become a teacher. She did not want to follow the B.Ed. programme (which is focused on primary school teaching) and chose to go the route of obtaining an undergraduate degree leading to a postgraduate teaching qualification. Although very polite and friendly, it was clear that she had no time to waste.

Respondent 11 (R11) is a white male student. He grew up in a small rural town in a very small farming community in the Northern Cape Province of South Africa. His parents got divorced when he was 11 years old. This seemingly still had an influence on him as he philosophically elaborated on it during our conversation. He matriculated at a prestigious boys' school. His undergraduate studies were funded by a bursary scheme for Afrikaans speaking student teachers who needed financial support. He told me about his hobbies that clearly showed a love for nature. He never referred to his future plans or reasons why he was following the PGCE programme during our initial conversation.

Respondent 12 (R12) is a white female student with English as her first language, although she was fully bilingual (Afrikaans). She matriculated from a school in a large mining town in the Gauteng Province of South Africa. She completed her honours degree in geography in 2010 and afterwards worked in the Middle East for a year. She used the time to tour through Europe. She was confident that she wanted to teach and therefore returned to her alma mater and enrolled in the PGCE programme. She seemed confident and determined about her future plans.

Only Respondent 5, Respondent 8, Respondent 10 and Respondent 12 enrolled in the PGCE programme because they wanted to become teachers. Respondent 11 did not mention his reason for enrolling in the programme while the rest of the respondents indicated that the PGCE programme was their second choice (because they did not qualify for an honours degree or because they had other plans). I was curious about how their apparent lack of passion for the teaching profession might influence the latter group of respondents' use of creativity during their teaching practicums. The above information was thus useful later in the study when I observed the lessons presented by the respondents, as the influence of their individual backgrounds became apparent to varying degrees (see Section 4.3.3).

4.3 ANALYSIS OF THE DATA

The process of data analysis firstly entailed the organisation of the different sources of data into manageable sections (see Section 4.3.1). These sections were used as categories to unpack the themes that emerged in accordance with what was found in literature (see Section 4.3.2). Finally, the research findings per identified theme are presented in Section 4.3.3.

4.3.1 Preliminary organisation of the data

In order to provide structure to the process of data analysis, I drew up an organising scheme to sort and organise the data (see Table 4.1). This was done in accordance with the stance I proposed in Sections 3.6 and 4.1, namely that the theoretical framework as argued in Chapter

2 provided the structure for the study and therefore offered a logic format to organise the data into manageable sections for the purpose of content analysis. The manner in which the sets of data are organised (e.g. 1Ai, 2Civ, 3Bii) further allows for an audit trail of the analysis process, as well as clear cross-referencing during the process of categorising the qualitative data. I furthermore used colour to highlight each piece of raw datum as indicated in Table 4.1 – this was done to the raw data of each respondent across the different sources of data. Through this process only the data relevant to the inquiry of the study was selected for further analysis. This process of summarising the data provided a comprehensive overview of all the data and assisted me to ensure that no data was left unaddressed during the coding and analysis processes that followed. As proposed by Merriam (1998) and Saldaña (2013), the researcher typically uses an analytical lens in subjectively reviewing, coding and analysing qualitative data. In the case of this study, the theoretical framework that was steered by the literature, the research questions and my personal expertise and involvement in the field served as lenses through which the data was filtered. During the initial phase of content analysis, I used pre-chosen eclectic and theoretical codes (Saldaña 2013) based on concepts in the theoretical framework. These preliminary codes employed to organise the data (Table 4.1) was thus purposefully named after Rhodes's (1961) multifaceted structural framework of creativity, consisting of the Four Ps (person, process, product, and press). This was done because it related to my personal expertise and involvement in the field and therefore gave me a comforting grip on the magnitude of data. Adding to the preliminary codes, some additional initial codes naturally emerged as I worked through the data (Rule & John 2011; Saldaña 2013).

After I organised all the raw qualitative data derived from the questionnaires, lesson observations and individual interviews, I started allocating codes to portions of text that had meaning in terms of the focus of the study through a technique that is called open coding (Henning *et al.* 2004). According to Rule and John (2011), the process of coding allows the researcher to get close to the data, while Saldaña (2013:5) explains that “[c]oding is the transitional process between data collection and more extensive data analysis”. Saldaña (2013:4) furthermore elaborates that “[i]n qualitative analysis, a code is a researcher-generated construct that symbolizes and thus attributes interpreted meaning to each individual datum for

later purposes of pattern detection, categorization, theory building, and other analytic processes”. When moving forward with the analysis process, I was guided by Saldaña’s views on the purpose and qualities of qualitative codes when he advocated that:

... qualitative codes are essence-capturing and essential elements of the research story that, when clustered together according to similarities and regularity (a pattern), they actively facilitate the development of categories and thus analysis of their connections. Coding is thus a method that enables you to organize and group similarly coded data into categories or “families” because they share some characteristics – the beginning of a pattern (Saldaña 2013:8-9).

Table 4.1: Organising scheme to sort and organise the data

	THEORETICAL FRAMEWORK	CATEGORIES OF DATA	SETS OF DATA	CODE
1	CREATIVITY Sources of data: questionnaires at the onset of the study; interviews at the end of the study	1A. UNDERSTANDING 1B. TEACHING 1C. TEACHER 1D. ENVIRONMENT	1Ai) Perception of creativity at onset/end of study 1Aii) Perception of own creativity at onset/end of study 1Bi) Perception of purpose of creative teaching at onset/end of study 1Bii) Perception of most creative lesson observed 1Biii) Perception of most creative lesson presented 1Ci) Perception of most creative teacher at onset/end of study 1Cii) Perception of least creative teacher 1Cii) Perception of self as creative teacher 1Di) Perception of the physical creative environment 1Dii) Perception of the affective creative environment	CREAPROD ²³ CREAPROC CREAPERS CREAPRESS
2	PEDAGOGICAL CONTENT KNOWLEDGE Sources of data: lesson observation during the course of the study; interviews at the end of the study	2A. ENVIRONMENT 2B. TEACHING 2C. TEACHER 2D. OUTCOMES	2Ai) Atmosphere 2Aii) Facilities 2Aiii) Support 2Bi) Strategies 2Bii) Technology 2Biii) Collaboration 2Ci) Content knowledge 2Cii) Preparation 2Ciii) Rapport 2Di) Active learning 2Dii) Collaborative learning 2Diii) Creative contribution	PCKPRESS ²⁴ PCKPROC PCKPERS PCKPROD
3	INITIAL TEACHER EDUCATION Sources of data: observation during the course of the study; interviews at the end of the study	3A. CURRICULUM 3B. ENVIRONMENT 3C. LECTURERS 3D. OUTCOME	3Ai) Prepared for profession 3Aii) Creativity in curriculum 3Bi) University lectures 3Bii) Practical teaching 3Ci) Modelling of creativity 3Cii) Feedback after lesson observation 3Di) Perception of role of creativity in ITE	ITEPROC ²⁵ ITEPRESS ITEPERS ITEPROD

²³ CREAPROD = Creative Product; CREAPROC = Creative Process; CREAPERS = Creative Person; CREAPRESS = Creative Press

²⁴ PCKPRESS = PCK Press; PCKPROC = PCK Process; PCKPERS = PCK Person; PCKPROD = PCK Product

²⁵ ITEPROC = ITE Process; ITEPRESS = ITE Press; ITEPERS = ITE Person; ITEPROD = ITE Product

			3Dii) Perception of future impact of creativity	
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Consequently, through the process of content and thematic analysis, I worked with the codes to identify patterns such as similarities, differences and regularity, and grouped the codes logically into categories of meaning, a process that Rule and John (2011) and Saldaña (2013) call axial coding. I then purposefully searched for patterns of meaning amongst the categories to generate themes to identify what specific units of data meant, as directed by Rule and John (2011) (see Figure 4.1). Saldaña (2013:267) explains that “[t]he analytic goals are to develop an overarching theme from the data corpus or an integrative theme that weaves various themes together into a coherent narrative”.

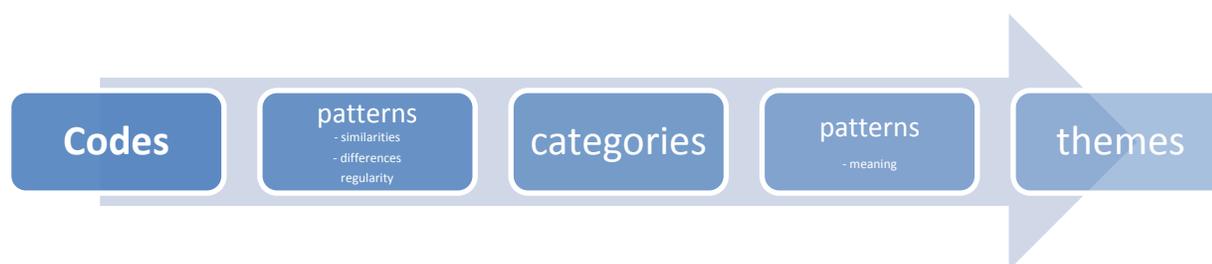


Figure 4.1: Moving from codes to themes of data (adapted from Rule & John 2011; Saldaña 2013)

4.3.2 Categories and themes of data for the purpose of discussion

After organising the data as explained above, I reviewed the different coding categories to synergise the different themes as they manifested across the different data sources. For the purpose of presenting the data in the sections to follow, I classified these themes in accordance with the organisational categories of the study as displayed in Table 4.2.

Table 4.2: Categories and themes of data for the purpose of discussion

CATEGORIES	THEMES
1. CREATIVITY	1A. Definition and understanding of creativity 1B. Creative teaching 1C. The creative teacher 1D. The creative environment
2. PEDAGOGICAL CONTENT KNOWLEDGE (PCK)	2A. The learning environment 2B. Pedagogical strategies and practice 2C. Content knowledge 2D. Learning outcomes
3. INITIAL TEACHER EDUCATION (ITE)	3A. The PGCE curriculum 3B. The university as learning environment 3C. The influence of the lecturers 3D. Creativity in ITE

In the next section, the research results are discussed. Each category of data is introduced and explained in relation to the theoretical propositions that led to the study (Chapter 2) by addressing the themes within each category. In doing so, reference is made to the data from the different sources.

4.3.3 The research results

The results obtained in the research process and which are presented here focus on what the respondents' perceptions of creativity were at the onset of the research project, how they integrated pedagogical content knowledge and creativity during their institutional practicum and in their practical teaching sessions at schools, what their perceptions were of creativity at the completion of the research project, and how creativity can be contextualised within initial teacher education as mediator between content knowledge and pedagogical practice. This was

viewed specifically within the boundaries set by the small group of respondents over a timespan of one academic year.

In the case where direct quotations of respondents are used, it has to be kept in mind that most of the interviews were transcribed from Afrikaans into English. The same applies to the questionnaires completed by the respondents. Otherwise, all quotations are verbatim. Apart from the citations and comments from the different data sources, my own comments serve as foundation for the synthesis that follows in Chapter 5 to ultimately provide answers to the research questions of the study.

4.3.3.1 Creativity

As was maintained throughout, the purpose of this study was to explore the respondents' perceptions of creativity as mediator between content knowledge and pedagogical practice. Another focus was the developmental nature of creativity. In this subsection, four different themes relating to the respondents' *perceptions of creativity* were explored as it *developed* over the course of the academic year: the way the respondents defined and understood creativity, their views on creative teaching and the purpose thereof, the qualities and skills of a creative teacher as perceived by the respondents and their understanding thereof in relation to themselves as future teachers, and how they perceived and described the ideal creative learning and teaching environment. These themes are interlinked and discussed holistically in the paragraphs below.

In Section 2.3, I referred to a synergy of definitions of creativity found in the literature that I regard fitting for the purpose of my study. Accordingly, creativity is a human capability or skill that can be developed, requires action, needs both divergent and convergent thinking and processes, results in novel, appropriate and useful responses or products, and needs to be assessed within a specific social context when appropriate observers independently agree that the outcome is creative. From the questionnaires it transpired that none of the respondents received any formal instruction on creativity prior to the study. Their definitions and

understanding of creativity at the onset of the study therefore need to be viewed with this in mind.

Some common elements were found amongst the respondents' definitions of creativity at the onset of the study with some respondents indicating that being creative meant making or creating something new, different, extraordinary, attractive, more interesting, or better than was previously the case. Respondent 10 went further and suggested that creativity "is a way of thinking to come up with new and original ideas never thought of or seen before". Respondent 6, Respondent 7 and Respondent 10 used the same phrase to describe a creative person as someone who "thinks outside of the box". Respondent 5 said that creativity required thinking that is "different from the norm". Both Respondent 4 and Respondent 11 used "fun" to describe creativity, while "entertaining" was added by Respondent 12, and Respondent 10 highlighted "energy" and "dynamic" as descriptors of creativity. Respondent 10 included features like music and movement to describe creativity and Respondent 3 noted that drawing (visual art) showed creativity. Respondent 10 referred to everyday creativity (see Runco & Albert 2010) when she claimed that "[c]reativity is sometimes observable through the ordinary things that you do in a different way". Respondent 12 pointed to the uniqueness of each person's creativity when she at first argued that creativity "is the way in which an individual expresses him/herself", but then concluded that "[t]here is – in my eyes – no real definition for creativity because each person has a unique way of showing creativity". When revisiting the definition of creativity as presented in the first paragraph of this section, it seems that most of the abovementioned responses at the onset of the study refer to divergent thinking and processes that needed action. Respondent 11 added the evaluative and comparative nature of creativity and Respondent 8 highlighted the developmental nature of creativity:

Finding a solution to a problem that is both pleasing and functional (R10).

Being creative is a skill that has to be acquired (R7).

Some respondents linked their definitions of creativity to teaching, although teaching was not explicitly mentioned in the question put to them at the onset of the study. Respondent 8

mentioned that creativity may contribute to a “positive atmosphere” while Respondent 7 added that creativity may “improve the learning environment by making the boring classroom flexible and fun”. Most of the respondents agreed that creative teaching may increase learners’ interest in and love for a subject (R3, R6, R7, R8, R9 and R12). Collectively, creativity was perceived as providing the spark that transforms subject matter and pedagogy for more effective teaching and learning (or PCK as put forward in Section 2.5):

Creativity is the methods used to explain concepts and make it interesting (R10). To bring forth or across knowledge in interesting and capturing ways (R1).

Something used to enrich information. It means to make something attractive, so that people will be more interested in using it or learning something about it (R2).

When a person goes out of his way to make something much more interesting, like making a poster about clouds and show the learners how they look (R3).

A mode of presenting that is new and entertaining (R11).

Other respondents emphasised the active and practical elements that creativity brings to teaching:

To explain concepts in a practical way (R8).

Introducing practicals [sic] and exercises that will require thought and understanding but at the same time spreading awareness (R7).

However, not all of the respondents could recognise the possible benefits of creative teaching at the onset of the study. Some respondents for instance referred to the lowest levels of Bloom’s Taxonomy (Bloom *et al.* 1956; Anderson & Krathwohl 2001) only when they indicated that

creative teaching may increase the remembering and understanding of new content (rather than higher levels like evaluating and creating). Respondent 5 even warned that “[c]reativity should not be incorporated to the extreme”. By the end of the study, changes in respondents’ perceptions were observed. For instance, Respondent 1’s perceptions of the benefits of creativity in teaching evolved from mere remembering and understanding new content as benefits of creative teaching to higher order and creative thinking (as discussed in Section 2.4.2) like exploring, motivation, openness and freedom of thought. Respondent 3 and Respondent 4 argued that creativity in teaching could bring about much needed pedagogical change in the conceptual and information age:

Learners need a different way of teaching and learning (R3).

Today’s learners don’t listen – they need something different (R4).

Respondent 10 looked at the bigger picture and elaborated that “[s]chools need new input and energy – they need teachers who can bring something new”. Respondent 7 and Respondent 10 suggested that creativity in teaching provided the element of anticipation to a lesson (as advocated by Torrance & Safter 1999). The valuable active nature of creative teaching was agreed upon by Respondent 9, Respondent 10 and Respondent 13, while Respondent 9 elaborated that creative teaching facilitated interaction, experimentation and the practical application of knowledge. Respondent 2 furthermore proposed that creativity could be utilised to design differentiated assessment strategies. Respondent 9 concluded that it was important to teach learners (and by implication students) creative, critical and reflective thinking skills in order for them to become independent learners. Finally, creativity was contextualised within initial teacher education when Respondent 3 insisted that “[s]tudents must learn how to think creatively” and Respondent 12 pointed to the need for university lecturers to incorporate creative pedagogies:

Academic articles and theory don’t teach us to change our teaching skills – it actually puts us in a specific frame of mind. There’s a huge gap between the theory and how to implement it (R11).

It was important to learn how the respondents rated their individual creative ability at the onset of the study. This information was useful to me as it provided insight into their levels of perceived competence and confidence as related to creativity and it assisted me when I prepared the creative tutoring sessions that I presented to the respondents a few weeks later. I therefore asked them to indicate on a scale of 1 to 10 how creative they regarded themselves to be (where 10 indicated the most creative)²⁶. The findings indicated that more than half of the respondents regarded themselves to be creative according to the scores they allocated to themselves, as well as their written comments that supported these claims. Some respondents were hesitant about their creative abilities at the beginning of the study and indicated that they have not yet acquired the knowledge or creative skills at that time. Respondent 3 found it “difficult to think creatively” and Respondent 7 felt that she was “still in the process of developing the skill”. Respondent 11 was confident that he could “contribute to successful new ideas, but have not yet done so”, while Respondent 8 could not “apply it practically”. Respondent 5 confessed that he was not yet confident to practically incorporate creativity in the classroom”. On the other hand, Respondent 6 indicated that her perceived level of personal creativity was 10/10. She saw creativity as a way of doing things (similar to pedagogy in the teaching sphere) to attain her interior design outcomes:

Creativity is my passion. I love being creative and it excites me. After I get my PGCE I plan to study interior design (R6).

She elaborated that she, for instance, created tables and couches by welding old school chairs together. As observed, she maintained this confidence throughout the study period and displayed her creative abilities during her practical teaching, where she not only received the highest marks from her lecturer, but also displayed the ability to use creativity as mediator

²⁶ As I stated in Section 2.4.4, the evaluation or assessment of creativity has always been a point of contention. For the purpose of my study I did not deem it necessary to formally measure the respondents' creative potential by means of a test like the Torrance Test for Creative Thinking (TTCT) (Torrance 1987; Kim 2006). Rather, I wanted to know what their perceptions were of their own creativity at that stage of the research. Their responses were subjective and in relation to their experiences of and knowledge about creativity at that stage.

between content knowledge and pedagogical practice²⁷. During the interviews at the end of the study, the way in which she reflected on her perceived creative ability at that time supported the developmental theories of creativity (as explained in Section 2.4) and her willingness and openness to learn (referring to some of the qualities of a creative person as explained in Section 2.4.2):

I always thought it (creativity) was in the art direction like creative decorating, the more visual aspect. But during this year I've learned a lot more, like it's more like [sic] coming up with ideas that people don't see ... like coming up with ideas that's outside the boxes [sic] ... holistic ideas (R6).

Likewise, at the end of the study, most of the respondents seemed to be more confident about their understanding of creativity. At first, Respondent 2's initial perception was that his personal creativity was as low as 2/10. This perception was shaped by his understanding at that time that creative people were artistic:

I'm not an artist. I don't know how colours work together. And I consider myself not to be creative (R2).

It was obvious that he was not yet able to acknowledge his own creative abilities when he elaborated on the most creative idea he ever had. He got that creative idea when he went fishing:

To build a chair that has a built-in cooler box under the chair or in the armrest – a portable chair that will mainly be used for camping. I sat on my cooler box, but after a few minutes it became uncomfortable. So I sat there thinking how I could improve the cooler box structure to hold me and how I could make it more comfortable ... two-in-one, there is more space for other equipment (R2).

²⁷ In Section 4.3.3.2 the development (or not) of the respondents' creative ability as observed during their teaching practicums and as reflected upon by them will be discussed.

However, at the end of the study, he was confident and smiled while reflecting on his understanding of creativity at that point. He referred to the notion that everybody had the potential to be creative (as discussed in Section 2.3) and that creative teaching required planning and relevance (Section 2.4.3). He also verbalised his changed perceptions on what creativity entailed and referred to his increased capability to purposefully employ creativity to present content knowledge by using different pedagogies:

I first thought only artistic people were creative, but had since realised that creativity is what you do – creativity has to do with being practical. Creativity needs planning and knowing what needs to be addressed. I applied creativity practically in my lessons. People think creativity is for younger children but you can use it for senior students. When I planned, I could come up with different ideas and strategies. I designed activities for the learners to enjoy so that all of them could participate and experience success (R2).

Respondent 2 thus referred to heightened PCK when he was able to use creativity where content knowledge and pedagogical knowledge intersected. Similarly, some respondents referred to improved PCK when they claimed that they implemented creativity during their teaching practicums. At the beginning of the study Respondent 4 admitted that she struggled to be creative. At the end of the research period she reflected that because she was “a quiet person”, she realised that she had to purposefully “think outside my box to be more creative” and added that “[c]reativity helped me to think about a different approach to my lessons ... how to make it pleasing ... to stretch myself to make the lesson enjoyable for the learners” (R4). Respondent 1 came to value the role of creativity in PCK:

I was personally made aware of how to make my lessons creative ... I didn't learn this anywhere else and I wasn't gonna [sic] be aware of how important it was to make my lessons creative (R1).

Respondent 7's response pointed to the developmental nature of creativity as well as to the limited exposure the respondents had to creativity during the study period:

I couldn't combine education and creativity ... I can now a little bit more than I could at the beginning of the year ... I now know what I can bring to the subject that I teach (R7).

Some respondents who regarded themselves to be creative at the beginning of the study commented on their improved understanding of creativity during the interviews at the end of the study period:

I knew that I am creative, but I have learned a lot about creativity. It gave me confidence (R3).

I have learned that there are different forms of creativity (R10).

Although a few respondents refrained from reporting any changes in their perceived personal levels of creativity during the study period, I have observed major strides in their use of creativity during their teaching practicums (see Section 4.3.3.2).

I was curious to find out what the respondents' perceptions and expectations of the qualities and skills of a creative teacher were and also if their visions of themselves as future teachers included some creative qualities. I asked the respondents to describe the creative teacher both at the onset and completion of the study period. Their written comments in the questionnaires at the beginning of the study period were to the point. Collectively, the respondents described the creative teacher as someone with basic creative thinking skills (see Section 2.4.2). Keeping in mind that the respondents did not have any prior formal creativity instruction, I prefer to use their descriptive words in reporting on their perceptions. They perceived the ideal creative teacher as someone who "has different perspectives" (R10), "improves things" (R6), "can change the textbook content into exciting stimuli" (R8), "does things different to the norm" (R12), "does the ordinary in original ways" (R11), and "takes risks, explores and pushes the limits"

(R1). Respondent 3, Respondent 4, Respondent 9 and Respondent 10 were confident that a creative teacher thinks outside of the box, while Respondent 1 and Respondent 6 agreed that a creative teacher comes up with new ideas. Respondent 2, Respondent 3, Respondent 4, Respondent 5 and Respondent 10 attributed artistic talent to creative teachers, while Respondent 4 added that creative teachers were “weird”. The respondents also used affective qualities to describe the ideal creative teacher as perceived by them at the onset of the study like engaging (R7, R9 and R12), interesting (R4, R5, R7 and R9), fun (R6), inspiring (R12), and enthusiastic, positive and cheerful (R5). Accomplishment in subject knowledge was highlighted by Respondent 11 as a prerequisite to be considered a creative teacher and some respondents were of the opinion that the ideal creative teacher would not be textbook-bound (R10), but would rather employ creative teaching strategies like visual stimulation (R3, R6, R9 and R12), unorthodox presentation skills (R11), surprise (R7), interaction, movement and music (R10), practical illustrations (R11), and original learning activities (R6). As was mentioned in the previous paragraph it was interesting to note that the respondents were able to link creativity to PCK at the early stage of the study.

I asked the respondents if they could recall any creative teachers or lecturers from their individual experiences. Some respondents (R1, R3 and R9) could not remember or name a creative teacher or lecturer, both at the onset and completion of the study. Four respondents, however, were confident about identifying a creative teacher both at the beginning and the end of the study. Three of these four respondents (R10, R11 and R12) had attended so-called ex-model C schools (see Section 4.2), which were probably better resourced, managed and had better trained teachers than many other schools. On the other hand, Respondent 9, who could also identify a creative teacher, was from a school in a previously disadvantaged community. She fondly spoke of her drama teacher who allowed his learners freedom to create their own productions and design their own sets; he furthermore inspired her to study drama at university and to open a theatre in her community. This example relates to the theory that creativity is not exclusive (Osborn 1953; Guilford 1975; Sternberg 1985, 2010; Gardner 1993a; Csikszentmihalyi 1997), as discussed in Chapter 2. Other respondents who failed to name creative teachers at the beginning of the study could do so at the end of the study (R2, R4, R5

and R7), which could be indicative of their, although limited, exposure to creativity theory and practice during my tutoring sessions, as well as the exposure they had during their teaching practicums at schools that could have led to their probable subsequent changed perspectives. At the end of the study period when the respondents described the teachers that they perceived to be creative, there was still a strong focus on creative thinking skills (as discussed in Sections 2.4.2 and 2.4.3.1) to describe those teachers. Aspects like fluency, flexibility, elaboration, originality, openness, freedom, focus and sensitivity, risk-taking, passion and motivation were mentioned. The creative teacher's attention to the atmosphere of the learning environment and the physical appearance and decoration of the classroom (as discussed in Section 2.4.1) were also mentioned:

My grade five teacher was really creative. The whole classroom was colourful. She used to give us sweets when we were good. Everything she did was just fun (R6).

They (creative teachers) were very excited about their subject and the classroom also displayed creativity (R1).

The classroom had interesting posters on the walls (R4).

Creative teachers' use of diverse and even unorthodox ways to provide the creative spark in linking content and pedagogy (PCK, as discussed in Section 2.5) were observed by some respondents:

My high school geography teacher used to climb up the classroom wall to illustrate gravity and the principle of "the higher you go the colder it gets". He also used to kick a desk to show the epicentre of an earthquake and the falling stationary as its impact (R11).

One of the student teachers used a video for an English listening test instead of reading the content herself (R12).

The English teacher at the school I did my practicum used ways to teach that I have not seen before. She also gave the learners freedom while still maintaining discipline. The learners reacted positively (R10).

The lessons were presented in different ways, like one day a group activity and the next day something totally different, like a PowerPoint presentation (R4).

Some other examples of creativity that were displayed by creative teachers as perceived and observed by the respondents included the use of technology, different resources and media, the use of analogies and real-life applications, as well as active and co-operative learning strategies (as discussed in Section 2.4.4.3):

The geography teacher ... although he mainly used the textbook, he succeeded in relating the content to the learners' context and environment. He involved them in discussions on what might happen in their community. He got them thinking creatively (R2).

She got the learners actively involved in the lesson. They had to learn new words in their third language and she would join them in practicing the pronunciation of it by breaking the words into syllables – they had to clap their hands at each syllable. She also made up rhymes with the new words and the learners had to act it out (R5).

The geography teacher explained the layers of the earth by comparing it to a boiled egg with different layers ... She let the learners look around the room and try to think where all these things came from ... In that way she made the lesson interactive and engaged the learners (R7).

The drama teacher first demonstrated to the learners how to set up a production and then gave them the freedom to create their own productions. They had to do everything themselves (R8).

The biology teacher used a plastic skeleton and a real cow's heart in her classes (R9).

Respondent 11 struggled to communicate his thoughts. My interpretation of it was that he referred to the ability of the creative teacher to reflect on his or her pedagogical content knowledge (PCK) by finding new ways to present similar content over consecutive years:

I kind of wonder if a lesson will still be creative if you have presented it for four years to different groups ... schools tend to focus more on effectiveness than on creativity ... you have to be able to adapt and make it new (R11).

Creative teachers furthermore succeeded in creating a relaxed atmosphere (R3, R4, R5, R7, R8, R10) where “learners feel free to express themselves and share ideas” (R1). The respondents agreed that the most creative teachers exhibited personality traits (see Section 2.4.1) like friendliness (R7, R8, R9, R10, R11) and kindness (R3, R4, R9):

She had a nice personality. The learners engaged with her and they enjoyed her lessons (R4).

She was always friendly and the learners did not hesitate to ask her something. She had a very nice personality and it even showed when she read from the textbook (R8).

Creative teachers also used humour in appropriate ways (R3, R4, R10, R11) and made learning fun (R6, R11) and exciting (R3, R5, R6, R8):

... used an icebreaker or tell [sic] a joke to get the learners involved in the lesson without them realising that they were participating (R3).

... created a relaxed atmosphere by making jokes off the topic without losing control
(R4).

Respondent 11 referred to the creative teacher's attitude towards risk:

My English teacher had authority issues and did not allow the system to confine him
(R11).

While they could identify the attributes and practices of creative teachers they observed, the respondents could also identify and describe teachers who displayed the opposite traits. At the beginning of the study, when critiquing why some teachers might refrain from employing creativity in their teaching, the respondents' opinions on possible reasons correlate well with what is found in the literature as discussed in Chapter 1. The teachers' lack of creative skills and the need for creativity training (R3, R6, R7, R9, R10) were put alongside the fear of making mistakes (R1, R2, R5). Respondent 10 explained that "[t]eachers do not necessarily know what it is that learners would regard to be creative. They may also not realise the value of creativity in teaching and therefore view it as a waste of time". Respondent 4, Respondent 6 and Respondent 11 agreed that some teachers' apparent lack of passion and energy that were needed for creative teaching caused them to become indifferent and stagnated in their teaching strategies after being in the profession for a few years:

I think some of them have taught for so long, they don't feel like being creative anymore. Some of them also feel like they know everything about teaching (R4).

Respondent 8 added matters like curricular, time and professional pressure:

Fear issues of curriculum and time management. Some may be technologically challenged (R7).

During the interviews at the end of the study the respondents were able to differentiate between creative and uncreative teaching and they were aware of the benefits of creativity as mediator between content knowledge and pedagogical practice. When the respondents reflected on teachers they observed who apparently did not use creativity to convey new content to their learners and thus demonstrated lower levels of PCK, some common elements were found. The respondents agreed that these teachers were boring (R4, R5, R6, R10), with no passion for teaching or for their subject (R2, R3, R8, R9, R11). They used the textbook as only resource (R1, R3, R5, R8, R9) and refrained from using different pedagogical strategies (R1, R3, R4, R5, R7, R8, R10, R12) that allowed for active learning (R7, R9, R10, R12) or real-life application of the content (R6, R12). These (uncreative) teachers also did not interact with the learners (R2, R7, R8, R10, R11) and had poor class discipline (R2). Some teachers did not take the effort to decorate their classrooms or keep it tidy (R9, R11). Respondent 11 gave the following description:

The door was without a doorknob – there was only a hole where it was ripped out. There was graffiti written all over the walls and doors and everything was dirty (R11).

The teacher that Respondent 11 referred to above also deliberately refrained from teaching or doing any work in class and the learners had to find assistance from other teachers at the school. Respondent 9 observed a mathematics teacher who never gave the learners the opportunity to do any work in class – he would only demonstrate the work on the blackboard and then give them homework to do. The next day the learners would typically copy the correct answers from the blackboard without any intervention or guidance from the teacher. They therefore could not work independently and most of them never passed any tests or exams, leaving them despondent and demotivated. Respondent 7 reported on a teacher who always shouted at the learners and expected of them to do everything exactly as she expected them to do. The atmosphere was unbearable with the learners being afraid of the teacher and no interaction or cooperative learning taking place.

As a final question during the interviews at the end of the study I asked the respondents what their visions of themselves were as future creative teachers. Their responses were demonstrative of deep reflection and higher order metacognitive thinking (as discussed in Section 2.4.3.2). Their accumulated observations and experiences during the course of the study (and their lives) manifested in the evaluative synergy of their perceptions of the deeper purpose of becoming a teacher. Because of the significance of how the respondents had come to the point of making meaning of their reflections and perspectives holistically, I decided to provide space for each respondent's reply (below) and to use direct quotations for their voices to be heard. They were acutely aware of the possible influence and impact they could have on the futures of their learners. Other commonalities included building positive relationships and creating a learning environment and atmosphere conducive to creative learning. Without elaborating on pedagogical strategies or specific teaching methods, they wanted to succeed in motivating the learners by means of their teaching skills (or PCK) and affective personality traits. Balance was also provided where some respondents focused on effective teaching, discipline and respect. Another strong theme that emerged was that of caring – it was clear that most of the respondents realised the need for genuine commitment and kindness from the creative teacher to bring positive change to the lives of learners, especially those from troubled communities. This notion of the creative teacher expands beyond PCK and the curriculum to creativity as a response to a socially unjust and unequal world:

I want to be an approachable teacher ... that is respected ... that gets the work done. I want to establish an environment where the learners know that we're going to work ... and we're going to have fun. I also want to bring change (R7).

I want to use different ways to enthuse the learners so that they will laugh and enjoy the lessons. I want to be more than a teacher ... I want to build relationships with the learners, to be a mentor to them, to teach them life lessons and to prepare them for life ... to open their minds ... how to think about things (R10).

I want to be an effective teacher ... to let the learners not only understand geography for instance, but to link the knowledge to the world. I want to create a safe environment for learners to share issues with me. I also want to be a fun teacher (R4).

I want to be known as a friendly and fun teacher but at the same time create a culture of work. I want to build relationships with the learners ... interpersonal connectivity (R2).

Someone who clearly cares and who is respected; always ready for action and fun; has positive influence on learners ... more than mere subject knowledge (R11).

I want to be someone who is respected because I clearly care about the learners. I also want to be someone who is open and who has a positive influence (R12).

I want to have some sort of meaning. I want to lessen the gap between where I'm the teacher and you're the learner (R1).

The learners must say this teacher's lessons are creative and fun – we actually want to learn from her (R3).

I want to be like [sic] a really kind teacher, organized, motivated, fun, creative, enthusiastic, exciting, very caring and encouraging (R6).

Respondent 5's concern about his status as teacher was in line with his self-confessed low self-esteem earlier in the year:

I want to be a teacher who can manage good discipline without raising his voice, but rather by gaining the respect of his learners (R5).

Respondent 9 had a strong social awareness and wanted to work in an underprivileged environment where she could bring change. She wanted to focus on parent involvement and uplifting the learners by being role model to them:

A teacher can make or break a learner. I want to make a learner. I want to encourage them to live out their dreams and I will help them to find work (R8).

Respondent 9 was deeply touched by the harsh realities of the learners she had worked with during her school practicum in a crime-ridden area:

I want my learners to know that I love them – that's the main thing. I want to give them everything. Yes, that's it (R9).

It was evident that all of the respondents' perceptions and understanding of creativity in general, creative teachers and creative teaching have developed from the beginning to the end of the study period. There was general consensus amongst the respondents that creativity was a necessary element of PCK to enhance teaching and learning in the 21st Century both at school and university levels. The respondents grew more confident about their creative abilities over the course of the research period and some reported that they purposefully applied creative teaching strategies in the lessons they presented during their teaching practicums at the schools after they had been exposed to the creativity tutoring sessions that I presented. The respondents' descriptions of both creative and uncreative teachers correlated with what was found in the literature, as discussed in Chapter 2 (Section 2.4.2). Only a few respondents could name creative teachers or lecturers from their experiences at school and at university. When the respondents reflected on their visions of themselves as creative teachers, they not only referred to elements of creative teaching that would add to heightened PCK, but also highlighted transformative elements of creativity that go beyond the curriculum (see Section 2.2). In other words, they recognized creativity as a means to deal with social and other problems and wanted to use their position as creative teachers to be change agents and to create encouraging environments and provide opportunities for their learners to better their

future prospects. This relates to the argument presented in Chapter 2 that creative teachers may contribute to the general improvement of basic education on the one hand, and to the ultimate development of a future creative workforce on the other (Pink 2005; McWilliam 2008).

4.3.3.2 Pedagogical content knowledge

As part of my study, I utilised two opportunities to observe if and how the respondents integrated pedagogical content knowledge (PCK) and creativity during their (1) institutional practicum, and (2) practical teaching sessions at schools. In reporting on my analysis and interpretation of these observations I had to also reflect on qualitative data from the questionnaires and interviews, as it provided context to the individual respondents' backgrounds and their related perspectives and perceptions. It has to be kept in mind though, that the respondents were not *expected* to integrate creativity and pedagogical content knowledge – neither by me nor by their university lecturer. If a respondent *chose* to utilise creative teaching strategies during the teaching practicums, it was because of the individual's personal inclination – creativity was not included in the lesson preparation template utilised by the respondents and submitted to their lecturers for formal assessment (Appendix 7). Furthermore, although the respondents were aware of the reason for my presence (my research project), I never gave any indication that I was going to evaluate their lessons or their use of applied creativity during the lessons that I observed. I therefore had to search for and identify creative elements in the lessons observed and thus had to provide some structure for my search, as explained in the following subsection.

In this subsection, four different themes relating to the respondents' *observed integration of pedagogical content knowledge and creativity* during their institutional practicums and practical teaching sessions at schools will be discussed: the way the respondents could create an environment and atmosphere conducive to creative teaching and learning, the respondents' levels of content knowledge as well as the effectiveness of their lesson planning and preparation, the creative pedagogical strategies and methods employed during the lessons, and the creative outcomes to the lesson, if any, that were reached.

As was stated before, the respondents had no experience in practical teaching prior to their institutional practicums (see Section 3.5.2). By the time I observed their practical teaching sessions at the schools, however, they were more informed and experienced. They were halfway through the one-year PGCE programme, attended four creativity tutoring sessions presented by me, observed their peers during the institutional practicums, and worked alongside serving teachers at the schools they were placed at. These factors thus contextualise the comparative and developmental lenses through which I observed the individual lessons. Below, I discuss each respondent's observed lessons in relation to the four themes to report on their observed integration of creativity and pedagogical content knowledge.

Respondent 1 was the first to present her institutional practicum or "fishbowl" lesson (see Section 3.5.2) and therefore did not have the opportunity to learn from her peers' successes and failures. Her observed poor performance during her "fishbowl" lesson could also be related to the negative memories that she had from her school years, as well as the discouraging comments about the teaching profession from her friends who were serving teachers (see Section 4.2). She failed to establish rapport with the learners and to create a positive learning atmosphere. Her voice was very weak and she did not interact with the learners. She was trapped behind the computer and resorted to the use of a *MS PowerPoint* presentation only, while the slides were uninteresting and poorly designed. The lesson had no real structure and was too short. She was quite despondent after the lesson and in two minds if she was to become a teacher.

It was clear that Respondent 1 had learned a lot by the time I observed the lesson she presented during her school practicum. She succeeded to establish creative collaboration by means of dialogue and debate. She also successfully employed different and creative strategies to convey content knowledge to the learners in an enjoyable manner. She stimulated curiosity, exploration, risk-taking, idea generation and problem solving when the learners were invited to discuss and debate the information on the *MS PowerPoint* slides and videos to come up with solutions to real-life problems like predicting earthquakes and inventing ways to better prevent or manage damage caused by earthquakes. Although this was superficial and no

conversion or evaluation of ideas took place, it got the learners to think creatively. They eagerly and actively participated in a non-judgmental way in the debate, while Respondent 1 confidently and casually moved around the classroom, smiling and encouraging elaboration. Unfortunately, this fertile active learning session was ended with a sterile factual pen-and-paper activity where the learners had to find answers in the textbook. The energy dropped and most of the learners did not do the activity, which led to poor class discipline. During the interview at the end of the study period I asked the respondents to reflect on the one lesson they had both observed and presented that they regarded the most creative. Respondent 1 referred to a lesson where she divided the learners into groups. They had to use information from university brochures, choose a career out of a faculty and identify the abilities, responsibilities, skills and requirements needed for the particular course. Each group had to report back. She enjoyed the active nature of that lesson because she could see that the learners were excited. The most creative lesson she had observed was presented by one of her peers. She deemed it to be creative because of many interactive exercises. The learners were excited and the atmosphere was relaxed. The lesson ended with a debate between the male and female learners.

My interpretation of Respondent 1's development from the beginning to the end of the study was that she could, to some extent, identify and apply creative teaching elements and strategies at the end of the study. From being discouraged and despondent after her institutional practicum, she was exhilarated after her practical teaching session at the school and was confident that she wanted to become a teacher. It has to be kept in mind that she was placed at a prestigious English girls' school where she had the opportunity to teach 20 learners who sat at tables for two in a beautifully decorated and spacious classroom that was well resourced with wall maps, a data projector and a screen, which was contrary to her negative memories from her childhood. This, as well as her exposure to (mostly) excellent teachers undoubtedly contributed to her positive experience. In summary, Respondent 1 made huge strides towards purposefully making creativity part of her PCK and it was clear that she was able to recognise creative pedagogies from her own and others' practices. She succeeded in providing the creative spark to get the learners interested in and actively involved with the content when she

allowed for divergent thinking and interactive learning. What stood out most was the positive effect that creative teaching had on her experience of and motivation for teaching.

Respondent 2 demonstrated in both practical teaching sessions that he was indeed more creative than he had regarded himself to be at the beginning of the study (see Section 4.3.3.1). He utilised his natural talent for communication as well as personality traits like friendliness to establish rapport and to stimulate the learners' eagerness to learn. In both instances it was clear that the learners enjoyed his lessons. They respected him as teacher because of his confident command of content knowledge and thorough preparation and they responded by participating in a positive and disciplined manner. He was also able to solve an unforeseen technical problem during the "fishbowl" lesson when the video that was a major part of his lesson seemed faulty. While most other student teachers at that early stage of the year most probably would have panicked, he was calm and rather used the opportunity to successfully verbalise the content of the video in an entertaining and engaging way.

The area in which Respondent 2 had grown most was the way he got the learners to respond and interact during the lesson at the school. Because of the large number of learners (44) in the class, he resorted to the question-and-answer method and managed it in a disciplined and compassionate manner. He gave the learners enough time to respond, while stimulating curiosity, exploration and risk taking. His approach was learner centred and he succeeded in referring to real life situations and applications of the content that was relevant to the learners who were from a culture different to his. The way that Respondent 2's mentor teacher at the school adapted to the needs of his learners had a positive influence on him. He was impressed when that teacher used an article from the local newspaper during a geography lesson and discussed the content thereof with the learners; he allowed and encouraged the learners to discuss their personal awareness of the relevant issues and willingly adapted his lesson plan to accommodate the spontaneous interactive learning that emerged. Respondent 2 also portrayed this kind of sensitivity towards the learners in his class. He for instance accommodated the apparent culture of little or no homework at the school by doing revision in class rather than expecting the learners to do it at home. The homework assignment was also

very short – the learners had to summarise the textbook content and provide their own examples of phenomena, which allowed for reflection and interpretation.

Regrettably, although Respondent 2 succeeded in creating opportunities for the learners to cooperate and respond to his questions, the lesson became boring after a while because Respondent 2 was textbook bound and remained static in front of the class. He also did not allow for interactive learning like group work. This was unfortunate and mainly due to the large size of the group of learners – the classroom was filled to capacity. He also refrained from incorporating technology like he did during his “fishbowl” lesson by means of the interactive whiteboard, *MS PowerPoint* and video. My interpretation of this scenario was that he seemingly fell into the trap of curricular pressure where emphasis was placed on the urgency of covering the content for examination purposes. He for instance frequently referred to specific sentences or paragraphs to be highlighted by the learners – he admittedly cared for these learners from a disadvantaged community and wanted them to do well in the forthcoming test. In summary, Respondent 2 exhibited more creative intention during his “fishbowl” lesson than when he presented his lesson at the school. Nevertheless, if one refers to Gardner’s Theory of Multiple Intelligences (Gardner 1993b), it was clear that Respondent 2 naturally and with great success tapped into his personal strengths of inter- and intra-personal intelligences. He therefore created a warm and friendly atmosphere and easily connected with the learners while they could relate to him. From what he told me, it seemed that he was more creative when he presented physical training lessons and had to adapt his lessons to the scarce resources at the school.

When Respondent 3 reflected on the most creative lesson she had observed, she referred to the way the teacher had used technology (videos) in the class. This aspect became apparent in both her practical teaching sessions. She was well prepared and skilled in operating the interactive whiteboard and prepared excellent *MS PowerPoint* slides and graphics. Her personal childhood experiences when she attended a highly acclaimed high school could also have supported her interest and prior knowledge in this regard. Although the learners were impressed by and thoroughly enjoyed her presentation, Respondent 3 allowed herself to be

trapped behind the computer rather than to engage with the learners for large parts of the lesson during her school practicum. She displayed good content knowledge in both practical teaching sessions. Also, her positive and confident body language and eye contact allowed her to succeed in establishing rapport and encouraging learner participation.

During her school practicum, Respondent 3 intentionally incorporated creative teaching strategies like interactive and cooperative learning. She communicated a sense of enthusiasm and excitement toward the content, asked stimulating questions and supportively responded by elaborating on the learners' ideas. She encouraged positive and non-judgmental dialogue where learners respected one another's comments. Although she could explain difficult concepts, the learners could not always relate to the examples of recycling she had chosen to show them as part of her *MS PowerPoint* presentation. This indicated that she was unaware of or insensitive to the learners' frame of reference and living conditions (that was different to hers). The main focus of the lesson was revision and consolidation of a previous lesson. The activity sheets she prepared for that purpose were clear and to the point and stimulated both divergent and convergent thinking. The learners could choose to work in pairs or individually and had to use their own words and understanding of the concepts to complete the activity sheets. This provided challenging opportunities to stimulate discussion and critical and creative thinking and encouraged learners to accept, acknowledge and appreciate their own creative thinking and to do likewise for other people. However, those learners who chose to work on their own did not take part in the discussion and also did not write down their own ideas on the activity sheet. After Respondent 3 asked for and discussed their feedback, the learners had to copy the correct answers from the whiteboard in open spaces provided on the activity sheet to record the correct information for future use. Although the learners thoroughly enjoyed the lesson, I was not convinced that they really understood the new content at the end of the lesson. However, Respondent 3 succeeded in incorporating different creative teaching strategies in her lesson, which resulted in learner participation, enjoyment and motivation. In summary, Respondent 3 used technology to provide for the creative spark in her lessons. She thus succeeded in securing the learners' interest in the lesson content and also actively engaged

the learners, but failed to facilitate the understanding of the new content (with or without creativity).

As was mentioned in Section 4.2, Respondent 4 did not want to become a teacher at first and he presented as immature in relation to his peers at the university. These two factors were visible especially during his “fishbowl” lesson at the beginning of the year. He did not plan or prepare the lesson properly, was very nervous and did not succeed in engaging the learners – there was no learning activity at all. His knowledge of the content was suspect and the lesson was boring. He used slang language and struggled to explain the content in his second language, which was also the case during his school practicum.

Respondent 4 reflected during the interview at the end of the study that the most creative lesson he had presented was one where the learners had to create their own mind maps on the lesson content. He regarded that to be creative as “it was different from my normal style” – he therefore risked going outside his comfort zone. It was thus not surprising that he included a mind map in the lesson that I observed at the school. However, he did not let the learners create their own mind maps, but rather asked them to verbally generate ideas while he used their responses to create a mind map on the board. He was much more confident than during the “fishbowl” lesson. Although he was still nervous, he smiled easily and made good eye contact. He succeeded in creating a relaxed and accommodating learning atmosphere by tapping into the learners’ humour and stimulating dialogue and discussion. He respected diverse opinions and responses and encouraged the learners to respond to each other’s questions and answers through positive and non-judgmental interaction. According to his lecturer, Respondent 4 demonstrated some development from the beginning of the study:

I could see that you have grown from the first lesson. Planning was good and the learners reacted positively (Geography Lecturer).

Nevertheless, he was still stuck behind the computer as he relied heavily on his *MS PowerPoint* presentation as was the case during the “fishbowl” lesson. The quality of his *MS PowerPoint*

slides improved considerably and the learners could relate to the visual content. It was clear that the main focus of his lesson was to facilitate interactive and collaborative learning through discussion, debate and dialogue. He also stimulated curiosity, imagination and empathy by inviting the learners to put themselves in the shoes of child labourers by referring to an emotive picture on the screen. Although he clearly succeeded in promoting debate and interactive explorative learning, his lack of experience, proper content knowledge and authority resulted in poor structure and discipline. My summative interpretation of Respondent 4's development was that, although he was still immature and in need of general teaching experience, he made huge strides towards incorporating creative elements in the lesson he presented at the school and he demonstrated courage and initiative by encouraging creative collaboration amongst the learners.

There were some commonalities between both lessons presented by Respondent 5. He was well prepared and had thorough command of the lesson content. He never raised his voice and succeeded in portraying confidence, although he hardly ever made eye contact. The learners respected him because of his professional manner, but did not interact with him. In both instances, Respondent 5 sometimes turned his back to the learners while he wrote on the white board. He therefore failed to establish rapport and to create a learning environment conducive to creative learning. He also refrained from using any form of technology in any of the two lessons. After his "fishbowl" lesson he explained that he did not want to use *MS PowerPoint* or the interactive whiteboard because he might end up at a school without such resources. However, he was placed at a well-resourced school during his school practicum with all of the above-mentioned facilities at his disposal. It would therefore be fair to assume that Respondent 5 was afraid to take the risk of possible failure – maybe he did not have the necessary knowledge and technical skills and therefore resorted to the only teaching strategies he was comfortable with, namely question-and-answer and writing and demonstrating on the white board. He seemed very pleased when he smiled and commented that he had used different coloured markers – that was his mini-c experience (see Section 2.4).

Although Respondent 5's lesson was successful insofar as that it was structured and that he had conveyed knowledge, there was no evidence of creative pedagogical practice. The learners were bored and did not respond to his questions. The lesson at the school consisted mainly of revision and included little new knowledge. He never allowed for active, interactive or collaborative learning. At the end of the lesson the learners had to complete a standardised assessment worksheet from the textbook. Respondent 5 allowed the learners to work in pairs and some of them assisted one another in finding the answers to the problems, while other learners did not do the activity. Respondent 5 walked between the desks but did not intervene or provide any assistance.

When I reflected on his lesson, I had to remind myself of my interactions with Respondent 5 earlier the year. He presented as someone with low self-esteem and high morals. This could explain his emphasis on class discipline and respect, as well the conscientious manner in which he planned and prepared his lessons. However, the data from his interview indicated that he actually had some (other) creative teaching experiences during his practicum at the school. He told me about an oral lesson he presented in the learners' third language (isiXhosa). He thought of a creative way to divide the learners into equal groups. He drew pictures on the board and the learners had to randomly pick a word that he had written on cards and then match it to the picture on the board – the words were grouped into themes and learners who chose related words belonged to the same group. Each member of a group had to ask a member of the other group a question in isiXhosa. However, when he told me about the most creative teacher he had observed, he steered back towards his preferred methodology, namely the use of the textbook combined with questions and answers. According to him, although the teacher did not use any teaching aids other than the textbook, the lesson was captivating and the way in which the teacher could execute the question-and-answer method contributed to the interactive nature of the lesson. Respondent 5's views of creative teaching reminded me of Respondent 12's opinion that there is "no real definition for creativity because each person has a unique way of showing creativity". In summary, I did not observe any evidence of applied creativity in Respondent 5's PCK, although he alleged that he did use creativity in other lessons.

At the beginning of the study Respondent 6 was very confident about her self-acclaimed creativity (see Section 4.3.3.1). Her heartfelt disappointment after her disastrous “fishbowl” lesson was thus understandable. The small group of learners from a prestigious English girls’ school entered the room with a negative attitude towards Respondent 6 – one of the other respondents overheard a conversation amongst these learners where they made negative comments about Respondent 6. The fact that she was inappropriately dressed (short skirt and tightfitting blouse) might have fuelled their bias towards her. Respondent 6 included creative elements in her planning like an opening icebreaker activity and a closing “fun quiz”. She also made good eye contact and explained well. But the learners were selfish and disrespectful. They enjoyed and eagerly participated in both the icebreaker and “fun quiz” and especially enjoyed the sweets that they received as prizes – but they were disruptive during the rest of the lesson and blatantly laughed out loud at Respondent 6’s discomfort. After the learners had left, Respondent 6 was very upset and close to tears. The lecturer was very empathic and complimented her on her perseverance – she kept up her energy until the end of the lesson and tried her best:

Let me put you at ease: you are well on your way to become a good teacher. The learners rattled you with their attitude ... became difficult to handle ... you showed maturity to handle a difficult situation. Teaching is about managing difficult situations. You succeeded in getting on with it, well done! When you go to practical teaching, you will tap into this experience (Geography Lecturer).

Respondent 6’s reply, “It’s good that I had this experience”, amplified her positive attitude and openness to learn. It also turned out to be prophetic. During her school practicum she demonstrated that she could improve on every aspect that she had previously struggled with and presented an excellent and creative lesson. She deserved the high marks she received from her lecturer (the highest marks of all of the respondents):

I still remember your “fishbowl”. What I saw then and today – HUGE improvement. You are friendly AND professional ... positive learning atmosphere. The learners were interested, respectful and they participated. You stayed calm despite

computer problems – well done. Keep up the good work! I hope you'll stay in teaching (Geography Lecturer).

First and foremost, she modelled creative problem solving. When her laptop computer was not compatible with the school's data projector, she asked the learners to move their chairs closer to her and they could watch the video and *MS PowerPoint* slides as planned. Also, at the end of the period she needed more time for the learners to complete the interactive group activity. She solved that problem by thinking on her feet – she simply asked the teacher who was to use the classroom next for a few more minutes and continued with her lesson unhindered. She was professionally dressed, confident, friendly and warm.

The learners enjoyed the way in which Respondent 6 used creativity as mediator between content knowledge and pedagogical practice. She for instance contextualised the content within current affairs at the time, the 2012 Olympic Games in London. The learners could relate and were excited to use their imagination when they had to discuss the possible impact of the tourists on London's natural and other resources: "How do you think the spectators of the Olympic Games affected the resources in London?" (R6). She also used different teaching strategies and succeeded in stimulating anticipation and the learners' curiosity through the use of technology and appropriate videos. The lesson was active and interactive and Respondent 6 encouraged learners to accept, acknowledge and appreciate their own creative thinking, acting and producing, and to do likewise for their peers. She furthermore allowed for both divergent and convergent thinking when the learners had to generate ideas and come up with solutions when they had to work in groups at the end of the lesson – each group was given a different problem related to the topic and they had to design and present a poster on their agreed solution. They were allowed to move around in the classroom and the atmosphere was relaxed and conducive to exploration, risk taking and creative production. She provided some extrinsic motivation (see Section 2.4.3.3) and anticipation by announcing that the posters would be assessed and the winning group would receive a prize the next day. In summary, Respondent 6 successfully incorporated creativity in her PCK to create an environment conducive to creativity (as advocated by Amabile 1990), stimulate anticipation (see Torrance &

Safer 1999), divergent and convergent thinking (see Section 2.4.3.1), and active and collaborative learning (see Section 2.4.4.3). She also provided opportunities for learners to create new knowledge (see Section 2.4.3.2) and demonstrated profound preparation, connection and reflective teaching as advocated by Lilly and Bramwell-Rejskind (2004) and discussed in Section 2.4.4.3.

Respondent 7's outgoing personality, positive self-image and ambitious commitment to success were in her favour of becoming an effective teacher. She was well prepared and confident during both practical teaching sessions and both lessons were executed successfully. She especially impressed by how she could manage a large class of 40 learners at the well-resourced school she was placed. The group of learners consisted of different cultures, while she was the only black (student) teacher at the school. The lesson on population growth had to be presented in both Afrikaans and English, while Respondent 7's first language was isiXhosa. This was the only area in which Respondent 7 confessed that she had struggled – she would have preferred to only use English.

She incorporated a variety of teaching aids in both lessons and moved with ease from the one to the other. During the “fishbowl” lesson on topographic maps she made use of the blackboard, overhead projector, printed maps, Google Maps, printed notes and a very appropriate printed booklet that the learners had to write in. She designed beautiful and appropriate *MS PowerPoint* slides and used that along with stimulating video clips in balance with the blackboard during her school practicum. This lesson was steered by questions and answers and the learners and Respondent 7 engaged in creative collaboration while she provided challenging opportunities to stimulate discussion and critical and creative thinking. In both instances she exhibited good content knowledge and used body language, gestures and eye contact to generate positive energy and communicate a sense of enthusiasm and excitement toward the content. Also, she easily connected with the learners and established rapport. Although the classroom atmosphere was relaxed and the learners participated and responded eagerly, they were disciplined because of the calm structure provided by Respondent 7. During the interview at the end of the study she reflected on the most creative lesson she had presented. It was a

maths literacy lesson – a subject that most learners did not enjoy. She therefore decided to employ a project-based approach where the learners had to use mathematical processes in a concrete and practical way. They had to design a theatre floorplan according to a scenario she presented to them in relation to the number of seats and floor space. She felt good about the lesson:

That was 'wow' for them, because they were not used to getting the content in such a way. I was excited because I noticed that most of the learners had a bad attitude towards the maths literacy. They would come to class and just sit there without taking out their books. But that day was different and the atmosphere was just all for learning and I really enjoyed that (R7).

I was impressed by the diverse nature of the three lessons presented by Respondent 7 and I think that this was where her strength as future teacher lies – the ease in which she could creatively adapt teaching strategies and apply different teaching aids provided the creative spark between pedagogical and content knowledge, resulting in learners' joyful participation.

Respondent 8 apparently attempted a creative approach when she opened the “fishbowl” lesson with playing a song (*Don't kill the world*) without explaining why or by disclosing the song's title or the topic of the lesson – it seemed to me that she wanted to create anticipation. Unfortunately, because of her lack of experience, the learners were rather left in the dark and confused. The same happened when she played background music during the learning activity – it was too loud and without purpose.

Although she was friendly, she struggled to connect with the learners and sometimes turned her back to them. She was insensitive towards the boys in the class and the atmosphere was tense – the learners did not want to answer her questions because she expected of them to write the answers on the board. Her *MS PowerPoint* slides were furnished with beautiful and appropriate pictures, although the black text on a blue background was not visually pleasing. She had difficulties in administering the slideshow, which indicated that she was not that well

prepared. The learners enjoyed the group activity where they had to create a poster about pollution and present it to the class. Because they worked together and presented the poster as a group, they were at ease and relaxed.

When the geography lecturer and Respondent 8's peers critiqued her lesson afterwards, she would interrupt them to explain her actions and excuse her mistakes. This reminded me of her honest self-reflection at the beginning of the study when she told me that she did not like to make mistakes.

During her school practicum Respondent 8 did not use any technology and I was of the opinion that it was deliberate because of her fear of failure and critique. According to her response to a comment by the lecturer that she should have incorporated different ways to explain the content instead of only the (well-prepared) notes, it was clear that she was intimidated by the class teacher who used the text book as only teaching aid. That was unfortunate – the small class of only twelve learners provided her with room for active and interactive learning, especially because the lesson was on map work. However, she remained static in front of the stationary learners and only asked questions, while the learners had to find the answers from the text. Although she was friendly and had a good relationship with the group of learners, her poorly formulated questions resulted in the learners becoming despondent despite her efforts to encourage participation. The learners did not really master any new skills, new knowledge and facts were not consolidated properly and the content was without relevant context or real-world applications. The written learning activity consisted of factual recall only, with no room for creative or higher order thinking. As was the case after the “fishbowl” lesson, Respondent 8 was not open to critique or advice. My interpretation of Respondent 8's observed lessons was that she actually regressed in terms of applying creativity as a means of conveying knowledge and skills – this might be because of her fear of failure.

At the beginning of the study, Respondent 9 was modestly confident about her personal creative abilities. She impressed during her “fishbowl” lesson with the calm and mature way

she presented a very successful lesson. She used her natural friendliness to establish rapport and to create a warm and relaxed learning atmosphere. Her well prepared lesson was thought provoking and it stimulated the learners' curiosity. She incorporated different teaching aids like *MS PowerPoint* and printed notes. Respondent 9 also stimulated creative collaboration by asking thought provoking questions that allowed for divergent thinking when the learners worked in groups and generated ideas on the advantages and disadvantages of the green revolution. After converging the learners' ideas, she provided a summary of the facts that they needed to write down. The learners enjoyed the interactive lesson and cooperated and participated in a respectful and disciplined manner.

Later the year, Respondent 9, a white female, was placed at a school in a disadvantaged community where poverty, drug abuse, gangsterism and violence were rife. There were mainly boys in the class of 15 grade 10 learners. The school was in a poor condition and not all the learners wore proper school uniforms; learners also smoked on the school grounds. Regardless of these challenges, Respondent 9 was not only able to manage those learners, but she even took the risk of incorporating a variety of creative elements in her lesson on HIV/Aids. She for instance introduced the lesson topic with an appropriate *MS PowerPoint* slide accompanied by music and also played music when the learners left the classroom. She established good rapport by smiling a lot and her friendly and confident manner communicated a sense of enthusiasm and excitement towards the content, resulting in the learners' eagerness to learn. She communicated the lesson purpose and objectives clearly and the lesson was stimulating and thought provoking. Respondent 9 asked questions that built on the learners' prior knowledge which provided for a safe learning context. She used intonation to vary emphasis and spoke clearly and calmly, even when she wrote on the black board and moved around the class with confidence.

She furthermore succeeded in stimulating the learners' curiosity and participation by means of a variety of teaching aids and strategies. She used *MS PowerPoint*, maps, diagrams and statistics, and also asked a lot of thought provoking questions. When she showed statistics of HIV/Aids in South Africa, some learners exclaimed "Wow!" The learners freely answered the

questions and engaged in creative collaboration when Respondent 9 explained new concepts and terminologies clearly. The learners got the opportunity to learn by means of creative thinking like problem recognition and idea generation relevant to real-world applications. Respondent 9 provided challenging opportunities to stimulate discussion and debate, while inspiring exploration and risk taking. She modelled tolerance and respected diverse opinions and responses, and encouraged learners to respond to each other's' questions and answers in positive and non-judgmental dialogue. She provided motivation with affirmative responses like "Wow, good!"

The lesson ended with a quiz and the learners moved the desks into two groups. The questions were purposely and cleverly designed to allow for accomplishment. The learners were excited and participated eagerly and could answer all the questions – they were therefore given the opportunity to have fun while learning informally and interactively. Finally, the learners were very excited when Respondent 9 gave each of them an HIV/Aids ribbon as they left the classroom at the end of the lesson. In addition to Respondent 9 proving that she "had what it takes" to become a good teacher during her institutional practicum, her deliberate and successful use of creative pedagogical strategies and spontaneous affective inclination during her school-based practical teaching session pointed to both her personal creative development as well as to her learners' enhanced learning outcomes, motivation and satisfaction.

As mentioned in Section 4.2, Respondent 10 headed the student council of the university residence she stayed at and was head girl at high school. It was thus no surprise that her proven leadership skills aided her well during her teaching practice. She was confident, organised and task orientated. Growing up as the child of a teacher and a church minister further equipped her with creative and affective capabilities. She also regarded herself to be creative: "I have been told by other people that I do things in a creative manner". She always wanted to become a teacher and her passion for the profession was visible.

Respondent 10 was thus extremely well prepared for both lessons that I observed and she presented each lesson effectively and successfully. During her interview at the end of the study she spontaneously and excitedly talked about various instances where she had applied creative elements in additional lessons she presented during her school practicum. Both her “fishbowl” lesson and school practicum were thus impressive and I therefore only report on her observed development regarding her applied use of creativity.

Respondent 10 exhibited the capability to assess the context in which she found herself and could adjust and adapt her teaching style and applied pedagogical strategies to meet the learning needs that were unique to the specific group of learners she had to teach. These learners were from an environment with a prevalent culture of non-compliance towards homework – the learners were also not allowed to take their text books home because of the risk that it would not return. She therefore started her lesson by revising the work done in the previous lesson. She saved time by displaying five revision questions on a *MS PowerPoint* slide and accommodated the learners’ verbal responses to these questions while she walked amongst them and handed out the worksheet they would use during the lesson. She selected teaching methods and strategies that stimulated learners’ creativity, curiosity and participation. The lesson was fast-paced, active and captivating – the learners were busy 100% of the time and therefore there was no time for them to get distracted. During the “fishbowl” lesson she made use of *MS PowerPoint*, video, question-and-answer, as well as group work. She expanded on these strategies by referring to the content in the textbook and by expecting the learners to complete the carefully prepared worksheet according to the ideas generated when they collaborated in the form of dialogue and discussions during group work.

Learning was based on principles of creativity such as collaboration, problem recognition, idea generation, and real-world applications. She furthermore allowed for creative thinking when the learners had to watch a video as stimulus and then generate original ideas on how to save energy. She modelled creativity and her use of body language, gestures and eye contact assisted to generate positive energy and communicate a sense of enthusiasm and excitement toward the content, resulting in the enhancement of learners’ eagerness to participate and

learn. She respected diverse opinions and responses and encouraged the learners to accept, acknowledge and appreciate their own creative thinking and to do likewise for other people.

During her interview at the end of the study she told me how she incorporated gaming in an English lesson she presented by creating clue cards related to a short story that they read – the learner who held the card had to describe the word on the card (like a character from the story) without repeating the word on the card, while the other members of the group had to correctly identify the character within thirty seconds. The element of fun added to the learners' levels of participation and enjoyment while they were actively learning. Another example of her own creative ability was when she used a video to facilitate a listening lesson in English. She established anticipation when she first allowed the learners to watch a very short video clip of a movie they were interested in. Then she played the audio format of a speech from the movie that they had to listen to. After they answered the questions about the speech on a worksheet, she rewarded them by letting them watch the actual speech.

When I reflect on Respondent 10's practical teaching I have to admit that she had creative abilities from the start (as she had claimed). The way she purposefully and successfully incorporated creativity during the lesson I observed at the school as well as during the lessons she told me about, indicated that she was more aware of the benefits of creative teaching during the latter part of the year and that she was better able to use creativity as mediator between content knowledge and pedagogical practice.

Respondent 11 was a white Afrikaans-speaking male and placed at an English school for black learners with isiXhosa as first language (Respondent 11 did not understand isiXhosa). The learners' culture was very different to that of Respondent 11, who matriculated at one of the country's most prestigious boys' schools. Contrary to what he had been used to, the learners he had to teach during his school practicum were ill disciplined. The school building was fairly new but not well maintained (e.g. holes in the doors and graffiti on the walls). The learners

arrived late for the start of Respondent 11's lesson; one girl was 20 minutes late. It is within this context that I reflect on Respondents 11's progression from the beginning of the study.

Some commonalities were found in the two lessons he presented. On the positive side, Respondent 11 was confident, professional and friendly, and established good rapport with the learners in both lessons; his knowledge of the subject matter was very good and his *MS PowerPoint* slides were both visually pleasing and effective. He also succeeded in actively involving the learners in discussions and active learning. On the negative side, Respondent 11 failed in both instances to fill the lesson time effectively and the lessons ended abruptly before the end of the period. During the "fishbowl" lesson he solved the problem by utilising the available technology to discuss an appropriate map found on Google Maps with the learners, but only after one of the observing student teachers pointed him in that direction. He could not do the same during his school-based lesson and he allowed the learners to pack up and talk to one another – this was an unfortunate ending to an otherwise well-disciplined lesson.

Nevertheless, Respondent 11 had matured from the "fishbowl" lesson where his attitude was mainly too relaxed and superficial. His sincere commitment to the learners at the school was visible in the way that he connected with them. He for instance used examples that were familiar to them when he explained difficult terminology in his lesson on resources – they could relate and therefore they eagerly participated in the discussion. Respondent 11 furthermore showed insight into the realities of these troubled learners and did not put the learner to shame when she arrived 20 minutes late but rather made sure that she caught up with the rest of the group. He moreover gained their respect and cooperation because he showed respect towards their culture when he allowed them to converse in isiXhosa during group discussions when they had to come up with answers to the stimulating and thought provoking questions he put to them. Although he did not know what they were saying to one another, he trusted the process. Resultantly, when the learners had to give feedback on their group discussions, it was evident that deep interactive learning took place.

During the interview at the end of the study, Respondent 11 told me how he had joined the learners and staff in a protest march against poor municipal service delivery in the area and how he appreciated that experience. He also empathically referred to a boy who was obviously very poor because he wore the same clothes to school day after day. For this reason, Respondent 11 appreciated the trouble that boy took to complete a homework project when he asked the learners to design a poster or draw a picture of a settlement according to certain criteria. To motivate the learners to complete this homework assignment, Respondent 11 announced that he would reward the winning project with a chocolate. He was so impressed by the above-mentioned boy's product that he displayed it on the wall of his bedroom (and bestowed the prize to him). In summary, Respondent 11 made huge strides towards using creative elements like empathy, respect and interactive learning in his PCK, resulting in heightened learner motivation and participation.

Respondent 12 had the advantage of presenting her "fishbowl" lesson later on the schedule and therefore she learned from the successes and mistakes of her peers and from the lecturer's comments. She also tapped into the creativity tutoring sessions that I presented to them and for instance played a rap song about the water cycle to the learners to create anticipation. They thoroughly enjoyed it and could follow the lyrics in a printed activity booklet designed by Respondent 12. When she asked questions and provided explanations about water, she would refer to movies the learners could relate to such as *Finding Nemo* and *Titanic*. She interacted with the learners and walked amongst them to provide assistance when they completed the written learning activity.

Respondent 12, however, spoke too fast and loud with a high-pitched voice. Some slides were boring (with too much text) and the activity booklet was not laid out chronologically. The learners were unsure of what was expected of them as some of the questions were not clear. At the end of the lesson she consolidated the content by asking summative questions that were displayed on a *MS PowerPoint* slide.

During her practicum at the school, Respondent 12 was very confident in the way she presented the lesson and interacted with the learners. She was also extremely enthusiastic and succeeded in generating positive energy and communicating a sense of excitement toward the content, resulting in the enhancement of learners' eagerness to learn. This related to her belief that creativity be defined as the way in which one expresses oneself (as reported in Section 4.3.3.1). Along with this, unfortunately, she fell into the trap of going too fast and speaking too loud which resulted in the learners also raising their voices. Nevertheless, the lesson was lively and interactive. Respondent 12 designed excellent *MS PowerPoint* slides and the activity sheet was logical and clear. She also used the blackboard to explain certain concepts and to write down learners' responses to her questions. She presented a practical map work lesson where the learners had to find information by themselves while she moved around the classroom to provide assistance where needed. They at first struggled with the assignment – she could have used more time for a step-by-step explanation of what was expected. Respondent 12 encouraged learners' questions and involvement, and provided challenging opportunities to stimulate discussion and critical and creative thinking. She listened to their individual responses and questions and took the time to converse with individual learners, which caused the rest of the learners to become rowdy. However, this approach encouraged confidence, risk taking and collaboration. The learners enjoyed the active and constructivist nature of the lesson by finding solutions to the problems themselves.

During her interview at the end of the study, Respondent 12 was confident that all of the lessons she had presented during her school practicum were creative. She referred to the active and practical nature of these lessons where she would explain difficult concepts by using physical objects and by facilitating active learning activities where the learners had to learn by means of practically finding solutions to problems. In summary, Respondent 12 developed constructivist, active and interactive learning strategies to provide the creative spark in her PCK.

When analysing the respondents' use of creativity in their teaching practicums, some themes emerged:

- Not many of the respondents attempted to use creative elements during their institutional practicums (“fishbowl” lessons), while the few that did were those who presented their lessons later on the schedule and after they attended some of the creativity tutoring sessions presented by me. This pointed to the first group’s apparent lack of exposure to creative teaching and learning prior to their “fishbowl” lessons.
- There was reported raised awareness amongst all of the respondents about the value of creative teaching during the latter part of the study and most of the respondents attempted to purposefully incorporate creative elements and strategies to enhance PCK during their school practicums, although at different levels of competence. This apparent willingness to experiment with creativity was not related to the anticipation that creativity was expected of them to gain higher marks from their lecturers, as creativity was not included in the university’s assessment criteria. They thus used creativity because they seemingly regarded it beneficial for intrinsic reasons.
- Two of the respondents who did not regard themselves to be creative at the beginning of the study did not incorporate creative elements and strategies to enhance PCK during both their institutional and school practicums. On the other hand, two of the respondents who did not regard themselves to be creative at the beginning of the study and who did not incorporate creative elements and strategies to enhance PCK during their institutional practicums, did so in their school practicums during the latter part of the study period. This iterates that creativity is developmental in nature and needs purposeful and decisive action by people who are willing to take sensible risks, while some people who are consciously or unconsciously resistant to move outside of their comfort zone struggle to develop their creative abilities.
- Seven respondents who regarded themselves to be creative at the beginning of the study showed increased ability to incorporate creative elements and strategies to enhance PCK from their institutional practicums to their school practicums. Conversely, one respondent who regarded herself to be creative at the beginning of the study regressed in her ability to incorporate creative elements and strategies to enhance PCK from her institutional practicum to her school practicum. This pointed to the important influence of the school environment on the respondents’ (and serving teachers’) deliberate inclusion or exclusion of creativity in their lessons.

4.3.3.3 Initial teacher education and creativity

The importance of creativity in education and specifically within the context of initial teacher education (ITE), was discussed in Chapter 2 (see Section 2.3) and formed the overarching argument of this study. The different stages of the research process (see Section 4.3) ultimately steered towards interpreting the respondents' perceptions of creativity in ITE, even though creativity was not part of the formal curriculum of the PGCE. It is with this as backdrop that I decided to purposefully include a few specific questions that could indicate to me what the respondents' perceptions were about the relevance of creativity in the context of ITE during the latter part of the interviews at the end of the study period. The timing of these questions was helpful because the respondents already reflected on their perceptions and experiences of creativity in general and in education, as well as on their own capabilities and experiences in integrating pedagogical content knowledge (PCK) and creativity during their teaching practicums (although it was not expected of them as discussed in Section 4.3.3.2). At that stage of the interviews it was even more crucial for me as researcher to refrain from my own biases and to stay open and honest in working with the data. I wanted the respondents to reflect on the PGCE programme in relation to my study and asked a few guiding, open-ended questions. I found that the respondents wanted to raise their opinions and I was grateful that they were willing to share their thoughts and perceptions – this proved to me that they trusted me as researcher. I had high regard for their opinions as all of them were successful post-graduate students who have shown commitment to their studies and future careers. I wanted to listen to the respondents' thoughts on their exposure to and their applied use of creativity during the year. I regarded the respondents' perceptions of the remarks and comments by their lecturers at the end of the lessons presented by them important, as this would indicate whether the (university) learning environment was conducive to creativity or not. Lastly, I was curious about the respondents' perceptions of the relevance of creativity in ITE and I wanted to listen to their ideas on how creativity could be situated in the PGCE curriculum (or not).

From my observations it became clear that the respondents had learned a lot during teaching practice, although at different levels because of the varying quality of schools and teachers they

were exposed to. When the respondents reflected on what they have (and have not) learned during the year, it was thus not surprising that most of them referred to their practical teaching experiences rather than to PGCE course work. Some respondents critiqued the format of practical teaching. Respondent 5 appreciated that they could be part of the school routine for nine weeks and could learn from experienced teachers. He suggested, however, that this period could be split into two opportunities – one at a so-called privileged school and the other at a so-called underprivileged school. This comment was significant especially because it showed creative insight and willingness to explore even though Respondent 5 was the least receptive to creativity earlier in the study period. Respondent 9 and Respondent 10 proposed that different practical teaching sessions of shorter periods during the year might be beneficial – they could then learn from their mistakes and ask for guidance upon their return to the university. Both of them were self-acclaimed creative individuals (and creative teachers as observed and discussed in Section 4.3.3.2) and their eagerness to learn confirmed that one needs knowledge to be creative as discussed in Section 2.5. Respondent 8 was of the opinion that the “fishbowl” practicum was “unreal” and Respondent 9 described it as “artificial”. To solve this problem, Respondent 7 suggested that the institutional practicum could be arranged in a more natural way by having the student teachers visit the schools instead of bringing the learners to the university. The respondents furthermore reflected on the impact of their lecturers on their learning experience during the discussions after their institutional and school practicums. There was general consensus amongst the respondents that the geography lecturer created an environment of trust and openness that was conducive to creative learning where ideas could be shared and explored. He furthermore provided positive and motivational feedback and acknowledged best practices and creative inputs by the respondents. He also suggested creative ways to solve problems or to convey knowledge (in other words PCK). On the other hand, some respondents referred to less supportive experiences where some lecturers were prescriptive and limiting, resulting in the respondents becoming disengaged and demotivated. Listening to the comments of the respondents, I was reminded of the importance of reflective teaching and to stay open to critique for the purpose of development (see Section 2.4.4.3).

When reflecting on the PGCE programme, the respondents identified learning needs they perceived as not yet being met by the end of the study period, although they agreed that they expected to learn from practice once they started to work. Most of these concerns related to the practical aspect of teaching and the respondents agreed that the theoretical nature of university lectures did not prepare them as they seemingly would have preferred. Aspects like the general administrative tasks of a teacher, lesson planning and assessment strategies were highlighted as areas in which the respondents felt they needed more guidance. While Respondent 9 claimed that “[n]obody taught us how to set up an assessment task or test – we don’t know the standards – I always wondered if the work was too easy or too difficult”, Respondent 2 showed insight into the supportive role creativity could play in designing assessment tasks:

I think creativity could be used in assessment strategies. Instead of only using homework, tests and assignments, there could be different strategies. Creativity along with assessment – that would be brilliant. It will make the subject more interesting (R2).

Respondent 1 referred to the creativity tutoring sessions I presented to them in relation to the importance of the modelling of creative teaching by university lecturers:

I wasn’t gonna [sic] be aware of how important it was to make my lessons creative because all the others (lecturers) were like [sic] ‘find a way to motivate your learners’ ... and they didn’t show us how to motivate the learners (R2).

Respondent 12 was the only one to highlight a subject that she regarded to have been presented adequately in relation to teaching practice:

The only place I’ve learnt anything about the curriculum was in the geography class – assessment standards and that (R12).

Some of the respondents mentioned that they were not trained in classroom practices like blackboard writing or the use of technology like the interactive whiteboard (R2, R5, R8, R11).

During a discussion after one of the “fishbowl” lessons the geography lecturer explained to the respondents that there was not enough time to cover that in the curriculum and advised them to practice during their free time. In my opinion that could explain why Respondent 5 refrained from using the available technology at the well-resourced school he was doing his practical teaching. Their ability to teach geography creatively to their future learners in correlation with the content of the national curriculum was a concern to a few respondents. Respondent 5 explained that “[i]t is an art to convey knowledge to learners and to explain concepts” and that he has not yet mastered the skill, while Respondent 1 verbalised her need to learn more about creative teaching. Respondent 2 and Respondent 4 were concerned about their depth of content knowledge in relation to what was needed to teach the national school curriculum. Some respondents (R3, R6, R7, R10) were of the opinion that they were not adequately trained how to instil discipline in the class, as verbalised by Respondent 10:

I want to know how to manage discipline within a large group of learners and how to be consistent by having the learners take responsibility and know their boundaries (R10).

The way in which the respondents could critically reflect on the PGCE programme and provide creative suggestions for possible improvement thereof pointed to their metacognitive and creative thinking abilities (see Section 2.4.3.2).

At the end of the study period and after the respondents had been exposed to different influences and experiences in relation to teaching practice, they could reflect in a metacognitive way on how their thinking about the role of creativity in initial teacher education has changed (or not). During the interviews at the end of the study the respondents recalled that they enjoyed the four creativity tutoring sessions I presented to them at the beginning of the study period where they were introduced to creativity theory and practice. The respondents agreed that they learned how to make their lessons more interesting and they were of the opinion that they had an advantage over their peers from other subject disciplines:

When they heard that you were in the class with us they thought, wow, they're very lucky ... also when they saw the types of notes we got from our geography lecturer about assessment and the curriculum (R12).

Your workshops were nice – you always came with fresh ideas. It added an element that we weren't aware of. It helped with teaching prac [sic]. I think it's important for every teacher to know how to be creative in the classroom (R7).

It changed my way of thinking. I used some of the activities in my lessons and it worked. It gave us an advantage (R8).

I was personally made aware of how to make my lessons creative and I didn't learn this anywhere else (R1).

Respondent 2's perception of creativity developed from viewing creativity as visual art, to incorporating creativity in his lessons. He could remember the activities I had done with them and tried to repeat it in his classes at the school. When he prepared his lessons, he "actually thought about how can I make this more creative, even the tests that I compiled". He referred to how he creatively looked at the limited resources at his disposal at the school and adapted his lessons accordingly. Respondent 12 also referred to the activities they did during my tutoring sessions and remarked that, because she could remember all of it meant that "[i]t was creative – it captured my attention". She recognised the nature of adult education when she said: "You didn't dictate to us what creativity was. The first question you asked was 'How do you define creativity?'" Then she referred to freedom of thought: "You didn't say to us 'Class, I want you to mould your clay like this'. You rather said, 'Here is clay, mould it'. That is very important". Respondent 3 said the creativity tutoring sessions helped her "to think differently, to have a different approach". For instance, instead of merely planning a lesson, she "actually thought about how can I make it more pleasing for the learners and how can I stretch myself to go a bit

further by maybe taking stuff to school to make it more interesting”. She referred to the success she experienced when she borrowed an idea from my tutoring sessions when she played a rap song during a lesson. Respondent 6, who asserted in the beginning of the study that she was very creative, was very excited when she said:

I learned a lot of tips like how to start a class, like do a little fun game and how to just add spunk to the class (R6).

Respondent 10 regarded the creativity tutoring sessions to be valuable enough to have mentioned it when she went for a job interview at a prestigious school that was looking for a teacher “who can bring something new to the table”. Respondent 11 philosophised that “[c]reativity takes you away from the ordinary”, although he admitted that he struggled at the challenging school he was placed. Respondent 5 acknowledged his improved awareness of creative thinking although he honestly admitted that he did not think he was yet capable to teach creatively:

Now, when I prepare a lesson, it is at the back of my mind – yes, I can present it in a more creative way – I think like that (R5).

It was evident from the data that the respondents agreed about the importance of creativity in ITE. Respondent 9 claimed that, because she could not recall a creative lecturer, she deemed it necessary to include creativity in the PGCE curriculum because “[a]ll of us has [*sic*] been placed into boxes ... I think it is crucial for teachers to be able to look outside the box”. Respondent 3 argued that student teachers needed to be taught how to be(come) creative teachers because:

Today’s learners learn in different ways. Even in my time it was not enough to only use the textbook. The lesson must be creative so that the learners can have fun ... they won’t even realise that they are learning (R3).

Respondent 5 referred to the developmental nature of creativity and added:

You have all this information to present to the class, so you have such a huge influence on the learners. A creative lesson can get the learners much more interested in the subject and can make the class atmosphere so much better ... I think everyone has creativity; it only has to be unleashed (R5).

Respondent 2 was adamant that student teachers would benefit from creativity in the curriculum:

I think it will be brilliant if creativity could be part of the curriculum. It is important that student teachers learn about creativity because they can use it at the school. They will also benefit from that (R2).

Respondent 4 and Respondent 9 agreed that student teachers would not only learn from creative teaching but also enjoy it:

The students will actually look forward to that class (R4).

Creativity is something that the students will enjoy and actually learn from and take with them (R9).

It was not the purpose of this study to critique or evaluate the PGCE programme. Rather, I tried to establish whether there was a need for instruction in creativity as perceived by the respondents. The respondents' responses naturally led to practical suggestions on how to include creativity in the PGCE curriculum and there was consensus amongst them that the PGCE curriculum allowed for enough time to include creativity. In the words of Respondent 12:

There's a lot of time! Definitely, I mean, it's actually a subject that wouldn't be wasting your time (R12).

While some respondents suggested that existing subjects could be eliminated or combined to find time for creativity in the PGCE curriculum, most of the respondents agreed that creativity

should not be presented as a separate module or subject, but be incorporated into curriculum studies of each academic subject:

Maybe it could be combined into the different curriculum studies we have. Because I think most of the lecturers focus on content – a lot. I think what is more important, is preparing us for the classroom and I think creativity can teach us more about the classroom than teaching us only content can do (R7).

Respondent 10 specified that creativity could be incorporated into the different academic subjects like “a chapter on how to teach Afrikaans creatively”. Respondent 2 elaborated and added that “[i]t would be brilliant if creativity and assessment could be combined so that students could see that you don’t always have to use tests and homework”. To find time for creativity in the PGCE curriculum, Respondent 3 and Respondent 11 suggested project-based learning:

To have a project where you have to creatively combine different subjects – to compare or something like that (R11).

The respondents demonstrated serious reflection, metacognitive insight and creative thinking when they aired their opinions and perceptions of creativity in ITE. They did not merely critique certain aspects of the PGCE programme, but put forth plausible suggestions to improve the practical teaching sessions to better meet their learning needs and to also incorporate creativity in the PGCE curriculum. Their collective motivation to suggest changes was their apparent raised awareness of the important role creativity (could) play to enhance student teachers’ PCK. They related the need for creative instruction in the PGCE programme to the learning needs of the 21st Century learners they were to teach (see Section 2.4.3). The respondents furthermore agreed that their geography lecturer created an environment conducive to creativity. However, that was not the case with all of their lecturers. All of the respondents indicated that they enjoyed and benefited from my creativity tutoring sessions and most of them reported that they applied creativity in their lessons with positive effect. They nevertheless agreed that they needed more instruction in creativity in relation to the practical aspect of teaching, thus PCK. Their collective

proposition that creativity be incorporated into the different PGCE subjects correlated with the argument by Beghetto (2013) as put forward in Section 2.4.3.1.

4.4 CONCLUSION

In this chapter I recorded the analysis of the data and presented and discussed the findings of the research in relation to (a) the respondents' perceptions of creativity as well as their creative abilities at the onset and the end of the research project; the respondents' perceptions of creative teaching, creative teachers and the creative learning environment; and the respondents' perceptions of themselves as future creative teachers; (b) how they integrated PCK and creativity during their institutional practicum and in their practical teaching sessions at schools; and (c) how and why, according to the respondents, creativity can be contextualised within ITE to improve teaching and learning.

- (a) Although the respondents only attended four creativity tutoring sessions presented by me during the first semester of the study programme, all of them reported improved awareness of and in creativity related skills. By the end of the study period they could differentiate between what they regarded as creative and uncreative teachers and lessons and could also refer to their own application of creative strategies during their practical teaching sessions. When they reflected on their perceptions of themselves as future creative teachers, the focus was on the positive influence they could have on their learners' lives and future rather than on creative pedagogies. Although their holistic and philosophical views were encouraging, the lack of reference to and thus knowledge of creative pedagogies pointed to the limited exposure they had to modelled or facilitated creative pedagogies as part of PCK.
- (b) While most of the respondents did not include creative strategies in their "fishbowl" lessons at the beginning of the study programme, most of them purposefully applied creativity in the lessons they presented at the schools where they did their formal teaching practicum during the second semester of the study programme. It was also noticeable that many of the respondents copied some of the activities I employed in my creativity tutoring sessions to create a class atmosphere conducive to creative learning

and also to facilitate active and collaborative learning. This again pointed to their limited exposure to creativity in education in general, but also to their eagerness to be able to apply it in their teaching. Most of the respondents exhibited sound content knowledge as expected from post-graduate students. It has to be repeated that the respondents did not include creativity in the lessons they presented merely because it was expected of them to do so, but rather because they apparently wanted to, as they had enjoyed the creative activities during the tutoring sessions presented by me.

- (c) While not all of the respondents wanted to become teachers at first, most of them reported that their perspectives had changed during the course of the study programme and none of them indicated that they did not want to become teachers at the end of the study. With this in mind, I regard their comments and suggestions about the PGCE programme and the role of creativity in ITE of great value. When they critiqued the PGCE programme the focus was on the (lack of) practical aspects of teaching, inclusive of the modelling of and directives on how to implement creative pedagogies to enhance their PCK. They showed insight into the learning needs of 21st Century learners and were in agreement that creativity was needed in ITE and that it could and should be incorporated into the curriculum.

The above presentation and analysis of the collected research data and findings is in line with the main research question and supportive research questions of this study (as introduced in Chapter 1). The following and final chapter will discuss, explain and interpret the meaning of the answers to these questions in light of the theoretical framework of this study (as presented in Chapter 2). This will ultimately lead to suggesting directions for future study and practice.

CHAPTER 5 – INTERPRETATION AND SYNTHESIS

5.1 INTRODUCTION

As indicated in Chapter 1, the purpose of this study was to explore, analyse, interpret and describe how the perceptions of a selected group of twelve geography Postgraduate Certificate in Education (PGCE) students at a South African university developed in the year of their initial teacher education (ITE) programme. The following central research question guided the study: How can the development of geography student teachers' use of creativity act as a mediator between their acquired content knowledge and their related applied pedagogical practice?

Sub-questions strengthened the search for a substantiated response to the central research question and also directed the data collection process:

- (a) What were the student teachers' perceptions of creativity at the onset the research project?
- (b) How did the student teachers integrate pedagogical content knowledge and creativity during their institutional practicum and in their practical teaching sessions at schools?
- (c) What were the student teachers' perceptions of creativity at the completion of the research project?
- (d) How can creativity be contextualized within initial teacher education to improve teaching and learning?

In Chapter 2, a comprehensive study of the body of scholarship in the field was provided. Chapter 3 elaborated on the research design and methodology used in this study and described the interpretive paradigm that underpins the research; the case study research design in which qualitative data was collected by means of questionnaires, lesson observation, and individual interviews; the assurance of research quality; and the data analysis techniques employed.

While the fourth chapter presented the results and discussion of the collected data, in this final chapter I will interpret and synthesise the results in light of the research questions, literature review and theoretical framework employed in this study. The rest of this chapter is presented as follows: the interpretation and synthesis of the results (Section 5.2) that will lead to the presentation of answers to the research questions (Section 5.3); limitations to the study will be identified and explained (Section 5.4); and some conclusions will be drawn and implications for theory, policy, practice, and future research will be suggested (Section 5.5). Finally, concluding thoughts will sum up the dissertation (Section 5.6).

5.2 INTERPRETATION AND SYNTHESIS OF THE RESULTS

In this section I will interpret and synergize the results of the study in relation to the research questions while illuminating the practical and theoretical implications and meanings of the study.

5.2.1 The development of creativity

More than a decade into the 21st Century and since the implementation of outcomes-based education in 1997 in a democratic South Africa (since 1994), it should be fair to assume that (current) university students would have been exposed to creative teaching and learning while at school. Contrary to this, the results of my study have shown that most of the respondents could not recall a creative teacher or a creative lesson during their education (inclusive of university lecturers and lectures). Although it has been put forward in Chapter 2 that creativity is being integrated into curriculum frameworks internationally (see Wilson 2005; Burnard 2006; Shaheen 2010; South Africa 2011), the reality is that little is done to develop and cultivate creativity (Cropley & Cropley 2005; Sternberg & Kaufman 2010; Robinson & Aronica 2015). Students are still being taught to be consumers of knowledge rather than to participate in the creation of knowledge. Moreover, they are still being taught how to answer and not how to critique and to wonder in standardised curricula which are dominated by a concern with transmitting knowledge with no room for error, while creative ideas are discouraged and ignored

(De Souza Fleith, 2000; Csikszentmihalyi 2006; Kim 2007; South Africa 2014; Robinson & Aronica 2015). However, life within the digital, conceptual age of the 21st Century needs people who are able to take charge of their own learning and contribute to the learning and knowledge of others – moving from merely acquiring knowledge to creating and contributing new knowledge (as iterated by Pink 2005 and Craft 2011).

If the purpose of education is to prepare people for the future as proposed by Vygotsky (1978, 2004) and Dewey (1987), the importance of creativity in initial teacher education (ITE) cannot be denied and was deliberated in Section 2.3. In South Africa with its challenges of unemployment and poverty on the one hand and competition in the global economy on the other, the urgency for the purposeful development of creative student teachers is even more acute. According to the results from my research, this notion is supported by the views of my respondents within the specific context of this study.

Throughout, my interpretation of the results of this study refers to the reported and observed development of the respondents' perceived and demonstrated levels of creativity from the beginning to the end of the research programme. The respondents had no formal instruction in creativity prior to the onset of the research programme. Their awareness of and interest in creative teaching was stimulated during four one-hour long creativity tutoring sessions that I presented to them during the first semester of the study programme. Although these sessions were not compulsory, the respondents eagerly participated with 100% attendance. Apart from my observation that they enjoyed the interactive sessions they also verbalised their appreciation as well as the insights they gained about the importance of creativity in ITE.

Your workshops were nice – you always came with fresh ideas. It added an element that we weren't aware of. It helped with teaching prac [sic]. I think it's important for every teacher to know how to be creative in the classroom (Respondent 7).

Furthermore, the PGCE provided for a variety of learning experiences that could add to the respondents' enhanced perceptions and experiences of creativity.

Unfortunately, due to time constraints, little room was provided for the respondents to practically apply their learning in the context of geography teaching prior to their teaching practicums at schools. Nevertheless, all of the respondents reported that because of these sessions, they seemingly had an advantage over their peers from other teaching subjects and most of them claimed that they purposefully applied creative elements in a variety of lessons (not only geography) they presented during their school practicums. The respondents also showed increased insight into the role that creativity could play to “bring something new” (Respondent 10) to teaching learners who “need a different way of teaching and learning” (Respondent 3), “creative, critical and reflective thinking skills in order for them to become independent learners” (Respondent 8). These insights correlate well with the desired standards to teach geography in South Africa as promulgated by the *Curriculum and Assessment Policy Statement, Grades 10–12, Geography* (South Africa 2011).

In line with the developmental theory of creativity as put forward by Craft (2003) and Kaufman and Beghetto (2009), it would be appropriate to regard the respondents’ interpretation of their use of creativity in teaching as mini-c creativity: the Four-C Model of Creativity (Kaufman & Beghetto 2009) describes this level of creativity as the novel and personally meaningful interpretations of experiences. In the context of this study I regard this to be a positive outcome, because mini-c or interpretive creativity might lead to larger-c contributions (see Section 2.4). One such an example was Respondent 5 who was enthused by the way that he employed interactive pedagogies like group work in a language lesson. While many teachers might regard group work as a basic day-to-day practice, to the introverted Respondent 5 it was a major paradigm shift. He even indicated that he had moved outside of his comfort zone. Whether Respondent 5’s mini-c experience actually resulted in larger-c contributions or not was unfortunately not within the scope of my research.

Another outcome of these creativity tutoring sessions was that, at the end of the research period, the respondents were evidently more capable of identifying creative (and uncreative) teachers and lecturers as well as creative (and uncreative) teaching practices than they were able to at the beginning of the study period. There were similarities between the respondents’ descriptions of the (few) teachers that they regarded to be creative by the end of the study

period and what is found in literature (see Section 2.4.2) and they could likewise identify and describe teachers who inhibited the creativity of their learners (see Section 4.3.3.1).

However, in the more focused context of my research, only one respondent (Respondent 11) mentioned the observed creative teacher's ability to use creativity as a stimulus or spark to convey content knowledge when he (the geography teacher) for instance kicked a desk to show the epicentre of an earthquake and the falling stationary as its impact. Respondent 11 added that he decided to study geography at university because of the positive influence this teacher had on his love for the subject. One respondent (Respondent 6) referred to a lecturer who used information and communication technologies (ICT) during her graduate programme in geography by showing a thought provoking video to create anticipation and excitement towards the content. It was thus not surprising that Respondent 6 applied the same pedagogy in her practical teaching with great success (see Section 4.3.3.2).

In reflecting on their observations of teachers that they perceived to be creative, the respondents' general focus was on these teachers' observed ability to provide a warm and relaxed atmosphere and to establish a creative learning environment where the classrooms were comfortable and visually stimulating (see Section 2.4.1). However, no reference was made to substituting the traditional classroom with, for instance, environmental learning or fieldwork (see Heron *et al.* 2006; Cook 2010; Barnes & Scoffham 2013), although Respondent 11 mentioned a visit to a power station (fieldwork) as the most creative learning experience he could remember when at high school. I regarded the above-mentioned omission by most respondents to be significant as they were geography graduates and I therefore assumed that they would consider the inclusion of nature into their conception of the creative learning environment (see Section 2.6).

Linked to the above phenomenon, it was clear from my data that most respondents did not experience the application of theory to real world situations outside of the classroom both while at school and at university. This could be due to contextual constraints like curricular time pressure and logistical and financial difficulties like providing transport to learners and students from different communities. Adding to these possible reasons, my interpretation of their

assumed lack of exposure to fieldwork and environmental learning at school level was that the teachers of the respondents at that time were not trained or expected to include such creative elements into their geography teaching. I furthermore derived from the respondents' comments that the PGCE programme that they followed was congested with many subjects and thus did not provide time for practical experience in the field (which was geography in the case of this study) other than eight weeks of experience in practical teaching at schools. Since, the recent *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015:10) directs that "[c]ompetent learning is always a mixture of the theoretical and the practical ..." and strong emphasis is placed on practical teaching where 32 out of the total 120 credits of the PGCE programme is allocated to practical teaching (South Africa 2015:29).

From a developmental point of view, the respondents' reported raised awareness of creativity in education and of their perceived personal development in creativity was an encouraging result of the study, although it has to be said that if time could be available for more creativity tutoring sessions during the study period, the respondents could have shown more insight and skill in creative pedagogies. **However, there was consensus amongst the respondents that creativity should not be presented as an extra module, but be part of the PGCE curriculum studies component.**

The results of my study conclude that student teachers need to be purposefully trained with creativity in mind. One cannot expect of teachers to be creative or apply creativity in their teaching in order to prepare their learners to solve not yet known problems in an uncertain future if they have not been trained accordingly (Puccio & Keller-Mathers 2007; McWilliam 2008, 2015; Wagne 2008; Beghetto 2013; Robinson & Aronica 2015). When creativity is not included in ITE programmes and curricula, only those individuals who happen to be creative because of reasons outside of the ITE programme will intuitively and naturally apply creative elements in conveying content knowledge (like in the case of Respondents 6, 9 and 10). These creative individuals might even find that the teaching environment stifles their innate creative spirit and they might resultantly exit the profession. This argument for including creativity in ITE programmes has been put forward in Chapter 2 (Sections 2.3 and 2.4) and is substantiated by the results of this study.

5.2.2 Creativity as part of pedagogical content knowledge in geography teaching

Because the respondents of this study were PGCE students with geography as subject area of specialisation, focus was placed on the relevance of creativity as part of pedagogical content knowledge (PCK) in geography although creativity is relevant to any subject or curriculum area.

In Chapter 2, an argument was made for the deepening of student teachers' (geography) PCK while developing their creative skills (see Section 2.6). It has to be noted that at the time of this study, creativity was not included in the university's PGCE programme *per se* and thus the respondents were not expected to exhibit creative ability during their teaching practicums; their lessons were not assessed with creativity in mind. However, the *Curriculum and Assessment Policy Statement, Grades 10–12, Geography* (South Africa 2011:4, 5) clearly highlights creative elements as part of the aims of geography teaching and explicitly mentions skills like creative problem solving, critical thinking, collaboration, communication, evaluation, synthesis, as well as presentation and technical skills that have to be incorporated. Adding to this, geography as a subject area provides the space for constructive, active, student-centred, collaborative, reflective, interdisciplinary, problem-based and project-based pedagogies (as discussed in Sections 2.4.4.3 and 2.5). Illustrative of this is that the diverse nature of topics included in the content knowledge to be taught as part of the geography national curriculum (South Africa 2011) lends itself to drawing on different sources of information, asking questions and discovering possibilities, speculating about trends, respecting different viewpoints, and helping to find solutions to political and social problems (see Section 2.6).

It might therefore be fair to assume that ITE programmes should focus on the development of these competencies as part of preparing student teachers. However, the “minimum requirements for teacher education qualifications is aimed at ensuring that the higher education system produces teachers of high quality, in line with the needs of the country” (South Africa 2015:6). This general aim does not explicitly mention what needs to be done in ITE programmes to prepare student teachers to be able to teach the above-mentioned creative skills to (geography) learners (South Africa 2011:4, 5). There thus seems to be a disjuncture between

the standards for beginner teachers as set out in the *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015) and what is required in the classroom according to the *Curriculum and Assessment Policy Statement, Grades 10–12, Geography* (South Africa 2011).

My study did not allow me to observe the delivery of the PGCE programme as a whole at the university and I therefore do not comment on it or on the other modules and associated lecturers as such. Rather, the purpose of this section is to interpret how the respondents went about incorporating creative elements as part of their geography PCK in their teaching practicums at the schools. In doing so, it has to be kept in mind that none of the respondents had instruction in creativity prior to the start of the research programme and that it was not expected of them to include creativity in their lessons. However, when I observed their lessons, I consciously looked for incidences where the individual respondents used creativity to provide the stimulus that was to transform subject matter and pedagogy for more effective teaching and learning (or PCK as explained by Shulman 1987 and discussed in Section 2.5).

As indicated in the previous section, all of the respondents perceived their personal creativity to have developed through the course of the research period; they were of the opinion that they purposefully included creative teaching elements in lessons they presented in a variety of subjects at the schools during the latter part of the study programme. My observation was in line with their claims in that they demonstrated heightened awareness of creativity and that most of them used creative elements in their lessons at the schools. However, although many respondents referred to the active and interactive nature of creative pedagogies as discussed in Section 2.4.4, only a few actually demonstrated some command thereof.

Respondents 9 and 10 succeeded in using class discussion and debate to stimulate active, collaborative and reflective learning while maintaining positive discipline, while Respondents 1, 4 and 12 lost control over their lessons; nevertheless, the learners enjoyed the active nature of the lessons. My interpretation was that the respondents were willing to take the risk of employing an active interventionist pedagogy (called “meddler-in-the-middle” by McWilliam 2009:8), although they clearly needed more instruction and experience. I therefore do not

criticise their evident lack of expertise, but rather appreciated their creative willingness to take sensible risks (see Section 2.4.2).

Respondent 12 presented a practical (map work) lesson. The active nature of the lesson resulted in enhanced learner participation and deeper learning (Prince 2004; Cheng 2011). The contrary was true in the case of Respondent 8 who presented a passive map work lesson. Her failure to include creative elements like exploring, collaboration and problem solving resulted in disengaged learners while little or no learning took place. Respondent 6 encouraged the learners to work constructively in groups and to move around in the classroom to create a product of learning (poster) as part of the learning activity. These collaborative and cooperative learning opportunities allowed the learners to learn with and from one another (see Prince 2004; Heron et al. 2006). Respondent 9 used the element of surprise when she ended her lesson on HIV/Aids by handing each learner a ribbon as a concrete reminder in order to prolong the learning experience as advocated by Torrance and Safter (1999). She reported that the learners wore the ribbons for the rest of the school term – prolonged learning indeed.

Most of the respondents resorted to the question-and-answer method that resulted in the learners participating in the lesson. Unfortunately, in most cases the respondents' formulation of the primarily content driven questions did not lead to deeper critical, speculative and probing thinking processes that might result in creative problem solving and solution finding (as advocated by Schwartz 2014). The respondents' observed incapability to stimulate and provoke higher order thinking from the learners were indicative of their prior little or no exposure to creative pedagogies. It was also evident that the respondents resorted to pedagogies like question-and-answer because that was what they could recall from their experiences at school and university. Runco (2004) and Beghetto (2013) highlight the influence student teachers' prior experiences in educational environments could play on their actual classroom practices, which illustrates the need for ITE lecturers to model creativity and demonstrate creative pedagogies.

Nevertheless, Respondent 2's confidence and sound content knowledge (Gess-Newsome & Lederman 1999; South Africa 2015) allowed him to use the question-and-answer method with a large group of learners in both a compassionate and disciplined manner as he linked the

questions to the learners' life experiences relevant to the topic (Butt 2011; Scoffham 2013). Respondent 10 asked carefully planned revision questions at the beginning of the lesson to create a safe learning environment. The confidence that was generated amongst the learners provided the creative spark to the rest of the lesson and it furthermore created anticipation amongst the learners to participate in the interactive lesson that was to follow (Torrance & Safter 1999).

It was not surprising that most of the respondents exhibited competence in using ICT (like *MS PowerPoint*) in their lessons since it is expected of ITE curricula in South Africa (South Africa 2015:11). Most of the respondents furthermore put strong emphasis on the use of ICT by teachers and lecturers they observed. However, no reference was made by the respondents to how the use of ICT resulted in creative contributions as a learning outcome.

According to my observations, the respondents used ICT (especially videos and graphics) in their geography classes to create anticipation and to stimulate the learners' interest in the lesson topic. *MS PowerPoint* slides also served the purpose of either replacing the textbook or providing additional information and visual effects. In many cases, however, the use of ICT resulted in learners becoming passive observers and recipients of information rather than becoming actively involved in discussing and critiquing facts to generate creative ideas in an attempt to synergise content knowledge into real life applications and solution finding.

It therefore became evident that the respondents were aware of and eager to use ICT in their lessons, but were not informed of the creative learning possibilities that could be unlocked in the teaching process. It would thus be fair to assume that the respondents of this study have either not witnessed or experienced, or that they lacked the insight and understanding of creativity to be able to recognise creative pedagogies that included the use of ICT that could lead to creative contributions as a learning outcome.

However, I did observe some mini-c incidents where some respondents (Respondents 1, 6, 7, 9, 10, 12) used *MS PowerPoint* slides and videos alongside other teaching aids like the blackboard, overhead projector and printed activity sheets to enhance the learning experience.

Respondents 6, 9, 10 and 12 used a variety of teaching strategies to keep the energy levels high and the learners were captivated and actively involved, as promoted by Shulman (1987:7) and discussed in Section 2.5. The *MS PowerPoint* slides designed by Respondent 9 displayed her creative ability – they were captivating and informative and included different formats like maps, diagrams, statistics and video clips. She furthermore played music when the learners entered and exited the classroom which added to the overall feeling of joy experienced by the learners (see Section 2.4.3.3).

Respondents 5 and 8 claimed that they used creative elements in some of the lessons they presented during their school practicums, but it was not the case in their geography lessons that I observed. At the beginning of the research period, both of them indicated that they did not regard themselves to be creative persons. This might have contributed to their visible vulnerability and fear to risk possible failure. In both cases their learners were passive and lost interest despite the sound content knowledge of the student teachers. These two examples were proof of what was discussed in Section 2.5 in that a teacher needs both deep content knowledge and creative skills to be able to actively involve learners and to engage and inspire their hearts and minds, as stressed by Grainger *et al.* (2004). The *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015:8) puts strong emphasis on the “the poor content and conceptual knowledge found amongst teachers” which needs to be addressed. This could explain why most respondents exhibited high levels of content knowledge (i.e. they were also graduate students of geography). The same document, however, does not mention that creativity is a priority in ITE.

Another barrier to creative enterprise was observed in the cases of Respondents 2 and 8 where they both were seemingly intimidated by standardised curricular pressure (see South Africa 2014; Robinson & Aronica 2015). Respondent 2 seemingly did not want to waste time as he felt the urge to cover the lesson content so that the learners would be able to succeed in their exams (learners from that community typically did not do homework). Respondent 8 admittedly copied the style of the school teacher and used the textbook as only resource because the learners were used to that – the school teacher apparently told her that there was no time in the curriculum for creative teaching and learning.

Although Respondent 11 was restricted in many ways by the environment in which he had found himself at the school, he showed creative enterprise in the way he gained cooperation from the Xhosa learners by showing empathy and respect to their culture in allowing them to discuss problems and generate ideas in isiXhosa (see Jenkinson 2010). As stipulated in *The Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015:11), ITE students should acquire:

knowledge of the varied learning situations, contexts and environments of education ... [and] an understanding of the complex and differentiated nature of the South African society, learning to work in nuanced ways in confronting the diverse challenges faced by children in schools and the communities they serve, for example HIV and AIDS, poverty and the lingering effects of apartheid, dealing with diversity, promoting inclusivity and environmental sustainability.

However, from my observation and Respondent 11's comments during the interview, it became apparent that the lecturer who observed the geography lesson presented by Respondent 11 did not recognise or comment on his above-mentioned capabilities. I therefore deduct that either the specific lecturer (who was not the geography lecturer) simply omitted to respond accordingly, or that creative situational learning outcomes (South Africa 2015:11) were not expected to be observed during ITE students' practical teaching.

Both Respondents 6 and 11 used extrinsic motivation (see Amabile 1996; Beghetto 2007a; Hennessey 2010) to encourage learners towards creative effort when completing their tasks. According to my interpretation, this was a good strategy because there was a lack of commitment to homework by learners at both these schools. Respondent 6 announced that there would be a prize for the group who produced the winning poster while Respondent 11 promised a chocolate as reward for the best effort when the learners were expected to design and draw a settlement as homework. In both cases this strategy led to heightened learner commitment, participation and enjoyment, although I cannot report on the anticipated creative learning outcomes in terms of the final creative product that would be submitted by the learners the next day.

In concluding this section, according to the data from the individual interviews at the end of the research period, the respondents' individual inclusion of creative elements in their geography PCK was seemingly not a result of their exposure to creative pedagogies as part of the PGCE programme, but rather because of their personal inclination to do so (or intrinsic motivation as proposed by scholars like Amabile 1983, 1996; Amabile *et al.* 1986; Sternberg & Lubart 1991; Hennessey & Amabile 1998; Hennessey 2000, 2003). When I observed that some of the respondents copied activities that I used in my tutoring sessions, I realised that they were not yet able to design their own creative activities. Respondent 8 admitted that she "used some of the activities in my lessons and it worked". Some respondents verbalised that they needed and wanted further instruction in creativity in relation to the geography content to be taught to their future learners (see South Africa 2011).

5.2.3 Creativity in initial teacher education

A strong theme that emerged from the research was the apparent absence of creativity as part of PCK in schools, as well as in the PGCE (ITE) programme as perceived by the respondents. Although the results of this study are not to be generalised to a larger population, the significance thereof in the context of the twelve respondents who attended twelve different schools from different parts of the country within a specific timeframe and who attended the same university at the same time, cannot be disregarded. The timeframe – two decades after the dawn of democracy in South Africa – is of extreme importance (refer to the discussion in Section 5.6).

Although the respondents of this study were not scholars of creativity and had limited exposure to creative instruction, they agreed on the importance of creativity in education in general and specifically in ITE programmes when they granted that "[i]t's important for every teacher to know how to be creative in the classroom" (Respondent 7) because "today's learners learn in different ways" (Respondent 3). Respondent 7's conclusion that "I think what is more important is preparing us for the classroom and I think creativity can teach us more about the classroom than teaching us only content can do" is in line with the aims of The *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015:10) where balance between theory and practice is promoted.

It was not the purpose of this study to evaluate the PGCE programme and I therefore did not attend lectures presented by the lecturers. I also did not have insight into the geography course content. However, I visited the geography work programme (Appendix 8) where the outcomes of the programme is set out and the different focus areas are listed. Mention was made of assessment methods like problem-solving tasks, fieldwork activities and teaching practice that might require creative capability. However, no mention of creative teaching strategies was made elsewhere in the document other than fieldwork, mapwork, interactive learning situations and group work. Unfortunately, the respondents did not provide any descriptive information on how lectures were conducted but rather reported that they could not recall creative lecturers.²⁸

In reflecting on their experiences of the PGCE programme, the respondents highlighted the supportive attitude and values displayed by their geography lecturer (see Section 2.4.1). They were more willing to take creative risks when planning and presenting their geography lessons than they were in the case of some other teaching subjects due to the apparent restrictive nature of some other lecturers' remarks and critique. My observations were supportive of the comments by the respondents. Accordingly, the geography lecturer encouraged his students to take sensible risks and experiment with different pedagogies. The focus of his interaction with each respondent after observing their lessons was formative rather than evaluative – the students could reflect on and learn from their experiences in order to develop and establish their individual professional identities. He also provided them with the perspective that a teacher develops and grows with experience. Although the respondents struggled to identify creativity in the PGCE programme in general, the motivational role played by the geography lecturer and the empathy he modelled might influence the affective effect the student teachers could have on their future learners (as discussed in Section 2.4.3.3).

When I reflected (as directed by Lilly & Bramwell-Rejskind 2004) on the interactive creative tutoring sessions I presented to the respondents as part of their PGCE programme, I realised

²⁸ Because of the limits of the scope of my research I would suggest that a possible future study into creative practices of PGCE lecturers be conducted (see Section 5.5.4).

that my demonstration and modelling of creative teaching, although interactive, was not sufficient. Rather, the respondents suggested that creative pedagogies (including ICT) should be used in the day-to-day lecturing of geography (and other subjects) as part of the PGCE (ITE) curriculum. Scholars like Cheng (2011) and Beghetto (2013) are strongly in favour of such a notion.

When lecturers employ creativity to provide the metaphoric spark that operationalises student teachers' understanding of subject matter (as discussed in Section 2.5), and furthermore provide opportunities for the development of their individual creativity in terms of cognitive abilities (Section 2.4.3.1), metacognitive abilities (Section 2.4.3.2) and emotional and affective elements (Section 2.4.3.3), student teachers will be able to think and act creatively in different circumstances. They will be able to use creativity as mediator between content knowledge and pedagogical practice in their teaching and also to explore, develop, apply and adapt different teaching, assessment and discipline strategies. My data indicated that although creativity was not expected of my respondents and not assessed during their teaching practicums, they regarded their inclusion of creative elements in their lessons as beneficiary to the outcomes of the formal assessment of their school practicums.

Although proper planning and curriculum design is needed (Fisher & Williams 2004; Lilly & Bramwell-Rejskind 2004; Ott & Pozzi 2010; Beghetto 2013) to include creativity in the day-to-day delivery of the PGCE programme, the *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* “allows for institutional flexibility and discretion in the allocation of credits within learning programmes, and encourages teacher educators to become engaged in curriculum design, policy implementation and research” (South Africa 2015:8). It thus seems fair to assume that the inclusion of creativity in ITE programmes in South Africa might be possible.

I thus conclude that creativity should be included not only in the delivery of ITE programmes, but also in the assessment criteria of ITE programmes – not only as part of student teachers' practical teaching sessions, but also as part of their academic learning outcomes (see Section 2.4.4). Resultantly and ideally, when student teachers are deliberately exposed to and given

the opportunity to experience and participate in creative pedagogies as part of their formal instruction, it would be fair to also expect of them to demonstrate creative learning outcomes and employ creative pedagogies during their teaching practicums.

5.3 RESPONSES TO THE RESEARCH QUESTIONS

The above-mentioned interpretation and synthesis of the results responded in depth to the research questions that guided this study. In summary, it showed that:

- although the respondents' perceptions and understanding of creativity have developed from the beginning to the end of the research period, they agreed that they needed more instruction in and how to apply creative pedagogies;
- most of the respondents did not include creative elements in the lessons they presented during their institutional practicums at the beginning of the research period since they were not previously exposed to creative teaching or instruction in creativity;
- most of the respondents purposefully and willingly included creative elements in the lessons they presented during their school practicums during the latter part of the research period although it was not expected of them to use creativity in their lessons for the purpose of evaluation by their lecturers; and
- at the end of the research period, all of the respondents were of the opinion that creativity was an important element that needed to be included in ITE programmes and they suggested that creativity could and should be incorporated into the day-to-day presenting of the PGCE curriculum because they experienced the beneficial outcomes of using creativity as mediator between their own content knowledge and pedagogical practice during their teaching practicums at schools, although at different levels of competence.

The interpreted results of this research suggest that the development of geography student teachers' use of creativity may act as mediator between their acquired content knowledge and their related applied pedagogical practice to provide for heightened PCK. This may be possible if lecturers of student teachers employ a variety of creative pedagogies (thus the modelling of

creativity in enhanced PCK by ITE lecturers) that practically and actively involve the student teachers during the process of acquiring content knowledge as prescribed by the relevant PGCE (ITE) programme (Fisher & Williams 2004; McWilliam 2008; Ott & Pozzi 2010; Beghetto 2013). What is therefore proposed (as discussed in Section 2.4.3.2) is that student teachers' creative skills (as referred to in Section 2.4.3.1) be developed if and while lecturers employ a variety of creative pedagogies in promoting student teachers' content knowledge as part of the day-to-day delivery of the ITE programme, and that creativity be included in assessment criteria of both conceptual and practical learning (Shulman 1986a, 1986b, 1987; Koehler & Mishra 2009; McWilliam 2009).

5.4 LIMITATIONS OF THE STUDY

This research was limited to the unique context of a small group of twelve geography PGCE students at a university in the Western Cape Province of South Africa. I had no access to PGCE students from other teaching subjects like history, art, science or maths. I therefore do not claim that the results of this study be generalised to a larger population.

I only observed the geography lecturer when he interacted with the respondents after they had presented their geography lessons during the institutional and school practicums. I thus had no insight into the lecturer's possible inclusion or exclusion of creativity in his lectures when presenting the PGCE programme. It was also not the purpose of this study to evaluate the lecturer or the PGCE programme in any way, but rather to report on the respondents' perceptions of the PGCE programme within the guidelines of the research questions of the study only.

I am admittedly more informed in the field of creativity than is the case with geography. I have extended experience in presenting developmental creativity programmes but have no experience in the teaching of geography to university students. In acknowledging my limitations in this regard, I consciously did not filter my observations of the lessons presented by the

respondents to be applicable to the teaching of geography only, but rather took a more holistic stance when reporting on the respondents' use of creativity to strengthen their PCK. It is therefore fair to assume that the results of this study could have been somewhat different had I been a geography expert. However, it has been repeated several times in this dissertation that creativity is not bound by a specific subject and should be incorporated into the teaching of all subjects.

5.5 IMPLICATIONS FOR THEORY, POLICY, PRACTICE AND FURTHER RESEARCH

In the opening chapter of this dissertation, I undertook, by way of this study, to contribute to the growing body of scholarship around the role that the development of student teachers' creativity could play in their applied pedagogical practice. I now put forward possible implications on theory, policy, practice and further research, following on the analysis and interpretation of the results as discussed in Chapters 4 and 5 above.

5.5.1 Implications on theory

This study built on developmental theories of creativity as proposed by scholars like Craft (2001b, 2002, 2003), Sternberg (2007, 2010), Kaufman and Beghetto (2009), Beghetto and Kaufman (2010) and Beghetto (2013). Another cornerstone of this study was the notion of pedagogical content knowledge (PCK) as theorised by Shulman (1986a, 1986b, 1987). This study thus considered the possible link between creativity and PCK where creativity could be used as mediator between pedagogical and content knowledge for enhanced and deeper learning. Hence, this empirical research investigated the perceptions of a group of student teachers about how the development of their creativity could act as mediator between their acquired content knowledge and pedagogical practice to provide for enhanced PCK in geography.

The developmental nature of creativity was evident in the case of the respondents of this study. All of them perceived their individual creative capability to have developed through the course

of the research programme. I also witnessed their improved application of creativity in their practical teaching sessions at schools during the latter part of the research programme, although at different levels of competence. Although it was not an expected outcome of this research, the respondents reported that they used creativity in teaching subjects other than geography and thus supported the notion that creativity belongs to all subjects as has been argued throughout. It was furthermore concluded that the respondents needed and requested further instruction in creativity to become more adept in using creativity to mediate their content knowledge and pedagogical practice for enhanced PCK.

The contribution of this study lies in showing that creativity can fill the existing gap between content knowledge and pedagogical practice (see Section 2.5) by providing for deeper learning and knowledge creation. Creativity can be developed alongside content knowledge and by means of pedagogical practice if students are encouraged to construe knowledge products and demonstrate teaching practices that value creativity.

I do not claim any statistical generalisation of the results of this research but rather pose analytic generalisation as proposed by Yin (2010, 2014). This implies that the carefully posed theoretical statement about the purposeful development of student teachers' creativity in ITE programmes could inform HE institutions in South Africa and elsewhere.

5.5.2 Implications on policy

In the opening paragraph of this dissertation I briefly referred to deliberate efforts to improve basic education in South Africa by means of legislation and education policy reforms (e.g. South Africa 1995, 2002, 2005, 2009, 2011, 2011a, 2011b, 2012). However, it was not in the scope of this study to provide in-depth discussion on education policy reforms in South Africa.

However, the relevance of two policy documents needs to be mentioned in the context of this study which is initial teacher education (ITE) in higher education (HE) in South Africa. It was highlighted in Section 5.2.2 that there seems to be a disjuncture between the standards for

beginner teachers as set out in the *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* (South Africa 2015) and what is required of teachers in the geography classroom according to the *Curriculum and Assessment Policy Statement, Grades 10–12, Geography* (South Africa 2011).

The *Revised Policy on the Minimum Requirements for Teacher Education Qualifications* places strong emphasis on the need for HE institutions to produce teachers “of high quality, in line with the needs of this country” (South Africa 2015:6). Further emphasis is placed on improving “especially the poor content and conceptual knowledge found amongst teachers” (p 8). Although the policy claims that “it gives renewed emphasis to *what* is to be learned and *how* it is to be learnt” (p 9), it does not provide directives on what “high quality” might mean in the context of ITE programmes in South Africa and how the levels of student teachers’ content and conceptual knowledge could be increased or how the “inter-connections between different types of knowledge and practices” could be facilitated (p 9). It is furthermore not clear how student teachers are expected “to draw reflexively from integrated and applied knowledge, so as to work flexibly and effectively in a variety of contexts ... by explicitly placing knowledge, reflection, connection, synthesis and research in the foreground” (p 9) in order to be able to practically apply the synergy of different types of knowledge (disciplinary learning, pedagogical learning, practical learning, fundamental learning and situational learning) in the classroom. While the importance of experience in practical teaching is highlighted by ensuring that enough time is allocated for teaching practicums in ITE programmes (p 29), the policy is not clear on how student teachers should become competent and show mastery of the synergy of the above-mentioned different types of knowledge. Rather, this policy (South Africa 2015) admits that:

The setting of standards, for example knowledge and practice standards as described in the Integrated Strategic Planning Framework for Teacher Education and Development, to define competences at deeper specialised levels for specific subjects or specialisations, is not defined in this policy. These standards will have to be developed by the relevant teacher education communities of practice. A process will be put in place to support the development of these standards for teacher education (South Africa 2015:6).

From my interactions with the respondents and from their comments during the interviews at the end of the research programme, it was clear that they held strong and valid opinions about the PGCE programme in relation to their experiences during their teaching practicums at schools. It was evident that they wanted their voices to be heard although it was the end of their ITE programme – their opinions and suggestions would therefore not be to their own benefit. The passionate way in which all of the respondents presented their ideas on how creativity could and should be included in the PGCE programme to mediate the acquisition of improved PCK reminded me that they grew up as children of a new democracy – they therefore expected their voices to be heard. The overarching and conclusive theme from the respondents' comments was that if they were trained with creativity in mind, they would be able to teach better.

The question to be asked then is whether policymakers consider the perceptions and experiences of student teachers when policies about ITE programmes are drafted. If policymakers for instance listened to my respondents, they would learn that they (the students) agreed and understood that it was expected of HE qualifications to have substantial conceptual and theoretical grounding, and therefore proposed that lecturers should convey these concepts by employing creative pedagogies. They furthermore viewed creativity as essential in preparing them for the practical aspects of teaching and therefore concluded that creativity should be combined with or infused into curriculum studies in all teaching subjects for them to broaden their repertoire of creative pedagogies to be used as part of heightened PCK.

In concluding this section I therefore suggest that if student teachers are consulted when ITE policies are drafted or amended or when the above-mentioned processes to develop standards for ITE programmes are negotiated or modified, it might have positive implications on future ITE students' learning outcomes. Such collaboration may furthermore add to the possible production of "teachers of high quality" (South Africa 2015:6) who will be able to teach 21st Century learners and effectively prepare creative citizens who will be able to create new knowledge to stay abreast of the fast-moving digital and conceptual age and solve yet unknown problems (see Section 2.2).

5.5.3 Implications on practice

Throughout this dissertation the importance of creativity in education and specifically the development of creativity in the context of ITE have been argued (e.g. Sections 2.3 and 5.2.1). Reference was also made to literature that indicated the prevalent steep road towards reaching the goal of incorporating creativity in ITE programmes in HE institutions and that institutional reform was needed (Beghetto 2013; Robinson & Aronica 2015). The *Revised Policy on the Minimum Requirements for Teacher Education Qualifications*, however, “allows for institutional flexibility and discretion in the allocation of credits within learning programmes, and encourages teacher educators to become engaged in curriculum design, policy implementation and research” (South Africa 2015: 8). In the context of this South African study it might therefore be possible to include creativity in ITE curricula if the institutional will and flexibility is there to do so.

According to the respondents of my study there seemed to be room for changes in the PGCE curriculum as well as enough time in the programme to incorporate creativity into curriculum studies of all teaching subjects (at the particular time of their particular PGCE studies). Although I take the perceptions and opinions of my respondents seriously, I also acknowledge the contextual, subjective and unsubstantiated nature thereof. Nevertheless, it provides food for thought and could be built upon to find both creative and feasible ways to address the issue of creativity as part of ITE programmes in South Africa.

It is, however, not within the scope of this research to impose directives on what needs to be done or on what needs to be taught as part of creative instruction in ITE programmes. Rather, reference is made to scholarly contributions on the factors that should be considered to purposefully develop individual creativity in student teachers (see Section 2.4). These factors²⁹ can be categorised as (1) providing a creative HE learning environment (Section 2.4.1), (2)

²⁹ These four factors relate to the Four Ps of Rhodes (1961) namely place/press, person, process and product (see Figure 2.1) that informed the organisational structure of this research.

stimulating the qualities of highly creative individuals in student teachers (Section 2.4.2)³⁰, (3) the modelling of creative teaching by lecturers for the manifestation of creative learning amongst their students (Section 2.4.3), and (4) the inclusion of creative assessment strategies in terms of both student teachers' academic learning and practical teaching outcomes (Section 2.4.4). While it is important that lecturers of student teachers include creativity in the assessment criteria of ITE programmes (Hennessey 2007, 2010; Landau 2007; Beghetto 2013), it is important to recognise the developmental nature of creativity (Kaufman & Beghetto 2009); there will be differences in creative responses between those students who are just starting the ITE programme and those leaving to go into employment. When students complete their university programmes they should be able to apply their creativity at a more advanced level of complexity than when they started. They should have developed a number of creative abilities and be able to use these in combination with the knowledge and skills they have developed while at university.

A strong theme that emerged from my research data was that the respondents could not identify incidents where lecturers used or displayed creativity in their teaching of the PGCE curriculum, although they highlighted the encouraging and creative environment provided by the geography lecturer (see Section 5.2.3). It is therefore implied that to assist students in learning about creativity, lecturers should reveal and model their own creativity and show students what it means to them in their own practice by allowing opportunities for reflection and collaboration. Lecturers could introduce creative thinking and problem solving strategies to encourage students to develop a repertoire of thinking skills that might enable them to think creatively in the context of ITE. It would be unfair to assume that ITE lecturers are automatically equipped with creative skills and that they are skilled in creative pedagogies as discussed in Section 2.4.4.3. It is therefore suggested that appropriate professional development opportunities be made available to them.

³⁰ The seven educator roles as described in the Norms and Standards for Educators (DOE 2000) contain many attributes that could, to my informed opinion (see chapter 2), be associated with the qualities of creative teachers such as "know about different approaches to teaching and learning"; "sensitive to the diverse needs of learners"; "construct learning environments that are appropriately contextualised and inspirational"; "design original learning programmes"; "demonstrate responsiveness to changing circumstances and needs"; "provide helpful feedback to learners"; "develop a supportive and empowering environment for the learner" (South Africa 2015:58, 59).

It would thus be beneficial if lecturers included creative pedagogies like project-based learning (Krajcik & Blumenfeld 2006) as suggested in Section 2.4.4 in the teaching of the curriculum to student teachers. In these and other creative pedagogical ways, different areas of conceptual and content knowledge could be covered in support of one another to save curricular time and to allow for the practical application of conceptual knowledge to real-life situations. Student teachers will furthermore gain experience in such creative pedagogies to implement it in their own teaching of geography and other subjects.

Therefore, university lecturers should give students opportunities to experience and practice their creativity by creating the curriculum spaces, conditions and experiences that are stimulating, relevant and authentic to their field of study (e.g. geography teaching) and creating challenging situations for learning where students are able to draw on and balance different abilities and discover for themselves how they can use their creativity in particular learning contexts (Jackson & Sinclair 2006; Beghetto 2013). In this way, student teachers may be enabled to employ creative pedagogies when teaching geography (and other subjects) to their learners (Mayer 1989; Reilly *et al.* 2011; Beghetto 2013). At the same time, student teachers' individual enhanced creative capacity will enable them to deal with curricular and other pressures of the teaching profession like standardised curricula and testing as well as multiple challenges of the fast moving 21st Century (Pink 2005; McWilliam 2008; Sternberg & Kaufman 2010; Robinson & Aronica 2015).

5.5.4 Implications on further research

A reasonable step would have been to examine in-service practices of the respondents to see how their enhanced awareness of creative teaching reflected in their teaching practices. This was unfortunately not possible in this instance and it is thus proposed that, if and when a similar study is conducted in future, it could also include longitudinal research.

Because of practical reasons of time constraints, this study did not measure the creative learning outcomes by the learners of the respondents during their practical teaching sessions. If a similar study is conducted in future, this aspect could be included.

Combining research on creativity and ITE will go a long way in identifying and addressing lingering misconceptions about creativity and problematic practices that student teachers have inherited from their own prior schooling experiences.

Since this study did not collect and thus provide any data on the conduct of PGCE lecturers insofar modelling and teaching creative pedagogies to student teachers, it is suggested that future research be conducted to establish to what extent university lecturers incorporate creativity in enhancing student teachers' PCK to prepare them for teaching 21st Century learners.

Research could be launched into current and relevant creative pedagogies to be applied in the ITE sector as well as to be combined, adapted or elaborated upon to create pedagogies uniquely and creatively appropriate to specific teaching subjects (like mathematics for instance).

Further international research into actual creative practices in HE institutions where ITE programmes are presented could be insightful, especially because I have found research in this regard to be scarce in South Africa. Such research could then be extended to South African universities with the purpose to compare and inform.

5.6 CONCLUDING THOUGHTS

This study mainly focused on developmental theories of creativity which advocate that there are qualitatively different levels of creativity (Beghetto & Kaufman 2007; Kaufman & Beghetto

2009; Beghetto 2013) and that creativity can and should be developed (Guilford 1950; Amabile 1989; McWilliam 2007; Robinson & Aronica 2015) in the context of ITE (Beghetto 2010, 2013). Simultaneously, the importance of preparing student teachers to become subject specialists (Gess-Newsome & Lederman 1999; South Africa 2015) was highlighted. These two focuses underlay the argument for creativity to be purposefully used to act as mediator between (student teachers') acquired content knowledge and their related applied pedagogical practice to provide for heightened pedagogical content knowledge (PCK) (Shulman 1986a, 1986b, 1987). If this could be achieved, student teachers will ultimately have a positive influence on the quality of basic education in South Africa that in turn will provide for better prepared HE students. Apart from enhanced PCK as an outcome, the individual student teacher (and learner) will benefit from acquiring creative skills to equip them to cope with future demands of the 21st Century.

The analysis and interpretation of this study's data revealed a synthesis with the literature in the field and iterated the changing landscape in which university students and school-going learners find themselves. The fast-paced world we live in today places demands on individuals to become more creative in their thinking to be able to cope with changing environments, changing knowledge, more choices, more information, more novelty, and greater levels of complexity (Beghetto & Kaufman 2010). Therefore, ITE in the 21st Century has to keep track with the apparent transition from the Information Age to the Conceptual Age (Pink 2005; McWilliam 2008). Information alone is no longer enough. Individuals (student teachers and their subsequent learners) have to be empowered to lead change and to survive inevitable change (Csikszentmihalyi 2006; Puccio & Keller-Mathers 2007). McWilliam (2008) adds that to be educated is crucial, but that it is better education (not just more education), that makes the real difference for engaging successfully in the higher-order thinking that is needed in the 21st Century. While academic knowledge and skills may be inadequate to meet the needs of a rapidly changing world, creativity may provide skills in coping with different environments, and therefore creativity becomes increasingly important in dealing with complex issues (Sternberg & Kaufman 2010).

The twelve respondents of this study were in agreement that creativity should be included in ITE programmes because they had realised the importance and practical advantages of incorporating creativity in PCK to enhance teaching and learning.

The obvious question then would be: How this could be done? Beghetto teaches creativity at graduate level to student teachers and has first-hand experience of the process. According to his response in an e-mail conversation:

(I)t seems that the clearest path to infusing creativity in university programs (and teacher education, in particular) results largely (or entirely) from faculty (and administrators) who recognise the value and connection among creativity, teaching, and learning. They thereby have made room in their courses or developed curricula. These efforts, for the most part, are mostly isolated individuals or housed in separate programs (rather than meaningfully integrated in and across the curriculum) (Beghetto 2014).

It thus seems clear that there is a need for a cultural change in ITE to be(come) more accepting of the value of creativity where lecturers learn to understand and value their own creativity, and to recognise this as an integral part of their professionalism. Also, an institutional climate which encourages and values critical reflection and personal development for both lecturers and students is needed, one which provides time for continuing academic debate and dialogue between the various stakeholders about the nature of professional teaching in ITE, and the role of creativity within it (Jackson 2006; Wisdom 2006). The need for creativity has never been greater as lecturers need to have a wide repertoire of forms of course design, teaching methods and assessment strategies to be able to accommodate the learning needs of ITE students in the Conceptual Age.

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APPENDIX 1

Consent of participants to participate in research



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STELLENBOSCH UNIVERSITY CONSENT OF PARTICIPANTS TO PARTICIPATE IN RESEARCH

Creativity in initial teacher education: A case study in geography

Dear Student

You are invited to participate in a study conducted by Mrs. Hessie de Waal (née Traut) who is currently enrolled as a PhD student in Education at Stellenbosch University. You were selected as a possible participant in this study because you are currently enrolled as a PGCE student specializing in geography. This study will be done with the collaboration of Prof Peter Beets, Curriculum Studies (Geography) Lecturer in Education at Stellenbosch University.

1. PURPOSE OF THE STUDY

The researcher will argue from the standpoint that creativity can be developed in any person and therefore that student teachers may benefit from unleashing their inherent creativity which might have been undeveloped or underdeveloped. McWilliam (2007) and McWilliam and Dawson (2008) hold that creativity is a skill that can be developed as a result of specific implemented pedagogical practices and argue that universities should teach aspects of creativity like thinking and application skills which can be developed through appropriate pedagogies. Feldman (in Sternberg 1999:170) explains:

Creative accomplishment, after all, is nothing if not a developmental shift, a significant reorganization of knowledge and understanding, which can lead to changes in products, ideas, beliefs, and technologies. Creativity is quintessentially a developmental matter.

The purpose of the research is to analyse and describe the perceptions of a selected group of Postgraduate Certificate in Education (PGCE) students of Stellenbosch University (SU). The respondents make up a small group of PGCE students specializing in geography at SU, who will take part in a purposeful developmental creativity programme and who will reflect on their implementation of acquired creative competencies during their practice teaching sessions at university and in schools. As a central part of the research process, there will be a close alignment of the academic programme (geography) with practical application of creative teaching skills. The purpose of the qualitative study is to report on the researcher's interpretation and understanding of the individual students' perceptions about creativity as mediator between content knowledge and pedagogical practice in initial teacher education. The researcher will not claim to generalise the findings of the study to a broader population. **PROCEDURES**

If you agree to participate in this study, you will be requested to complete a qualitative questionnaire on your individual perceptions of creativity. During the first semester of 2012, the researcher will, alongside the geography lecturer (Prof Peter Beets), facilitate a developmental creativity programme within the context of the SU Curriculum Studies (Geography) module. Also, during the first semester, the researcher will observe the individual students' "fishbowl" practical teaching sessions, where the researcher will provide the students with feedback after the lesson is presented in the form of a short personal interview. This will serve as a developmental intervention, where the individual student may benefit from the expertise of the researcher, while the student's skill of reflection is being enforced. During the second semester of 2012, the researcher, alongside Prof Beets, will observe the students' practical teaching sessions at schools. Lastly, the researcher will conduct individual in-depth interviews with each participant, which will be guided by the researcher's observations of the individual students during the year, as well as from the individual questionnaires.

3. POTENTIAL RISKS AND DISCOMFORTS

Participants will not experience any discomfort or be exposed to any risk.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

The participants will not be assessed or evaluated insofar as their participation in the programme is concerned and therefore there will be no academic benefit for the participating students.

The participants will be introduced to creativity theory and practice which will broaden their horizons and influence their learning outcomes, especially insofar as practical teaching, through the acquisition of creative thinking and teaching skills.

5. PAYMENT FOR PARTICIPATION

There will be no material benefits (no rewards, etc.) for taking part in this research.

6. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with participating students will be treated as confidential. The researcher will therefore label the individual participating students in numerical order, such as "Respondent 1", etc. and also attach the appropriate label to the questionnaires and interview transcriptions. No names or any other personal information will be known by any other person than the researcher. All research documents will be kept in a safe place and will only be accessible by the researcher.

7. PARTICIPATION AND WITHDRAWAL

This is a request for you to take part in the study. Nevertheless, students who choose not to take part in the study will be free to do so and no demands will be put on them to participate in class and/or during practical teaching sessions. No student will be penalised or advantaged because of their participation or not. Participants may refuse to answer any questions for personal reasons and also may withdraw from the study at any time.

8. IDENTIFICATION OF RESEARCHER

For further questions or concerns about the research, please contact:

Mrs Hessie de Waal (néé Traut) (Researcher) at 0825637367 / hessie.dewaal@gmail.com or hessietraut@gmail.com

Prof Peter Beets (Promoter) at 021 8082298 / padb@sun.ac.za.

SIGNATURE OF RESEARCH SUBJECT/PARTICIPANT

The information above was described to me by Mrs. Hessie de Waal in English / Afrikaans and I am in command of this language. I was given the opportunity to ask questions and these questions were answered to my satisfaction. I understand that my participation is voluntary and that I can withdraw from the study at any time without prejudice. Signing this form does not waive any of my legal rights.

I hereby consent to participate in this study. I have been given a copy of this form.

Name of Subject/Participant

Signature of Subject/Participant

Date**SIGNATURE OF RESEARCHER**

I declare that I explained the information given in this document to

[He/She] was encouraged and given ample time to ask questions. This conversation was conducted in English / Afrikaans and no translator was used.

Signature of Researcher

Date

APPENDIX 2

Qualitative questionnaire



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QUALITATIVE QUESTIONNAIRE

Creativity in initial teacher education: A case study in Geography

Dear Student

Thank you for agreeing to participate in this study conducted by Mrs. Hessie de Waal. This study forms part of her PhD study in Education at Stellenbosch University. You were selected as a possible participant in this study because you are currently enrolled as a PGCE student specializing in Geography. This study will be done with the collaboration of Prof Peter Beets, Curriculum Studies (Geography) Lecturer at Stellenbosch University.

Please complete all the questions below.

1. Have you had any formal training in Creativity? (Please mark the appropriate answer with an X).

YES	
NO	

If answered yes, please tell me more about the training.

2. How would you define Creativity?
3. How would you describe a Creative Person?

The most creative person I know (of),

4. Explain why you chose to describe a creative person in the way you did?
5. Tell me about the most creative product you know of.
6. Explain why you regard the abovementioned product creative.
7. Tell me about the most creative idea you ever had.
8. Briefly describe the process you followed in finding the creative idea.
9. On a scale of TEN (where 10 is the most creative), indicate how creative you regard yourself.
10. Give reasons on why you chose the above indicator.
11. Can you think of a teacher or teachers in your life who had taught you with exceptional creativity? If yes, please describe the creative teaching you had experienced.
12. Why do you think some teachers refrain from using creativity in their teaching?
13. As a future Geography teacher, how would you go about to teach creatively?
14. What is your opinion about the possible impact the integration of creativity in teaching may have on learners?
15. Is there anything else you would like to add to what you have mentioned above?

SIGNATURE OF RESEARCH SUBJECT/PARTICIPANT

The information above was described to me by Mrs. Hessie de Waal (née Traut) in English / Afrikaans and I am in command of this language. I was given the opportunity to ask questions and these questions were answered to my satisfaction. I understand that my participation is voluntary and that I can withdraw from the study at any time without prejudice. Signing this form does not waive any of my legal rights.

I hereby consent to participate in this study. I have been given a copy of this form.

Name of Subject/Participant

Student number

Signature of Subject/Participant

Date**SIGNATURE OF RESEARCHER**

I declare that I explained the information given in this document to

[He/she] was encouraged and given ample time to ask questions. This conversation was conducted in English / Afrikaans and no translator was used.

Signature of Researcher

Date

APPENDIX 3**Classroom observation schedule****GENERAL INFORMATION**

Participant code		Number of learners in class / Gender split	
Observation site		Language of instruction / learning	
Grade		Availability of resources (physical / social / educational)	
Date		Nature of discipline / pedagogical atmosphere	
Time		Arrangement / classroom organization	

CLASSROOM OBSERVATION SCHEDULE

		Not Observed	Observed	Accomplished very well	Further notes / remarks
A	Content / Context / Content Knowledge and Relevance				
	Opening / Introduction: Novel, appropriate and stimulating, establishing rapport. Able to adapt / improvise content and presentation to needs of learners.				
	Demonstrated command of subject matter. Lesson purpose and objectives communicated holistically and clearly. Lesson was stimulating and thought provoking.				
B	Teacher / Facilitator				
	Used body language, gestures and eye contact to generate positive energy and communicate a sense of				

	enthusiasm and excitement toward the content, resulting in the enhancement of learners' eagerness to learn.				
	Modeled creative thinking styles and creative strategies e.g. used humor in positive an appropriate ways; used intonation to vary emphasis; used a variety of spaces in the classroom, allowing for movement by teacher as well as learners.				
C	Pedagogy				
	Selected teaching methods and strategies which stimulated learners' creativity, curiosity and participation. Incorporated various appropriate and relevant instructional supports like Power Point, maps, diagrams, etc.				
	Explained difficult terms, concepts or problems in more than one way: different / interesting / divergent / creative.				

	Learners and teacher engaged in creative collaboration. Gave learners enough time to respond, while stimulating curiosity, exploration and risk taking.				
	Clearly organized and carefully explained assignment / activity / task, while providing opportunity for divergent thinking.				
	Handouts / text were visually pleasing and thought provoking, while also providing manifold and stimulating materials for the elaboration of ideas.				
D	Environment				
	Class atmosphere was warm, welcoming, tolerant, participative and appreciative of unusual thoughts, original ideas, and individual expression which may result in creative products.				
	Encouraged learners' questions, involvement, and debate. Provided				

	<p>challenging opportunities to stimulate discussion and critical and creative thinking.</p> <p>Encouraged confidence and risk taking. Respected diverse opinions and responses.</p> <p>Encouraged learners to respond to each other's questions and answers in positive and non-judgmental dialogue.</p>				
<p>E</p>	<p>Learning</p>				
	<p>Encouraged learners to accept, acknowledge and appreciate their own creative thinking, acting, and producing and to do likewise for other people.</p>				
	<p>Learning based on principles of creativity such as problem recognition, idea generation, originality, elaboration, flexibility, freedom, solution construction, which are relevant with references to "real world" applications and new settings.</p>				

	<p>Provided opportunities for creative thought in assignments and tests, e.g. Learning activities which include verbs like <i>design; imagine; invent; what if</i>, etc</p>				
	<p>Learners could choose their own topics for papers or presentations, or problem solving methods</p>				

APPENDIX 4

Interview schedule

At the beginning of the year, you completed a questionnaire about your perceptions about creativity at that stage. In the meanwhile, you have been exposed to a few creative thinking workshops and other formal PGCE programmes. You have also done practical teaching: first, the fishbowl, where after I had a mentoring session with you. Then you went for practical teaching at a school during the 3rd term, where you had the opportunity to learn from experienced teachers. You also had to teach and take full responsibility of the lessons you presented.

You are now going to reflect on your PGCE year. I am going to record the interview. The interview data will be processed unanimously and collectively. Therefore, please feel free to express yourself without the fear of being recognized. I will be the only person to handle the data.

The structure of the interview will be semi-structured and open-ended. This means that all respondents will be asked the same questions, but you are free to elaborate as much as you wish to do. I will set no boundaries for you to express yourself and will not expect of you to answer any sensitive questions. If you at any stage feel uncomfortable about a question, please feel free to inform me and also feel free to refuse to answer the particular question. You are also free to terminate the interview if you feel ill or if you prefer not to continue for whatever reason.

I want to thank you for your willingness to take part in this study and for taking the time.

1. What is your understanding of creativity?
2. How would you describe a creative teacher?
3. Who was the most creative teacher you have observed and why (you don't have to name the person)?
4. Who was the least creative teacher you have observed and why (you don't have to name the person)?
5. How would you describe the ideal classroom setup conducive for creativity?
6. How would you describe the ideal classroom atmosphere most conducive for creativity?
7. Tell me about the classroom most conducive for creativity you had observed and why. Think about class set-up and atmosphere.
8. Tell me about the classroom least conducive for creativity you had observed and why. Think about class set-up and atmosphere.
9. Tell me about the most creative lesson you have observed and explain why you deem it to be creative. Think about the teacher, content, methodology, atmosphere and learners' levels of participation and excitement.
10. Tell me about the least creative lesson you have observed and explain why you deem it to be not creative. Think about the teacher, content, methodology, atmosphere and learners' levels of participation and excitement.
11. Tell me about your journey this year from the first fishbowl lesson to the last day in the school.
12. What would you like to highlight as the area in which you had grown the most? Why?
13. In which areas of teaching do you feel least prepared / most uncomfortable with? Why?
14. How do you feel about the school you were placed in? Why?
15. Tell me about the most creative lesson or activity you have presented and why you regard it to be creative.

16. How did you feel when you realized that the learners are excited and enjoyed your lesson? Describe what you were doing and how they responded.
17. How did you experience the feedback the lecturers gave after a krit-lesson? If positive/negative, explain why and how it made you feel.
18. Do you think that the PGCE programme was suffice in preparing you to be a teacher?
19. How do you think the programme can be adapted to provide for more effective preparation?
20. Do you think you had benefited from the creativity workshops I presented and the mentoring session I had with you? How?
21. Do you think there is a need for a module like that in the PGCE curriculum? Why?
22. Do you think there is enough time to include a module on creativity?
23. In which ways did your perceptions and perspectives about teaching change throughout the year?
24. Do you now want to teach more than you did at the end of last year?
25. In a few sentences, describe to me the kind of teacher you want to be. You may make use of metaphors, analogies or comparisons.

Is there anything you want to add or ask?

Thank you very much for your participation and good luck with the exams!

APPENDIX 5

Creative tutoring sessions

OUTCOMES:

The student will:

- receive relevant information regarding the research process
- give written consent to participate in the research
- complete a qualitative questionnaire on their perceptions of creativity at the onset of the research
- be introduced to creativity theory and practice
- be introduced to creative thinking skills
- be introduced to creative teaching and learning

PROGRAMME:

DATE	TOPIC / FOCUS AREA	CONTENT
5 March 2012 12:00-13:00	Introduction Overview Admin Questionnaires	Explain research process Written consent from students Qualitative questionnaires: students' perception of creativity at onset of research
12 March 2012 12:00-13:00	Defining creativity (Amabile, Buzan, Jobs, etc.) 4 P's (Rhodes)	Icebreaker activity to enhance anticipation and enjoyment – includes music Work in pairs: define creativity - feedback Individual drawing activity (Torrance)

	<p>Developmental theory of creativity (Beghetto)</p> <p>Reflection</p>	<p>Power Point presentation on research of individual creativity in children</p> <p>Power Point presentation on developmental theory of creativity</p> <p>Group work: creativity games that can be used in classrooms to stimulate creative thinking and curiosity</p> <p>Reflect on perceptions and experiences</p>
<p>16 April 2012 12:00-13:00</p>	<p>Creativity can be taught</p> <p>Creative Thinking Skills: Fluency, Flexibility, Elaboration, Originality, Sensitivity, Freedom</p> <p>Creative Thinking techniques</p> <p>Active and interactive learning</p> <p>Visual stimuli</p> <p>ICT</p>	<p>Group activities to enhance anticipation and excitement towards learning (Torrance & Safter)</p> <p>Revision of previous session</p> <p>Individual Fluency activity (divergence): generate ideas on different uses for empty plastic bottle (recycling)</p> <p>Elaborate in groups – focus on Originality and Appropriateness/Sensitivity (convergence) – present to class</p> <p>Forced Relationships – activity in Elaboration – expand idea of uses of plastic bottle – stretch imagination – Freedom of thought – present ideas to class – evaluation (convergence)</p> <p>Power Point slides: original and appropriate ideas for geography classroom and teaching</p>

	<p>Humour</p> <p>Learner-centred teaching</p> <p>Reflection</p> <p>Meta-cognition</p>	<p>Video: humour inside classroom</p> <p>Cartoon: context of children</p> <p>Reflect on experiences and on ideas how to take it into future classrooms</p>
<p>7 May 2012</p> <p>12:00-13:00</p>	<p>The creative teacher</p> <p>The creative environment</p> <p>The creative process and product (Robinson, etc)</p> <p>Creative teaching</p> <p>Reflection and closure</p>	<p>Humorous creative physical activity</p> <p>Revision of previous session</p> <p>Open discussion: what kind of teacher do you want to be – visualize your classroom, etc. – build on one another’s ideas</p> <p>Drawing activity: draw a creative teacher piece by piece per student – add to one another’s pictures. Put completed pictures on wall and explain to group / discuss.</p> <p>Activity: use clay to illustrate a geographical fact/process or to create a creature in a specific context. Present to group. Background music – atmosphere</p> <p>Case studies: evaluate printed lessons on a scale for creativity and discuss reasons</p> <p>Activity: In a circle, keep balloon in air by saying what you have learnt, observed and enjoyed (hold balloon temporarily when talking)</p>

APPENDIX 6

Example of transcribed interview

RESEARCHER: At the beginning of the year, you completed a questionnaire about your perceptions about creativity at that stage. In the meanwhile, you have been exposed to a few creative thinking workshops and other formal PGCE programmes. You have also done practical teaching: first, the fishbowl, where after I had a mentoring session with you. Then you went for practical teaching at a school during the 3rd term, where you had the opportunity to learn from experienced teachers. You also had to teach and take full responsibility of the lessons you presented.

You are now going to reflect on your PGCE year. I am going to record the interview. The interview data will be processed unanimously and collectively. Therefore, please feel free to express yourself without the fear of being recognized. I will be the only person to handle the data.

The structure of the interview will be semi-structured and open-ended. This means that all respondents will be asked the same questions, but you are free to elaborate as much as you wish to do. I will set no boundaries for you to express yourself and will not expect of you to answer any sensitive questions. If you at any stage feel uncomfortable about a question, please feel free to inform me and also feel free to refuse to answer the particular question. You are also free to terminate the interview if you feel ill or if you prefer not to continue for whatever reason.

I want to thank you for your willingness to take part in this study and for taking the time.

1. RESEARCHER: What is your understanding of creativity?

RESPONDENT: I learned a lot about creativity. I always thought it was in the art direction like be creative decorating, coming up with ideas, more visual aspect. But through this year I've learned a lot more, like it's more coming up with ideas that people don't see, but coming up blinks of ideas, it's like coming up with ideas that's outside the boxes. Like very clever ideas, like very... shoe that's a good idea... also holistic ideas.

2. RESEARCHER: How would you describe a creative teacher?

RESPONDENT: Obviously very enthusiastic – enthusiasm must rub off on the class. And then they must also like want to look for new experiences and look for opportunities to help the learners to enjoy the subject as much as possible and learn as much as possible, for example a history teacher shouldn't just teach learners history, but use documentaries to intrigue learners and – the class should be colourful, it shouldn't be boring and everything is just work. Because I think if the learners have fun and enjoy the class then they are going to learn the best.

3. RESEARCHER: Who was the most creative teacher you have observed and why (you don't have to name the person)?

RESPONDENT: I would say, when I was in grade 5, I had [a teacher] who was really creative, the whole class was colourful and she used to give us sweets in class when we were good and she was just really fun and everything she did was just fun.

4. RESEARCHER: Who was the least creative teacher you have observed and why (you don't have to name the person)?

RESPONDENT: It's difficult, but I think in general, [uncreative] teachers are very like dull, they just teach the work in such dull way and make the work so boring, just you cannot apply it to your everyday living; it's just in this box.

5. RESEARCHER: How would you describe the ideal classroom setup conducive for creativity?

RESPONDENT: It mustn't be too distracting, it mustn't distract the learners. But it should be like, the colours and stuff must inspire the learners to want to learn. The colours

should be properly executed and stuff, like it should be like calming colours. There should also be a lot of visuals, for example in a Geography class, I will use a lot of visuals of mountains and clouds, so the learners when learning about mountains will have a visual to help them. The desks: I would say – to be practical, 'cause the learners distract each other in class and stuff, so I would like to have the desks close to the teacher, so she can interact with the class. But the learners should face the teacher, maybe like two desks, ja, two – [groups of two facing one another].

6. RESEARCHER: How would you describe the ideal classroom atmosphere most conducive for creativity?

RESPONDENT: The teacher has to be like very enthusiastic and she must make the subject so fascinating, like wow, this is so fascinating, when she teaches, she must carry that, that it would rub off on the learners – you just teach like that's the atmosphere and also I will like to have music, like when they walk in and when they do a test, I will play soft music so they can ... it must also be a fun atmosphere, but also a strict atmosphere so that is not too disorderly – fun, but with order.

7. RESEARCHER: Tell me about the classroom most conducive for creativity you had observed and why. Think about class set-up and atmosphere.

RESPONDENT: The classes didn't have the resources to be creative, but ... uhm I think my History teacher's class was nice, but I would change a lot, I'll buy Power Point projector and put that in the class. But I liked the fact that she had a lot of posters in the classroom. [And the atmosphere?] She was very firm, but she kept order in the class – the way the desks were structured, the learners weren't all crazy and talking to each other. [Did they interact with her?] Ja, they did. Afterwards, she would have class discussions with them.

8. RESEARCHER: Tell me about the classroom least conducive for creativity you had observed and why. Think about class set-up and atmosphere.

RESPONDENT: Ja, there was this one classroom, it was like an open classroom, because the Geography teacher had to move around and this art classroom was like a mess, because everything was messy, with papers all around the class and the desks –

the learners' backs were towards the teacher and you know... it was too messy and unorganized.

9. RESEARCHER: Tell me about the most creative lesson you have observed and explain why you deem it to be creative. Think about the teacher, content, methodology, atmosphere and learners' levels of participation and excitement.

RESPONDENT: I think there must be a lot of elements, like Prof Beets taught us, there must be just one thing, there must be activities, there must be videos, there must be the board, there must be pictures, there must be all those things so that the learners can have all different ways to learn the content. What I really enjoyed was when I did Geography first year, and then like the professors showed us videos – they started off by showing us videos about the cosmos and it made it very interesting and then they kind of explained afterwards what it was all about and they like introduced it to you and then you were all interested and like okay, tomorrow we are going to learn about this aspect and that excited you.

10. RESEARCHER: Tell me about the least creative lesson you have observed and explain why you deem it to be not creative. Think about the teacher, content, methodology, atmosphere and learners' levels of participation and excitement.

RESPONDENT: The subject can make it very boring, like Accounting at school. It's so bland, like all you do is sums... The teacher just taught us the work, give us the answers...

11. RESEARCHER: Tell me about your journey this year from the first fishbowl lesson to the last day in the school.

RESPONDENT: There are a lot of things, like I first, when I started the course, I really thought school was going to be horrible. I had this bad misconception. I was very scared to go to school. And then, when I went to the school I was like totally shocked, I really started loving it and ja, I grew a lot from the beginning to the end. I also learned like to be more confident, how to be more authoritative. I learned how to be powerful, because I'm also timid and I learned how to be authoritative and also learned how to speak in

public and also how to interact with the learners, I really enjoyed that. I really learned a lot of myself.

12. RESEARCHER: What would you like to highlight as the area in which you had grown the most? Why?

RESPONDENT: Definitely I've grown, like giving lessons, like the way you think when you have to give a lesson like the beginning, the end – now it just comes naturally, you know. I was a bit stuck in the beginning, how I'm gonna... I've learned a lot of life skills like don't assume things are going to be so bad until you experience it. [You did very well with those kids ...] They were very naughty, those kids – because I was in such a bad school, now I know how to [laugh]. [But they were good in your class. Were they always so good in your class?] The grade 10 and 12's were fine, because they were small classes. But the grade 8 and 9's they were monkeys – yoh – the History teacher was the only one who could control them.

13. RESEARCHER: In which areas of teaching do you feel least prepared / most uncomfortable with? Why?

RESPONDENT: I think definitely discipline, that's quite a challenge. I thought it was easy but it's not that easy to keep learners quiet. And it's difficult to be hard on them, be rude to them and punish them, because I feel like a witch, but you have to. And then also, I think it's going to be very overwhelming all the work, to organize it, admin, to get into that, like marking tests and stuff, that's going to be hard to get into – manage my time. [Did you have to stay after school – what time did you go home?] I went home the normal time except for my extra-mural activities – I gave extra art [laughs]. Because the learners they were so creative and they just draw the whole time, so I was like: should I give you extra art classes? And they couldn't wait, every week. And they made the most beautiful beads... I took photos, it's in my portfolios. They were also so passionate – like after an hour, they wanted to continue.

14. RESEARCHER: How do you feel about the school you were placed in? Why?

RESPONDENT: It was really good, because it was a very challenging school, but that taught me like I got the worst, now I know like what to do when there's no discipline and

it won't be a shocker to me when I get to another school – I experienced the worst. But I was actually enjoying it, because it really opened my eyes to like different sectors in our country and how people are living – they are living in poverty – it was quite a culture shock and, ja, I actually enjoyed the school. I also felt like – the learners – you can have a big influence on the learners. [Did you learn from the teachers?]. To be honest, I found the school to be very disorganized, like the discipline process and the way ... I think they can totally fix the school by just changing the discipline process because it's very unorganized and the teachers weren't that organized. I just feel there should be more structure, because if they were late for class, or if they misbehave, they don't get detention, that's why they so naughty. Discipline was bad. And supervising classes and stuff – like a teacher would be absent and then you have to take the class for the whole day – and then because they had nothing to do, they were naughty. So keeping them quiet and being rude to them and shouting...

15. RESEARCHER: Tell me about the most creative lesson or activity you have presented and why you regard it to be creative.

RESPONDENT: I once gave History (fishbowl) and then I was really creative. I did the French Revolution – they ate marshmallows and then at the end of the class I read a thing about the marshmallows and the French Revolution. I just showed nice videos. I started the lesson by saying in French Hallo on the power point and ended it by saying goodbye. [How were the kids?] They enjoyed it, ja. And I showed them the dress code they wore during the French Revolution. It was girls, Rhenish girls – they were very interested.

16. RESEARCHER: How did you feel when you realized that the learners are excited and enjoyed your lesson? Describe what you were doing and how they responded.

RESPONDENT: I think it was very fun for them. [How did it make you feel?] I felt way better. I felt that it was fun and that they enjoyed it. I enjoyed just interacting with the learners. I just loved the learners. I enjoyed interacting with them, and having the power around the class and making them interested in the class.

17. RESEARCHER: How did you experience the feedback the lecturers gave after a krit-lesson? If positive/negative, explain why and how it made you feel.

RESPONDENT: I felt good, like, they were very positive and they said I interacted very well with the learners. The other lecturer was like... the power point was too busy, there were things moving around and he was... like it was too busy and so. He was stricter.

18. RESEARCHER: Do you think that the PGCE programme was suffice in preparing you to be a teacher?

RESPONDENT: Ja, I think it did. I would have liked to ... learn about how to discipline learners, the whole psychology of disciplining, we should go more into that, because I think it is really important, the whole psychology behind it. And then, but I feel, ja, quite prepared – diversity and stuff, I thought it was stupid, but now it really makes sense.

19. RESEARCHER: How do you think the programme can be adapted to provide for more effective preparation?

RESPONDENT: Research – it's stupid, all that we ever do is this huge research project now and I think – I understand actually that research is good, but to go into all this detail on how to table it and stuff. In Psychology last year, I had Research. I think it's good to understand more or less, but I don't think it's necessary to go into detail.

20. RESEARCHER: Do you think you had benefited from the creativity workshops I presented and the mentoring session I had with you? How?

RESPONDENT: Ja, definitely. I learnt a lot of tips like how to start a class, like do a little fun game and how to just add spunk to the class.

21. RESEARCHER: Do you think there is a need for a module like that in the PGCE curriculum? Why?

RESPONDENT: Ja, definitely. Because I think, teaching, you have to be creative, because you have all this information you have to present to the class, so you have such a huge influence on the learners. Like having a creative class can have a child so much more interested in the subject and can make the class atmosphere so much better and I think everyone has creativity it only has to be unleashed. [Did you have any other input

in the course than my – is there anything else on creativity?] No, there's nothing. And I think it's really ... because teaching is being creative.

22. RESEARCHER: Do you think there is enough time to include a module on creativity?

RESPONDENT: I think there is, they should just take other subjects that aren't that important away and add creativity.

23. RESEARCHER: In which ways did your perceptions and perspectives about teaching change throughout the year?

RESPONDENT: Well I learnt that teaching is a very humbling job; it's a very rewarding and self-sacrificing job, so I never knew it was so fulfilling. I also realized that you have a lot of responsibilities, it's a very difficult job and you have to cater for all those learners and make sure that all those learners are fine. In the beginning of the year I never knew it was so rewarding, I only thought I was going to teach content and then go home.

24. RESEARCHER: Do you now want to teach more than you did at the end of last year?

RESPONDENT: Actually more – I always thought of teaching from the viewpoint of a learner, and now I realize it's way different, because you're on the other side, so yes.

25. RESEARCHER: In a few sentences, describe to me the kind of teacher you want to be. You may make use of metaphors, analogies or comparisons.

RESPONDENT: I want to be like a really kind teacher, organized, motivate, fun, creative, enthusiastic, exciting, very like caring and encouraging.

APPENDIX 7

Example of respondent's lesson planning

LESBEPLANNING / LESSON PREPARATION

	Onderrigmoment Teaching moment	Tyd Time	Kennis, konsep, vaardigheid, toepassing, taal Knowledge, concept, skills, application, language	Onderrigstrategie / Teaching strategy		Onderrighulpmiddels Teaching aids	Konsolidering Assessering Consolidation / Assessment
				Onderwyser / Teacher	Leerder / Learner		
Sleutelvrae Key questions	① Introduction: Different forms of water in world	3min	Earth has four (4) systems → We will look at the hydrosphere. Look at different forms of water <ul style="list-style-type: none"> liquid solid gas 	Through means of teaching aids, communicate to learners the knowledge of different forms of water.	Availability of Activity booklet: (can read and listen about topic, and look at examples provided)	<ul style="list-style-type: none"> • Powerpoint • Verbal • Activity Booklet • Pictures 	Activity 1 in activity booklet. the incorporating phases of water in water cycle.
	② Water Cycle	10min	Communicate and teach the water cycle. Concept of water cycles, the phases and processes of the water cycle, and the results thereof.	the Communicate the water cycle using a few teaching aids phases of water in cycle <ul style="list-style-type: none"> • Processes <ul style="list-style-type: none"> evaporation condensation precipitation 	Study water cycle through means of visual aid & video provided.	<ul style="list-style-type: none"> • Powerpoint • Activity booklet • Diagram • Song / Video (Video-audio) • blackboard 	Activity 2 in booklet: understand & label water cycle and answer two questions.
	③ Freshwater and Seawater concept	3minute	Fundamental difference between salt water and freshwater. Why saltwater? An introduction for "Oceans" (concept / teaching moment number 4)	Ask students their opinion: difference between salt- and fresh water. State a fact on dissolved salts.	Students think about difference between salt and freshwater: what they understand it to be.	<ul style="list-style-type: none"> • Powerpoint • Activity booklet • Discussion 	Discussion / verbal question: What student understands difference between salt & freshwater to be.
	④ Ocean	10min	Take a look at the ocean under the following headings: <ul style="list-style-type: none"> • Situated where? • Ocean currents (Why are they important?) • Why are oceans important? • Relationship between oceans & people, and strategies to managing oceans. 	Look at where oceans are situated. Look at ocean currents and their importance. Look at importance of ocean for humans etc. Show impact of negative factors on oceans	Students can follow in activity booklet as well as listen, and understand diagrams. Can study the ocean as a whole and why it is important.	<ul style="list-style-type: none"> • Powerpoint • Diagrams • World Map • Discussion • Activity booklet 	Activity booklet and class discussion. Activity 2 in booklet: strategies for managing the world's oceans.
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APPENDIX 8

Geography course programme

UNIVERSITY OF STELLENBOSCH

Department Curriculum Studies

Curriculum Study (Geography) 61662-774

WORK PROGRAMME 2012

Lecture room: 4002

Periods: Monday 11:00 to 12:50 (Periods 4 and 5)

Contact sessions: Lectures, interactive learning situations; group work; individual research assignments, outdoor excursions

Notes: Duplicated by lecturer, notes by student, insights from learning situations and own research as well as resource materials, e.g. atlases, topographical and orthophoto maps, consulting libraries and available databases.

Problems: Students are invited to discuss any problem with the lecturer as soon as possible.

Class attendance: Compulsory

Excursion: Possible visit to Paarlberg (Fieldwork & Mapwork)
Possible visit to Weather Office (Cape Town International Airport) & Khayelitsha

OUTCOMES OF THE COURSE

The student will be able to:

- *show an understanding for curriculum changes in South Africa and its implications for Geography teaching*
- *show competence in the knowledge base of Geography in the FET band*
- *show competence in the planning of, design of and reflection on applicable learning programmes taking into consideration the learner and learning context*
- *show competence in the selection, use and adaptation of teaching and learning strategies in ways which will address the needs of the learners and the context*
- *show competence in the management and administration of learning environment and to support learners*
- *show competence in the monitoring and assessment of learners' achievement and performance in Geography.*

Assessment

In the assessment of the above-mentioned outcomes (which include both integrated assessment and teaching experience), evidence will be collected of progress and competence through different assessment methods, e.g. problem-solving tasks, fieldwork activities, teaching practice in micro lessons and real class situations, written examinations, research assignments and structured class presentations.

General feedback and feedforward based on the assessment findings will be discussed in class. Individual students are welcome to make an appointment should you feel you need more detailed comment or have further enquiries.

COURSE PROGRAMME

FIRST SEMESTER		
Date	Focus area	Pedagogical/Didactical aspects
6 Feb.	Welcome Nature of Geography	<ul style="list-style-type: none"> • What is Geography? Personal and other perspectives • International Charter for Geography Education
13 Feb.	Curriculum development and education policy in South Africa	<ul style="list-style-type: none"> • The Constitution and implications for teaching in SA; Critical Outcomes • Report 550 to OBE to post-OBE (CAPS)
20 Feb.	Planning	<ul style="list-style-type: none"> • FET band planning (learning programme, work schedule, lesson plan) • Factors influencing the planning process • Philosophy and policy, principles underpinning curriculum, Integration
27 Feb.	Curriculum change in Geography teaching	<ul style="list-style-type: none"> • Interim Geography Syllabus – characteristics and points of departure • NCS for Geography – characteristics and principles • Learning Outcomes and Assessment standard over FET-band
5 March	Teaching approach(es)	<ul style="list-style-type: none"> • GEOGRAPHICAL ENQUIRY AND USE OF KEY QUESTIONS • Learning foci in study of Stellenbosch – local environment • <i>Geographical enquiry: the route to learning : Graham Butt</i>
12 March	Geography teaching in the local area	<ul style="list-style-type: none"> • Use of spatial information – map reading and interpretation • <i>Learning through Maps : Paul Weeden</i> • MapTrix as a teaching aid
26 March	Fieldwork as learning strategy	<ul style="list-style-type: none"> • Planning : Paarlberg-excursion • <i>Teaching and Learning through fieldwork : Nick Foskett</i>
2 April	Physical Geography : Climatology	<ul style="list-style-type: none"> • Processes (mid-latitude & tropical cyclones) and associated patterns • Use of different types of information sources : video • Learning programme planning of diverse themes : presentation

9 April	Issues-based approach	<ul style="list-style-type: none"> • Study of Africa – human issues • Collecting, organising and analysing data/information • Research project
7 May	News paper geography	<ul style="list-style-type: none"> • Aims and value • Presentation: learning programme with news articles as point of departure

SECOND SEMESTER		
Date	Focus area	Pedagogical/Didactical aspects
24 Sept.	Teacher and learner support material	<ul style="list-style-type: none"> • Selection and use of appropriate support material, e.g. photo's, sketches, observations, textbooks and teacher guidelines
1 Oct.	Contribution to literacy and numeracy development and the use of information technology	<ul style="list-style-type: none"> • Development of language and mathematical literacy through Geography teaching as well as use of GIS and GPS • <i>Language and communication in the teaching of Geography : Graham Butt</i>
8 Oct.	Study of South Africa	<ul style="list-style-type: none"> • Teaching for environmental education and sustainability • <i>Environmental education and development education: teaching geography for a sustainable world: Daniella Tilbury</i>
15 Oct.	Assessment in Geography teaching	<ul style="list-style-type: none"> • Policy requirements for the NCS Geography in the FET band • <i>Continuity and progression in Geography education: G. Butt</i>

Formative Assessment	<ul style="list-style-type: none"> • Assignment: Monday 27 February 2012 • Test : Monday 12 March 2012 at 19:00 • June test: Monday 4 June at 09:00 • Presentations in class / Research assignment 	<ul style="list-style-type: none"> • Class mark: These formative assessment tasks contribute to 50% of the final mark for this module.
Summative Assessment	Examination: Wednesday 7 Nov. 2012 [09:00] Suppl. exam: ?	<ul style="list-style-type: none"> • The examination component contributes 50% to the final mark.