

**Self-regulated professionalism: A Whole Brain® Participatory Action Research
design in a pre-service teacher mentoring context**

by

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Declaration

I declare that this doctoral thesis, which I hereby submit for the degree Philosophiae Doctor in Curriculum Design and Development is my own work and had not been previously submitted by me for a degree at this or any other tertiary institution

Signature of student: _____

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This Ethics Clearance Certificate should be read in conjunction with the Integrated Declaration Form (D08) which specifies details regarding:

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- No significant changes,
- Informed consent/assent,
- Adverse experience or undue risk,
- Registered title, and
- Data storage requirements.

DEDICATION, ACKNOWLEDGEMENTS AND THANKS

I dedicate this thesis to my adorable children. Thank you for inspiring me:

Miandi, my cherished daughter, delightfully tenderhearted, gracious, talented and aspiring, and

Pierre, my happy, cheerful, tremendously smart, wonderfully vigorous, caring and focused son,

I love you forever and evermore!

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Romans: 12:2: “Be transformed by the renewing of the mind.”

May the mind of Christ, my Saviour

Live in me from day to day

His love and power controlling

All I do and say.

ABSTRACT

During Work Integrated Learning, pre-service mentoring helps to prepare final-year education students for the workplace. For the purpose of this study, seven pre-service teachers and their mentor teachers formed scholarly communities of practice. Self-regulated professionalism was initiated by implementing the principles of self-regulated learning using a constructivist Whole Brain® Thinking mix as epistemological grounding. Participatory action research was enriched and a Whole Brain® Participatory Action Research Design was used to contribute to the scholarship of mentoring in the education context and the new meaning-making of our current understanding of what action research entails.

A baseline study was conducted ten months prior to the commencement of the Whole Brain® Participatory Action Research study. The responses from the Senior and FET Phase pre-service teachers and their mentor teachers in the two online surveys provided an information base for the participatory action research process.

The rationale for using Whole Brain® Participatory Action Research was that no scholars have examined a collaborative perspective on pre-teachers, mentor teachers and a university faculty. This particular research design has never before been used in the context of pre-service teacher education. The Herrmann Brain Dominance Instrument® was initially completed by the participants and myself as the principal researcher to inform reflective practice and to create awareness of our thinking preferences. Action research was conducted by the pre-service teachers in their classroom practice and executed by the mentor teachers in their mentorship practice. I employed action research during the scholarly communities of practice sessions with the participants. Peer mentoring, Whole Brain® Mentoring and blended mentoring were innovatively introduced in the mentor teachers' and my own mentoring practice as an essential part of the self and the we becoming agent(s) of transformation. The development of a Comprehensive Whole Brain® Mentoring Model for the education context is shared as an outcome of this study.

Keywords: Self-regulated professionalism, scholarly communities of practice, Whole Brain® Participatory Action Research, Whole Brain® Thinking, pre-service teacher mentoring

EDITOR'S STATEMENT

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TO WHOM IT MAY CONCERN

Herewith I, FJ OPPER, confirm that I undertook the language editing of Mrs Tanya Smit's doctoral thesis titled:

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CHAPTER 1

SPROUTING: AN INTRODUCTION TO OUR PROFESSIONAL GROWTH STAGES



Artwork 1: "The journey" by Laurie Pace (Pace, 2006)

1.1 INTRODUCTION

The assignment of mentor teachers to mentor final-year education students, referred to in this study as pre-service teachers (Ambrosetti & Dekkers, 2010), is common practice in the teacher-preparation setting in South Africa. This Work Integrated Learning period, during which pre-service teachers visit the authentic school environment, is fundamental in preparing them for the practice of teaching (Darling-Hammond & McLaughlin, 2011). Ehrich, Hansford and Ehrich (2011:530) researched mentoring across the fields of education, business and medicine and came to the alarming conclusion that "poor mentoring is worse than no mentoring". I regard the pre-service teacher mentoring context as complex and multi-dimensional.

The above painting by Laurie Pace (Pace, 2006) (Artwork 1) could be seen as symbolising this research study as a journey. A novel participatory action research design was used as the mentor teachers, pre-service teachers and I worked together to co-construct the research. I developed two short courses that enabled the mentor teachers, pre-service teachers and I, as the principal researcher and overseeing mentor, to see ourselves as agents of transformation in our practice (Du Toit, 2013). We did not know where this journey would lead, and although sometimes there were

patches of light, there were also dark, intimidating shadows cast by the actual situations we had to deal with in our practice. In the painting, the participants and I each represent a different tree, and we continuously asked the following question: How can I become an agent of transformation in my practice? We soon realised that it is a never-ending endeavour, focused on the self.

An array of colours are visible in Artwork 1. Each tree is portrayed differently. The participants and I celebrated our differences, especially in terms of our ways of thinking. The question the participants and I raised collectively during the scholarly communities of practice (Du Toit, 2013) that we formed during the abovementioned two short courses, and also during pre-service mentoring, was: How can we become agents of transformation? Chapter 1 thus introduces our professional growth stages as the participants and I took a holistic view in terms of the different “selves” and roles we played in our striving to become self-regulated professionals. In this pre-service mentoring context, transformation refers to the introduction of an innovative idea into practice. In essence, the principles of self-regulated learning are implemented in the professionalism construct using a constructivist Whole Brain® Thinking mix as epistemological grounding.

Education in South Africa is governed by the Department of Basic Education and the Department of Higher Education. The latter is responsible for tertiary education. This research was conducted at the Institution of Higher Education in Pretoria, Gauteng, where I am employed. The office for Work Integrated Learning at this Institution assisted me with the placement of final-year education students in the participating schools.

Since 1994 South African Education is governed on a national, provincial and local level. The National Department of Basic Education in South Africa divides the thirteen years of schooling from Grades R–12 into the Foundation Phase (Grades R–3), the Intermediate Phase (Grades 4–6), the Senior Phase (Grades 7–9) and the Further Education and Training Phase (Grades 10–12). When a child turns five they start in Grade R (reception year) and in Grade 12 (matric) a child usually turns 18 when completing their schooling years. The schools in the nine provinces are either primary schools (Grades R–7) or secondary schools (Grades 8–12). Initially two

independent and eight public secondary schools (Grade 8-12) participated in the research study. Public secondary schools are owned by the state, while trusts, congregations or groups are the owners of independent or private secondary schools.

1.2 PREMISE OF THE STUDY

Mentoring, like other activities such as teaching, requires a balance between different modes of thinking. I used the Herrmann Brain Dominance Instrument® (HBDI®) to identify the mentor teachers, pre-service teachers and my thinking preferences. The Whole Brain® Model assisted us in what Splitter (2009:149) refers to as the “I being part of some we” within a mentoring relationship, and also in the scholarly communities of practice sessions that took place during the two short courses.

1.2.1 Why pre-service teachers?

Since quality education appears to be lacking (Mlachila & Moeletsu, 2019), pre-service teacher education has become a talking point between stakeholders and entities internationally (Ambrosetti, 2014), and specifically in South Africa. South Africa needs approximately twenty to thirty thousand beginner teachers each year (Kersaint, Lewis, Potter & Meisels, 2007). Frick, Carl and Beets (2010) describe the teaching profession as overwhelming, intimidating and unnerving for beginner teachers and a far cry from what they expected the workplace experience to be. More than ten years ago, Shulman and Shulman (2004:504) described the education profession as “perhaps the most complex, most challenging and most demanding and frightening activity our species ever invented”. In my opinion, and based on my experience as an educator and later on as a lecturer, being a teacher today has become even more daunting. Beginner teachers label their experiences when initially entering the profession as “practice shock” (Ulvik, Smith & Helleve, 2009:836) and some quit in the early stages of their careers (Kersaint *et al.*, 2007).

The participating pre-service teachers were enrolled for professional teacher qualifications at University, either the BEd degree or the Postgraduate Certificate in Education (PGCE). The “South African National Qualifications Framework” (NQF) (Department of Higher Education and Training, 2015a) provides a framework of

qualifications, consisting of ten levels. The Bachelor's degree in Education and the Postgraduate Certificate in Education are ranked at Level 7 of the NQF framework. In order to receive their qualification, pre-service teachers are required to spend 16 weeks at schools while learning to teach independently. This Work Integrated Learning (WIL) period is "a curriculated, assessed, credit-bearing component of initial teacher education programmes, delivered as modules" (Department of Higher Education and Training, 2015a:14). Joseph and Burney (2011), however, are of the opinion that pre-service teacher modules do not entirely prepare students for the real-life of teaching.

I concur with Mukeredzi (2016), who advocates for new directions in the field of authentic teacher preparation. I propose a transformation in the sphere of the mentoring of pre-service teachers. I confide that this primarily entails taking an "action turn in social inquiry" (Hathcoat & Nicholas, 2014:306) by introducing innovative mentoring approaches, such as peer mentoring, Whole Brain® Mentoring and blended mentoring. I initiated reform in pre-service teacher mentoring by using a Whole Brain® Participatory Action Research design.

1.2.2 What is Whole Brain® Participatory Action Research?

The research design Whole Brain® Participatory Action Research coined by Fringe (2013) was innovatively introduced by the mentor teachers, final-year education students and I implemented it in my practice. Whole Brain® Participatory Action Research was chosen for its potential influence on the quality of our professional practice. In the pre-service mentoring setting, the research design, in essence, entailed the following: The participants and I jointly constructed meaning and were co-constructors throughout the research process. Whole Brain® Thinking was at the core (De Boer, Du Toit & Bothma, 2015) of the research process and the two short courses. The action research approach we implemented was, therefore, a Whole Brain® Scholarly endeavour. The pre-service teachers conducted Whole Brain® Participatory Action Research in their teaching practice and the mentor teachers used the same research design while mentoring the final-year students. As the overseeing mentor and primary researcher I used Whole Brain® Participatory Action Research in the scholarly communities of practice sessions involving the mentor and pre-service teachers. As part of the two short courses, the mentor teachers formed

the “mentor teacher scholarly community of practice”, and the pre-service teachers the “pre-service teacher scholarly community of practice”.

1.2.3 Why use the Herrmann Brain Dominance Instrument® (HBDI®)?

I decided that the participants and I should complete the HBDI® for the following reasons: First, we were made aware of our own, and one another's thinking preferences. Second, I opted to use the HBDI® as the Whole Brain® Model supports harmony, tolerance and effective communication (Greyling & Du Toit, 2008), which I regard as being valuable during pre-service teacher mentoring and in the scholarly communities of practice. As we progressed through the Whole Brain® Participatory Action Research process, I developed a contemporary Comprehensive Whole Brain® Mentoring Model for the education context, which is discussed in Chapter 6.

1.3 RATIONALE

Whole Brain® Participatory Action Research is the research design of choice. The rationale is to discover the means for taking action to transform, which has a social intent (McNiff & Whitehead, 2012). The study was essentially influenced by four theoretical and methodological foundations (McNiff & Whitehead, 2012). From an ontological rationale, my position is that of the principal researcher. I recognise the relationship between the knower and the known, and what is to be known as the epistemological rationale. The epistemological rationale is underpinned by the notion of constructivism as a process of new meaning-making. Methodologically I justify the research design as a process used to generate meaning that complements the epistemological stance. The practice transformation rationale offers the scholarly rigour needed to validate the justification of claims made in respect of constructing new meaning and establishing a professional skills base for the participants and me.

1.3.1 Ontological rationale

In the epicentre of the ontological stance taken by me I acknowledge the “self” as integral to my role as a scholar. Whitehead and McNiff (2009) emphasise the importance of having various frames of mind or voices when conducting action research. This idea comes into play when executing action research and is evident in the work of Du Toit (2013). During the execution of the research, I further realised that the notion of “having a voice” could be equated to “having a scholarly voice”. I

consequently see myself as taking a leadership position in my role as the principal researcher, scholar, higher education practitioner, overseeing mentor, peer mentor and member of the scholarly communities of practice. In terms of me being a practitioner, I enacted my role as dialectic, critical short course developer, with a view to contributing to the professional development of the participants. Within the respective roles I mentioned, I have deep-rooted personal and professional values that drive my actions, and I acknowledge the fact that the participants have their own.

Ontologically I therefore had to consider the “self” from the viewpoint of my scholarly voice. Cain (2011) acknowledges that an understanding of our position in practice eventually affects the action research design chosen. The impetus originates from my experiences as a beginner teacher in South Africa. When I was an education student, I had several mentor teachers assisting me during Work Integrated Learning periods. I was a pre-service teacher at various schools in South Africa and also in London, England. Initially, as a beginner primary school teacher, I was conversant with, and excited about my new position. I was qualified to teach in the Intermediate and Senior Phases, working with learners in Grades 4-7. I was, however, overwhelmed by the demands of the profession, which I felt had not been adequately addressed during my studies. I found it difficult to maintain effective classroom management in my teaching practice while adhering to the requirements of the Department of Basic Education and the school. I understood the significance of my position as a role model in the teaching profession and decided to take responsibility for my professionalism. I embarked on a trajectory of transforming “the self” as a professional while also focusing on my practice.

While manifesting my stance, I recognised the link between the known and the unknown. I ultimately admitted that my experiences as a pre-service teacher and beginner teacher had influenced my practice then, and still continues to influence my practice as a lecturer and action researcher. I regarded the Whole Brain® Participatory Action Research design as a means for the participants and me to continuously transform “the self” and our practice. McNiff and Whitehead (2012) describe action research and the “self” in relation to “others” as a phenomenon. I consider my study as a process of zooming in on mentoring in the education sector

and the mentor teachers and up-and-coming education professionals as specialists and part of the phenomenon.

1.3.2 Epistemological rationale

In the process of taking a constructivist meaning-making standpoint in our practice (McAteer, 2013), the participants and I developed professionally in a reciprocal manner and continuously asked the question: “What is to be known?” (Hathcoat & Nicholas, 2014:303). Jointly and individually we were actively involved in constructing new meaning (Du Toit, 2013), which required us to share what we did and claimed to be doing in our educational practice. The mentor teachers, pre-service teachers and I all developed professionally while collaborating in the scholarly communities of practice to construct meaning in our educational practice. In the constructivist theory of learning, I prefer knowledge not found but instead created socio-collectively (Hershberg, 2014). The participants and I were not removed from our educational ideals, personal assets and one another. My epistemological rationale thus derived from the impression that whatever I do in my practice, impacts someone else (McNiff & Whitehead, 2012). The mentor teachers, pre-service teachers and I used Whole Brain® Participatory Action Research to transform our practice and take responsibility for culminating our professionalism.

The epistemological question that forms part of the meaning-constructing drive in this context is: “How do we develop and empower ourselves professionally?”

Throughout the action research process, I had to acknowledge my lived experience, as emphasised by Dewey (1933) throughout his work and life. While I was a mentor teacher, I wanted to prepare the fourth-year student(s) allocated to me for the realities of the teaching profession. I was, however, not sure of how to successfully inspire them to accept accountability for their professional learning. I found mentoring challenging. I realised that my pre-service teacher and I were two unique individuals with different ways of thinking and in different phases in our careers. I lacked sureness in my mentoring capabilities and did not develop professionally during the mentoring process. Ehrich *et al.* (2011) report that mentor teachers are less likely to benefit from a mentoring relationship as they experience numerous challenges and find working with pre-service teachers to be less beneficial to them.

I opted to use scholarly “reflection in action” (Schrader, 2015:26) as introduced by Piaget, the Swiss clinical psychologist (Hershberg, 2014), the social psychologist Vygotsky (Meyer, 2009) and Dewey, a pragmatic constructivist educator. I started to recognise the individual and interactive (Rogoff, 2008) dynamics that came into play during mentoring. Eventually, as a mentor teacher, I realised that I could also benefit from this mentoring relationship. As a beginner teacher (Smit & Du Toit, 2016) I worked with peers and we addressed our own professionalism by conducting action research. This study is therefore derived from the notions of Vygotsky’s socio-constructivist theory. I acknowledge peer mentoring as a type of mentoring that is useful for addressing our professionalism in the peer-mentoring context.

1.3.3 Methodological rationale

I chose Whole Brain® Participatory Action Research as the research design. The motive was to activate my self-regulated professionalism, and also that of the pre-service teachers and mentor teachers. I used a constructivist theoretical approach as the participants were actively involved in generating data and, to some extent, in the analysing phases. The mentor teachers, pre-service teachers and I researched our practice with a view to transforming it. We did not expect to find specific answers or solve problems. The constructivist theory holds that the focus is on being “descriptive, not prescriptive” (Yilmaz, 2008:167). The transformative process (Whitehead & McNiff, 2009) that I undertook together with the participants maintained a best for now perspective. Entailing what Dadds, Hart and Crotty (2001) express as intensive methodology to attempt several approaches before choosing the most appropriate one to introduce into our practice.

The methodological rationale was prompted by the indication that to date hardly any scholars have examined the application of participatory action research to pre-service teacher or mentor teacher professionalism and development (Ioannidou-Koutselini & Patsalidou, 2015; Price, 2001). Cooperation between pre-service teachers, school mentors and university lecturers (Mertler, 2008) is innovative (Mitchener & Jackson, 2012) and no scholar has yet used Whole Brain® Participatory Action Research (Du Toit, 2013) in the setting of pre-service teacher education.

1.3.4 Rationale for practice transformation

The participants and I strived to transform our specific practice by constituting my philosophy and the philosophies of the pre-service teachers, and mentor teachers (McNiff & Whitehead, 2012). This meant relating our practice to one another, with the motivation of developing a living theory (Whitehead & McNiff, 2009) or making meaning. As the principal researcher, I focused on using a Whole Brain® Participatory Action Research approach to develop a mentoring model for contemporary education contexts.

The practice transformation rationale evolved from literature such as Ambrosetti (2012), which indicated that pre-service teachers are unsure of what is expected of them during mentoring. A substantial number of beginner teachers leave the profession (Galton & MacBeath, 2008). The South African National Education Policy Act, 27 of 1996 (section 3) states that teachers need particular abilities, information and values to deliver quality education (Department of Basic Education, 1996). The reality is that unless pre-service students receive quality in-field mentoring, they will not be ready for the authentic workplace environment in South African schools, impacting more than 12 million learners in 25 000 schools in South Africa. To make matters worse, the country's Department of Education is financially constrained as it is responsible for most of the expenses in 97% of the public and independent schools in the nine provinces (Modisaotsile, 2012).

Whitehead and McNiff (2009) regard research as being political in the sense that action research is placed within a particular social setting for a specific reason. Since the participants and I were concerned about being agents of transformation (Du Toit, 2013), an "intrinsic change" was required (Gravett, De Beer & Du Plessis, 2015:321). I regard the practice transformation intent in the Whole Brain® Participatory Action Research design as a challenging process that could potentially destabilise the participants' and my own values, reasoning and practices. Together we attempted to answer the research questions, which will be discussed below.

1.4 RESEARCH QUESTIONS

The main research question directed my study and is as follows:

How is self-regulated professionalism constructed in a pre-service teacher mentoring context using a Whole Brain® Participatory Action Research design?

This question involved all the participants, including myself, as we were taking part in the scholarly communities of practice. It was furthermore concerned with our self-regulated professionalism. The mentor teachers, the pre-service teachers and I, as the principal researcher, therefore embodied the “self” and the “we”.

The following sub-questions are a refinement of the main research question:

1. How can I, as the principal researcher, initiate self-regulated professionalism in scholarly communities of practice?
2. How are the practice and self-regulated professionalism of mentor teachers transformed?
3. How are the practice and self-regulated professionalism of pre-service teachers transformed?
4. What will a Comprehensive Whole Brain® Mentoring Model for education entail?

1.5 PRÉCIS: THEORETICAL FRAME

The frame that supports the theoretical aspects of my study is socio-constructivism, which is briefly explained and further elaborated on in Chapter 2. There are various viewpoints regarding the denotation of constructivism. Schunk (2012) views it as a philosophical and psychological standpoint, while others merely perceive constructivism as a “social movement” (Hershberg, 2014:138). Langhout and Thomas (2010) regard constructivism as a paradigm, while it is labelled a learning theory by a number of other researchers (Hershberg, 2014; Scholnik, Kol & Abarbanel, 2006; Ültanir, 2012). Fosnot and Perry (1996) claim constructivism to be both a paradigm and a theory. I agree with Gill (2015) that to clarify constructivism is challenging. My study takes a Whole Brain® Thinking, transformative and collaborative approach to pre-service teacher mentoring. I regard any reference to constructivism as a theory to be relevant when referring to the various interrelated

and innovative ideas or constructs that are appropriate for explaining my research topic, questions, design, and methods.

In my opinion, the epistemological process entails a unique interpretation (Schunk & Mullen, 2013), a process of personal understanding (Nawaz & Kundi, 2010) and improved quality in practice (Hugo, Slabbert, Louw, Marcus, Bac, Du Toit & Sandars, 2012). Ültanir (2012) highlights knowledge as a process, not a product. I therefore regard constructivism and participatory action research as being aligned. The Whole Brain® Participatory Action Research design and data collection process allows for the construction of meaning. I involved the participants by combining research and action.

Participatory action research and constructivism both emphasise the value of connection (Coghlan & Brydon-Miller, 2014). I consider the Whole Brain® Participatory Action Research design to be closely aligned with socio-constructivism (Vygotsky & Cole, 1978). Since in this study the focus was on the principal researcher and participants co-constructing knowledge and meaning, I decided not to refer to terms, terminology or concepts, but rather to constructs, which frame the research and detail the co-construction process that we jointly undertook.

Apart from being in a mentoring relationship, the pre-service teachers and mentor teachers were part of the scholarly communities of practice (Du Toit, 2014), which I had established during the two short courses. Coghlan and Brydon-Miller (2014) regard the use of communities of practice during action research as significant, since understanding is generated and shared. The participants were involved during the social interactions and production of meaning in our practice. I regard this research contributing to the body of knowledge in the mentoring in education and action research fields, as discussed in Chapters 5 and 6.

1.6 PRÉCIS: CONSTRUCT FRAME

Du Toit (2018b:4) has a problem with a traditional research construct, such as a conceptual framework, and refers to action research as “an authentic endeavour which is frameless”, indicating that the constructivist meaning-making process in action research is not restricted. In the case of in my study, I also regarded the word

“framework” as placing restrictions on what we did during our participatory research. Our meaning-making was not a process that could be fitted into a fixed structure or framework. Instead, I acknowledge that the participants and I constructed and contributed meaning to this study and to our practice. Collaboratively we therefore framed and constructed the theoretical underpinning of the study and the research process.

As a constructivist researcher and practitioner, I preferred to use a “construct frame”, as proposed by Du Toit (2019b), instead of a theoretical or conceptual framework, which is commonly used in research studies. The construct frame shown in Figure 1 captures the constructs of the Whole Brain® Participatory Action Research design and outlines the baseline constructs to guide the process, allowing new constructs to emerge by means of meaning-making. Constructs are fluid and not stagnant. What makes sense at a particular moment during the action research process might later be reconstructed to mean something different.

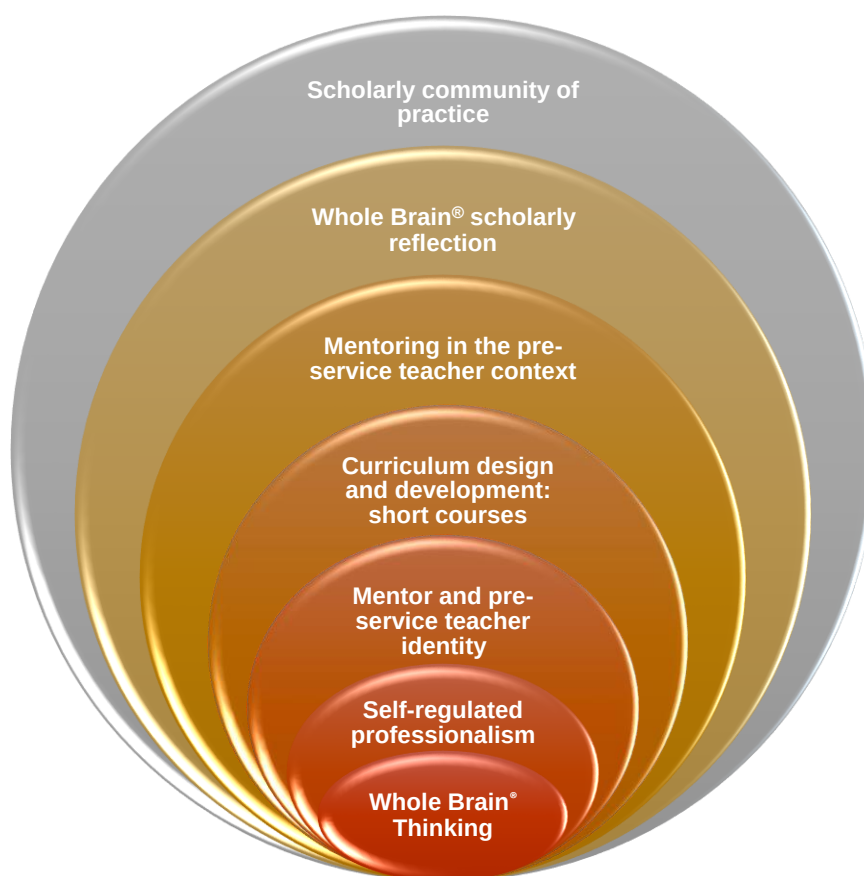


Figure 1: Whole Brain® Participatory Action Research construct frame

The construct frame in Figure 1 is represented as spheres within a circle, acknowledging the integration between the baseline constructs. The framework is based on the socio-constructivist lens through which I view the study, with Whole Brain® Thinking (Herrmann, 1996) at the epicentre. “Mentoring” (De Jager, 2011), “scholarly communities of practice” (De Boer *et al.*, 2015), “self-regulated professionalism” (Du Toit, 2013), “professional teacher identity”, “scholarly reflection” and “curriculum design and development” were meaningful constructs in the journey I undertook with the mentor and pre-service teachers.

1.7 ACTION RESEARCH

Lewin (1946) describe action research as a cyclical process that is determined by the participants According to McNiff (2013), the action research process is as much as about answering questions as it is about the answers themselves.

1.7.1 Verification of research design

My motivation for using action research was to make meaning with a view to empowering the “self” or transforming practice. This meaning-making process aligns to “the integrated set of knowledge, conceptions, beliefs and values teachers develop in the context of the teaching situation” (Van Driel, Beijaard & Verloop, 2001:141). The intention was to be action-orientated, acknowledging the “self” and linking theory and practice. Van Driel *et al.* (2001) write about striving for social transformation, but in this context, I chose to refer to practice transformation. The mentor teachers, pre-service teachers and I constructed meaning in practice and comprehended that our points of view value by using Whole Brain® Participatory Action Research to contribute to the body of knowledge.

Action research assisted us in developing transformative practices, facilitating teacher self-regulated professionalism, promoting innovation and developing a professional identity. The participants took ownership of his or her professional development through scholarly reflection (Du Toit, 2013). The use of action research promoted creative, innovative thinking and meaning-making in our scholarly

communities of practice and in the mentoring relationship (Chabot, Shoveller, Spencer & Johnson, 2012; De Boer *et al.*, 2015; Morales, 2016).

Whole Brain® Participatory Action Research contributes to action research and is based on the view that action research is a Whole Brain® Scholarly endeavour (De Boer, Du Toit, Bothma & Scheepers, 2012). The pre-service teachers who participated in the current study used this research design to reflect on their teaching practice and the mentor teachers employed Whole Brain® Participatory Action Research in their mentoring practice. As the principal researcher, I developed the curriculum of the short courses and facilitated the two scholarly communities of practice. Whole Brain® Participatory Action Research was a distinct part of our professional make-up in practice.

Action research inherently focuses on personal and social transformation (McNiff & Whitehead, 2012). However, Schön (1995) is of the opinion that traditional research practices do not fully support this point of view. Participatory Action Research was implemented to make meaning in the participants' and in my own practice by using the principles of Whole Brain® Thinking (Du Toit, 2013). I describe the Whole Brain® Participatory Action Research process that was executed as a trefoil as it was happening in a synchronised fashion. Action research promotes reflection (Whitehead & McNiff, 2009) which De Boer *et al.* (2012) coined as Whole Brain® Scholarly Reflection and validates the epistemological viewpoint to construct meaning in practice and add to the body of knowledge on action research. The characteristics of the research design will be explained in Chapter 3.

1.8 WHOLE BRAIN® PARTICIPATORY ACTION RESEARCH PROCESS

Participatory action research emphasises the real-life situation and combined action through a spiralling process consisting of cycles that alternate between action and reflection. The Whole Brain® Participatory Action Research model complements the scholarship of action research (De Boer *et al.*, 2015) with data collectively generated, shared, analysed and interpreted (Coghlan & Brydon-Miller, 2014). I started by conducting two online baseline surveys, followed by action research data collection in the scholarly communities of practice. As a collective, the participants and I actively employed action research in our practice by taking action, employing

innovations, evaluating and following-up. The seven participating pre-service teachers were members of the scholarly community of practice, co-constructors during action research, facilitators in their teaching practice and peers during his or her pre-service mentoring. The seven contributing mentor teachers were labelled peer mentor teachers and co-constructors during the action research study, and were also members of their scholarly community of practice.

As proposed by De Jager (2011), the 14 participants and I actively participated. The participatory action research was a cyclical Whole Brain® Multi-dimensional cyclical process. The professional practice action research process illustrated in Figure 2 was inspired by “the visionary action research model executed by a scholarly community of practice” (Fringe, 2013), as found in De Boer *et al.* (2015:68). Each spiral is consisting of cycles with steps. The steps consisting of firstly planning for transformation in practice; acting to employ the plan; observing by gaining responses; making use of self and peer evidence of assessment to reflect and evaluate the action research process. Finally commencing with a new cycle, as recommended by De Boer *et al.* (2015).

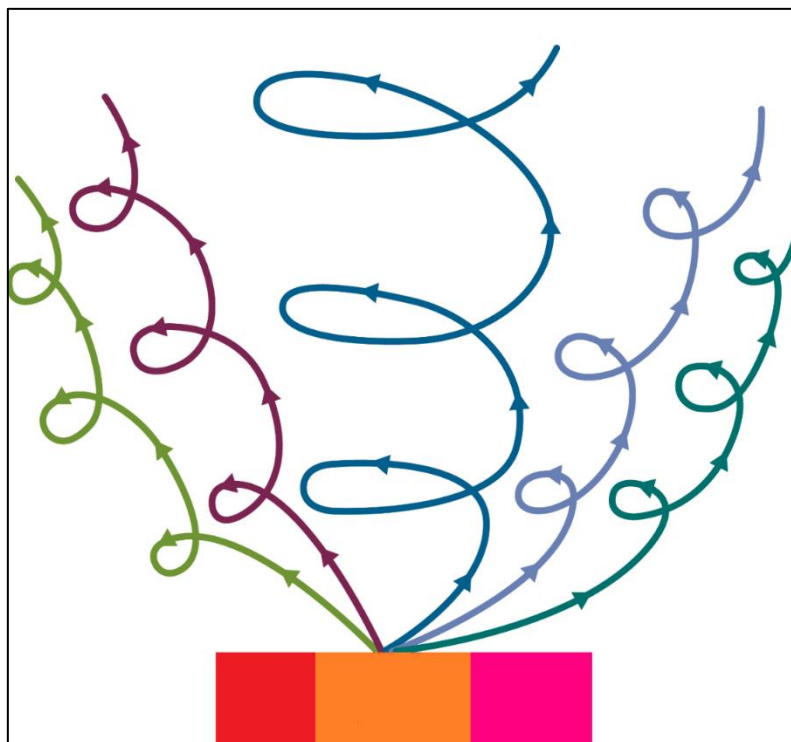


Figure 2: Professional practice action research process

As shown in Figure 2, the baseline studies are illustrated at the base of the cycles. In the case of my study the pink frame represents the exploratory baseline survey I conducted nine months before commencing with the participatory action research study. The orange area represents the curricula I developed for the short courses. The red area illustrates the HBDI® completed by the participants and myself. The professional practice action research process (Figure 2) is slightly altered and explained in more detail in Chapter 3 in terms of the Whole Brain® Participatory Action Research design.

1.8.1 Sampling

I conducted the exploratory baseline study prior to starting the participatory action research process. Two different online electronic surveys were distributed to pre-service teachers and their mentor teachers. I used non-probability convenience sampling to select the pre-service teachers, who were a sample of approximately 280 final-year education students. The pre-service teachers were all enrolled for a Postgraduate Certificate in Education (PGCE) or a BEd degree in either the Senior Phase (SP) or the Further Education and Training (FET) Phase at the Institution of Higher Education in Pretoria where I am employed. Snowball sampling was used to select the mentor teachers, who were staff members of the schools in Pretoria where the final-year education students were doing their Work Integrated Learning.

In the following year, I used purposive sampling to identify participants for the Whole Brain® Participatory Action Research study. The two purposive sampling types, homogeneous sampling and maximal variation (Creswell, 2012), enabled me to select a representative sample frame. Initially 18 pre-service teachers and their mentor teachers were selected and agreed to participate in my study.

1.8.2 Data collection

I distributed two separate online quantitative surveys to the pre-service teachers and their mentor teachers. The data gathered from these surveys were used to provide an information base for the Whole Brain® Participatory Action Research process.

In the following year, the pre-service teachers, mentor teachers and I used Whole Brain® Participatory Action Research as research design with a mixed-methods approach in our practice. The mentor and pre-service teachers were in mentoring relationships during the Work Integrated Learning period of ten weeks and the pre-service teachers used action research in their teaching practice. The mentor teachers applied this research design to their mentoring practice and I executed action research during the short course sessions.

The mentor teachers and the pre-service teachers had four separate scholarly communities of practice sessions: Before, during and after the Work Integrated Learning period. We met at the Institution of Higher Education where I was employed, which was at a convenient distance from all the schools where the mentor teachers and pre-service teachers taught. I had never previously lectured any of the final-year education students. I was also not familiar with any of the mentor teachers. During the sessions, I conducted semi-structured focus group interviews. As proposed by Clandinin and Connelly (2000), I gathered data over a period to clarify the individuals' ever-changing frames of mind, observations, comprehension and in this case also their practice. The mentor teacher and pre-service teacher worked together at the same school and had four mentoring opportunities.

I designed two different short courses for the mentor teachers and pre-service teachers respectively. The study manuals and study materials I developed are attached as Appendices C to F. The study material for the pre-service teachers and the mentor teachers included supplementary reading. The study manuals were linked to the study material that explained how the constructs of the programme could be put into practice. The study manual guided the action research process and included observation sheets, feedback questionnaires and reflection forms. The framework to be used during mentoring opportunities was incorporated into the study manual of the mentor teachers.

The pre-service teachers were not formally assessed but received a certificate of attendance. The assessment criteria for the mentor teachers were stipulated in the study manual. The mentor teachers received a certificate of completion and 30 professional development points from the South African Council of Educators (SACE).

1.8.3 Data collection methods

The participants and I combined quantitative and qualitative approaches to gathering data. I thus made use of a mixed-methods approach (Creswell, 2012) in the Whole Brain® Participatory Action Research design. I opted for this approach in view of Wisdom and Creswell (2013) acknowledging that mixed methods can easily be used in various research designs. The viewpoints of the participants were reflected and ample data was collected. I will now explain how the pre-service teachers, the mentor teachers and I collected data.

1.8.3.1 Pre-service teachers

The final-year education students initiated Whole Brain® Learning into their teaching practice during the Work Integrated Learning period. The pre-service teachers completed the HBDI® as part of their baseline study before starting with the action research process. During the ten-week practical teaching period the pre-service teachers received feedback from the learners, which enabled them to reflect on their teaching practice. The qualitative approach they used included observations, scholarly reflections and evaluations of the two audio recordings they had made of the lessons they presented. The pre-service teachers proceeded with the next action research cycle.

1.8.3.2 Mentor teachers

The mentor teachers initially completed the HBDI® as part of their baseline data and used action research in his or her mentoring practice with the pre-service teachers. They qualitatively completed the observation forms after listening to the audio recordings they had made during the two mentoring opportunities. The mentor teachers then reflected on their mentoring and completed the reflection forms in the study manual. The action research process promoted scholarly reflection, which in turn promoted possible transformations in the “self” and in practice. The pre-service teachers anonymously completed the online feedback questionnaires that I had designed and distributed on the Qualtrics software program.

1.8.3.3 Principal researcher and overseeing mentor

As part of my baseline data, I had conducted a baseline survey study nine months prior to the Whole Brain® Participatory Action Research study by means of two quantitative exploratory online surveys for mentor teachers and pre-service teachers. I developed the curricula and also completed the HBDI®.

During the pre-service teacher and mentor teacher scholarly communities of practice sessions I used action research and made video recordings. To observe and scholarly reflect on my practice, I used feedback questionnaires, semi-structured group interviews, SWOT analyses and the Whole Brain® Scholarly Reflection processes during the sessions, and during the focus group interviews I used probing to elicit more information. I also wrote personal journal entries throughout the research process.

1.8.4 Data analysis

The analysis of the exploratory quantitative baseline study was completed prior to the start of the Whole Brain® Participatory Action Research process. I used descriptive analysis to describe emerging trends. The Qualtrics software program was used as an instrument to assist me in sorting and presenting the quantitative data in graphs, as described in Chapter 4. My own and the participants' HBDI®s were analysed by HBDI® International. To analyse the short courses, I scholarly reflected on the development and implementation of the curricula. I reviewed the effectiveness of the short courses in terms of how they had assisted the participants in transforming his or her practice by conducting action research. I compared the curriculum development structure by Wiles and Bondi (2015) which I had used as a guide for developing the curricula, with the steps the participants and I had followed during the Whole Brain® Participatory Action Research process.

In action research, there is no one right way to conduct data analysis (Coghlan & Brydon-Miller, 2014). The data collection and analysis phases were not separated (McAteer, 2013) and were ongoing. Due to the participatory nature of this Whole Brain® Participatory Action Research study, the participants and I had to make sense of the numerous qualitative and quantitative data we collected. The data analysis

progressed through the participatory action research phases, as proposed by Rowley (2014). I adapted it for the Whole Brain® Participatory Action Research (WB®PAR) study, using the WB®PAR formative data analysis phase and the WB®PAR summative data analysis phase. The participants and I made sense of the emerging constructs and meaning in our practice during the first WB®PAR formative data analysis phase. In the final WB®PAR summative data analysis, I interpreted and triangulated the data the participants and I had collected to answer the research questions and contribute to the body of knowledge in the fields of action research and mentoring in the education sector.

In the WB®PAR formative phase, the participants and I analysed the data from the action research we had conducted in our practice. In line with Rowley (2014), self-reflection was overlaid throughout the action research process and the participants and I surfaced meaning in our practice. Rowley (2014) suggests the following summative phases: First, mining the data; second, interpreting and triangulating the data; and finally, contributing to the body of knowledge. As explained in the following two sections, I slightly altered the phases for the Whole Brain® Participatory Action Research study.

1.8.4.1 WB®PAR formative data analysis phase

During this phase the pre-service teachers retrieved qualitative data from observations in two of their lessons by doing scholarly reflections of the audio recordings and evaluating the lessons. The mentor teachers and the pre-service teachers completed more or less the same process. The mentor teachers conducted action research in their mentoring practice with the final-year teaching students. The mentor teachers did observations during two mentoring opportunities and reflected on their implementation of the types of mentoring. The mentors reflected and finally evaluated the action research process. Based on the data gathered, the mentor teachers compiled an online portfolio of evidence. I used action research in the short course sessions and afterwards looked at the video recordings made of each session. I reflected on how I innovatively implemented Whole Brain® Thinking, Bloom's Revised Taxonomy and the types of mentoring as explained in Chapters 2

and 4. I assessed my practice and evaluated the action research process I had implemented.

The pre-service teachers received quantitative feedback from the learners after the two lessons they had presented and used the feedback data to reflect on their implementation of Whole Brain® Learning in their lessons. The data were summarised and descriptive analysis was used to describe trends.

The mentor teachers used the data from the online feedback questionnaires completed by the pre-service teachers to reflect on their practice. I analysed the feedback questionnaires I had given to the participants after every scholarly community of practice session. The conclusions the mentor teachers, pre-service teachers and I drew from the feedback received assisted us in the WB®PAR formative analysis phase. We reflected on our practice and evaluated the action research process as part of our meaning-making process. After reflecting on how I had activated all four the brain quadrants during a session and how the types of mentoring had been implemented, I evaluated the quantitative feedback data to re-plan and make adjustments before starting with the next action research cycle.

1.8.4.2 WB®PAR summative data analysis phase

Rowley (2014:242) suggests that a researcher should start by “mining the data” in the data sets separately to make sense of the findings. I prefer naming the first phase “harvesting the data” as it connects to the metaphor of a tree that I use in my study. I organised the data and meaning the pre-service teachers, mentor teachers and I had generated in the WB®PAR formative data analysis phase. After the harvesting of data phase, I continued by interpreting and triangulating the data to answer the research questions and bear fruit in terms of contributing to the body of knowledge in the fields of action research and mentoring. I used construct analysis (Du Toit, 2019a), as explained in detail in Chapter 3, to develop the WB®PAR triangulation matrix to assist me in the analysis process.

I analysed the majority of the qualitative data sets, including the transcriptions of the scholarly communities of practice focus group interviews. The aspects discussed

included self-regulated professionalism, the managing of pre-service teacher mentoring, the Whole Brain® Participatory Action Research process, scholarly communities of practice, classroom management and the stakeholders in pre-service mentoring, as discussed in Chapters 4 and 5. I used Version 8 of the Atlas Ti program as a qualitative data analysis instrument to help me make sense of the data.

In the final WB®PAR summative analysis phase, I shared the meaning the participants and I had constructed during the action research cycles described in Chapter 4 and merged the data from the WB®PAR formative analysis and WB®PAR summative analysis phases. I reduced the data in both analysis phases by keeping the construct frame and the research questions in mind. In Chapters 4 and 5, I describe the emerging constructs that ultimately contributed to the construction of new knowledge in the mentoring and action research fields. In Chapter 6, I link the emerging constructs with the literature review in Chapter 2 and share the contemporary Comprehensive Whole Brain® Mentoring Model I developed for the education context.

1.9 OVERVIEW OF RESEARCH PROJECT

The chapters in my thesis metaphorically represent the seven growth or transformation stages of an apple tree. The framework is illustrated in Figure 3 and is further elaborated on metaphorically in Figure 27 in Chapter 3.

Chapter 1: Sprouting: An introduction to professional growth stages
Chapter 2: Seedling: Rooted in theory and literature
Chapter 3: Sapling: Stems of the research design
Chapter 4: Budding: Harvesting the findings
Chapter 5: Blooming: Unravelling the meaning
Chapter 6: Fruit-bearing: Comprehensive Whole Brain® Mentoring Model
Chapter 7: Ripening: Cerebrating of the reflective "self"

Figure 3: Thesis outline

As seen in Figure 3, I commenced with the “spouting” stage, during which the study was introduced into a pre-service teacher mentoring context. In Chapter 1, I focused mainly on the rationale, the premise for the study and the research questions. I also provided a brief description of the research design and how data collection and analysis was done.

Next, just like a tree grows, the roots of the study start to develop in Chapter 2, and in this “seedling” stage I will delineate relevant theory and literature. A closer look is taken at various scholarly sources in order to understand the pre-service mentoring context.

The third chapter, titled “sapling”, represents the stage during the growth of the apple tree when the branches and foliage (my research process) are explained as my preparation for doing the data collection. The research processes used are explained in detail in Chapter 3, with Whole Brain® Participatory Action Research as the research design.

I named Chapter 4 the “budding” chapter. The “budding” stage symbolises the transitioning from the growing of branches to the appearance of blossoms. In Chapter 4, I share how meaning was constructed as well as the harvested findings.

In the metaphorical tree used in this study, the emerging leaves and apples represent the “blossoming”, “fruit-bearing and “ripening” stages of the apple tree. In Chapter 5, the final conclusions and the contribution made by this research to the body of knowledge will be discussed. The novel and contemporary Comprehensive Whole Brain® Mentoring Mode for education contexts is discussed in Chapter 6. In Chapter 7, I will celebrate the “self” as a researcher when I share my scholarly meta-reflection.

CHAPTER 2

SEEDLING: ROOTED IN THE THEORY AND LITERATURE



Artwork 2: “Boabab N.T”. by J.H. Pierneef (1911)

2.1 INTRODUCTION

The above artwork, created in 1911, is one of the many works by the well-known South African artist Jakobus Hendrik Pierneef (1886-1957) and is currently part of the La Motte art collection in the Western Cape, South Africa. The lithographic linocut (Artwork 2) of a Baobab tree symbolises the South African landscape, the backdrop to my study. This deciduous tree also symbolises the transformational nature of my study. In Chapter 2, the pertinent South African and international literature concerning the self-regulated professionalism of pre-service teachers and related constructs are discussed. An assortment of ideas and opinions relating to the topic were reviewed. The constructs discussed in the literature include mentoring, scholarly communities of practice, Whole Brain® Thinking, pre-service teachers, blended mentoring, Whole Brain® Mentoring, peer mentoring, curriculum design and development, self-regulated professionalism and reflection. The theory and literature guided my study. I could identify current opinions with which I agree, and also determine what is lacking in the pre-service mentoring field. In Chapter 5, I will link my conclusions to the relevant theory and literature in this chapter. The theoretical frame will be discussed in the following section.

2.2 THEORETICAL FRAME

Constructivism is described by Hershberg (2014:183) as “directing current social science research”. Constructivists claim that ultimately nobody has access to reality, while Meyer (2009) finds the idea that reality is created by ourselves overwhelming. I do not agree that constructivism is merely a “fad, movement or ideological theory” (Onyesolu, Nwasor, Ositanwosu & Iwegbuna, 2013:40), but rather agree with Nawaz and Kundi (2010) that it is ultimately a process of constructing meaning. Schrader (2015:23) agrees that constructivism “dominated the past several decades of educational practice”. The process of my action research was constructivist in nature and became a meaning-making theory (Splitter, 2009; Ültanir, 2012; Yilmaz, 2008). built on lived experience. The participants and I were actively involved in our professional development.

Next, I briefly discuss the numerous types, perspectives, and approaches constructivism holds. I also justify my choice of socio-constructivism as the preferred theoretical frame for my Whole Brain® Participatory Action Research study. The development of the constructivist theory in the early 20th century was based on the ideas of Vico, Kant, Dewey, James, Brumer and Piaget (Yilmaz, 2008). Socio-cultural constructivism, Piagetian constructivism, pragmatic constructivism and cognitive constructivism (Schrader, 2015) are currently some of the discernible constructivist theories. Hershberg (2014) adds hermeneutic and epistemological constructivism. In the late 20th century, Von Glasersfeld (1995) went further and conceptualised radical constructivism, and more recently Schunk (2012:232) identified dialectical, exogenous and endogenous constructivism. According to the dialectical perspective, or social constructivism, knowledge is constructed interactively. It is evident that there are many perspectives on constructivism. The participants and I deliberated on the question: How can we empower the selves to become agents of transformation in our practice? A socio-constructivist approach, which involved actively constructing our reality (Onyesolu *et al.*, 2013; Yilmaz, 2008) with a view to becoming Whole Brain® Self-regulated Professionals (Hugo *et al.*, 2012), was followed. The mentor teachers, pre-service teachers nurtured our professionalism in the scholarly communities of practice by constructing our own meaning. Socio-constructivism is the epistemological underpinning of the research design known as Whole Brain® Participatory Action Research.

2.2.1 Socio-constructivism

Socio-constructivism, which emerged shortly after the Second World War (Blankenship, 2010) is basically a collection of theories on knowledge and learning (Sicilia, 2010). Socio-constructivism originated mainly from the ideas of Piaget and Bruner and is based on socially constructing meaning from our experiences. Socio-constructivism involves the development of the self through support and interaction with others (Sicilia, 2010). Various other approaches have developed from the socio-constructivism theoretical frame, including communities of practice, communities of learners (Rogoff, 2008; Wenger, 1998; Wenger, 2011) and situated learning (Brown, Collins & Duguid, 1989). I prefer to explain socio-constructivism from the background of the Zone of Proximal Development (Schrader, 2015:25), developed by Vygotsky from the socio-cultural and Bruner's cognitive constructivist fields. It is defined as follows:

“The distance between the actual developmental level as determined by independent problem-solving and the levels of potential development as determined through problem-solving in collaboration with capable peers”.
(Vygotsky & Cole, 1978:86)

In this zone, imbalances occur between what we know and the unique unknown. I view socio-constructivism as that which impacts a practice; therefore challenging the self to be accountable. Schrader (2015) explains that there is a transaction between the meaning one constructs on one's own and then where interactions with peers are needed. I regard this process in the Zone of Proximal Development as not linear, but lateral and continuous. Equilibrium is, therefore, never ultimately achieved. Within a professional practice, one concurs that the process of professional learning and the action research process is unending, and the self is central (Schrader, 2015).

According to Batagiannis (2011:1308), constructivism and action research share the following qualities: “Reflection, active learning, critical inquiry, mutual learning, collaboration and the rejection of formal roles”. My opinion that meaning-making is rooted in experience and preferably occurs in a collaborative environment (Sicilia, 2010) is confirmed by Piaget, Vygotsky and Dewey. Whole Brain® Participatory Action Research thus advances the independent and authentic nature of

constructivism through inherent engagement between participants in a scholarly community of practice (Hathcoat & Nicholas, 2014). During the co-construction (Hathcoat & Nicholas, 2014) of meaning in our scholarly communities of practice and the mentoring relationships, Whole Brain® Thinking took a central position. The participants and I actively and reciprocally progressed to transform the self in our authentic South African education landscape.

2.3 SOUTH AFRICAN EDUCATION CONTEXT

In a report by Spaull (2013), the basic education system in South Africa is described as underperforming, with only 25% of the schools being functional. According to (Modisaotsile, 2012), the most frequently documented aspects impacting the alarming state of education are overcrowded classrooms and a lack of the necessary resources, while Hughes (2012) reasons that teachers leave the profession due to a lack of support and isolation. South Africa currently spends 19% of the annual budget (Modisaotsile, 2012) mainly on public schools governed by the state. In South Africa, 87% of the education budget goes to the payment of public school teachers. The compensation received by teachers includes, besides their monthly salaries, medical benefits, contributions to a pension fund and an annual bonus.

The literature I consulted provided numerous aspects to contemplate on when addressing the state of teaching and learning at the basic education level in South Africa. In the report titled “Demand and supply of educators in South African public schools”, the Human Sciences Research Council in 2005 confirmed that more than twenty thousand educators leave the vocation every year. There is also an unbalanced dispersal of teachers across the provinces, and many teachers are emigrating (Erasmus, Loedolff, Mda & Nel, 2009). Professional development support is provided to some extent by professional bodies, such as the South African Council for Educators (SACE).

The South African Department of Basic Education insists that teachers must be registered with SACE and abide by its code of ethics as mandated by the SACE Act No. 31 of 2000 (South African Council for Educators, 2011). However, Modisaotsile (2012) and Gravett *et al.* (2015) point out that some teachers do not adhere to the code and do not acknowledge the importance of professional development. I

advocate that attention be given to the professionalism of mentor teachers in the pre-service mentoring setting, as well as to final-year education students as colleagues. In 2012, the “National Planning Commission” (NPC) released a National Development Plan recognising SACE as a major role player in the continuing professional development of teachers (South Africa, 2012). Educators are currently expected to earn a minimum of 150 Professional Development Points in every Continuing Professional Teacher Development cycle (three years) (South African Council for Educators, 2013). A teacher needs to participate in activities or programmes initiated by the teacher him or herself, the school or other institutions.

Ambrosetti, Knight and Dekkers (2014) define a pre-service teacher as an education student who is not yet qualified to teach. I consider pre-service teachers to be students in their final-year of study at a university. The programmes for teacher preparation in South Africa have undergone “frequent transformation and change since the early nineties” (Fraser, 2018:1). Some of the changes included mergers between regional teacher training colleges and universities (Jansen, 2002). The policy regarding the requirements for teacher education qualifications (Department of Higher Education and Training, 2015b) was standardised. I agree with Du Plessis and Marais (2013) that the Work Integrated Learning period influences the preparation of pre-service teachers for the teaching profession. Together with the mentor teachers, the lecturers at a university are responsible for mentoring and assessing pre-service teachers during the Work Integrated Learning period. The management of the Faculty of Education and the office for Work Integrated Learning in our institution makes the logistical and managerial decisions. The current increase in student teacher numbers at universities result in a large number of students having to complete Work Integrated Learning (Fraser, 2018) at schools. Fraser (2018:1) states that “managers and mentor lecturers seek alternative models and strategies to cope”. In my opinion, the schools at which pre-service teachers undergo Work Integrated Learning and the mentor teachers are similarly affected by the larger numbers of students who need to be accommodated.

The document “Integrated Strategic Planning Framework for Teacher Education and Development in South Africa 2011–2025” emphasises the importance of the Work Integrated Learning component (Robinson, 2016) during which a student works with

a mentor teacher. In the “Revised policy on the minimum requirements for teacher education qualifications”, Work Integrated Learning is defined as “structured, supervised, integrated into the learning programme, spread across the learning programme, and it must be formally assessed” (Department of Higher Education and Training, 2015b:13). I regard the policy framework as lacking in vision, since in my opinion the ultimate goal of a pre-service teacher is to be prepared for the education occupation in South Africa. In 2007, the European Commission criticised teacher education, which was seen to be failing in its task of preparing students for the authentic workplace environment (Ioannidou-Koutselini & Patsalidou, 2015). Pre-service teachers are currently being prepared for the workplace by using the standard benchmark of “monitoring and supervision” (Fraser, 2018:1) with very few opportunities for mentoring or self-regulated learning. The individual’s thinking preferences and professional learning are also not considered.

2.4 WHOLE BRAIN® THINKING

The various existing models of thinking are concerned either with personality traits, or with how experiences are processed (Bawaneh, Zain & Saleh, 2010). How individuals learn or develop is still the topic of many scholarly discussions (Hughes, Hughes & Hodgkinson, 2017). A few of the thinking style models currently dealt with in literature are those of “Jung, Kolb, Dunn and Dunn, Myers-Briggs, Ferder-Silverman and the Herrmann model” (Bawaneh *et al.*, 2010:89). In the impartial Coffield research report, many learning style instruments and their effects on learning are explored and assessed (Coffield, Moseley, Hall & Ecclestone, 2004). The Herrmann Whole Brain® Model is “one of six” (De Boer, Bothma & Du Toit, 2011:6) models recommended for the education sector. The Whole Brain® Model indicates how one thinks, creates, learns, acts, dresses, mentors, teaches and interacts (De Boer *et al.*, 2011).

Ned Herrmann developed the Herrmann Whole Brain® Model in 1976 and the theory of Whole Brain® Thinking was formulated in 1988 (Herrmann, 1989). Hermann was influenced by the work of Paul MacLean and Roger Sperry. According to MacLean’s Brain Theory (1952), the “cerebral- and limbic system together with the brain stem does different kinds of thinking” (De Boer *et al.*, 2011:73). The neuropsychologist and neurobiologist Dr Roger Sperry developed the Split Brain Theory in 1964

(Bawaneh *et al.*, 2010; Herrmann, 1995). Sperry was awarded a Nobel Prize for his research on the left and right brain hemispheres, which led to the discovery that the left and right brain either do different tasks, or attempt the same undertaking uniquely.

Herrmann's quadrant concept was based on Sperry and McLean's research and illustrated that rather than having two halves, the brain actually consists of four quadrants. Ned Herrmann's metaphoric four-quadrant model represented the Whole Thinking® Brain (Herrmann, 1996) by combining Sperry and MacLeans' theories into a Whole Brain® Model. Herrmann did not use cerebral and limbic descriptors, but indicated the different parts as quadrants A, B, C and D, situated counter clockwise in the brain (Herrmann, 1995). The quadrants are considered to be the "thinking areas of the brain and are known as the neural cortices" (De Boer *et al.*, 2011:72).

The Whole Brain® Model is, therefore, "four interconnected clusters of specialised mental processing modes, that function together situationally and iteratively, making up a whole brain in which one or more parts become naturally dominant" (Herrmann, 1996:14). What individuals feel most satisfied with is regarded as their brain dominance (Hughes *et al.*, 2017). In this pre-service teacher mentoring construct, the Herrmann Whole Brain® Model is used for the following reasons:

- It provides a new perspective of the self and the other person (Van den Berg & De Boer, 2001), assisting mentor and pre-service teachers in understanding one another's thinking preferences.
- It explains our thinking and appreciates diversity and reasons for reciprocated constructions during mentoring and community of practice interactions (De Jager, 2011).
- It is efficient, comprehensive and supported by research (Coffield *et al.*, 2004).
- It views the various selves as Whole Brain® Individuals. We therefore attempted to be Whole Brain® Professionals in our teaching, mentoring and research practice.

Whole Brain® Thinking provides an account of how individuals reason and acquire information (Herrmann, 1995), and focuses on the whole brain and not only on the areas with which we are comfortable. The participants and I could view our unique

thinking preferences as acquired behaviour models (Bawaneh *et al.*, 2010). One could therefore say that we (the pre-service teachers, the mentor teachers and I) were “hard-wired to be whole” (Herrmann, 1995) cited in De Boer *et al.* (2011:73). In my opinion, this statement indicates that the self is able to use all the quadrants of the brain while incorporating Whole Brain® Thinking into practice.

The Whole Brain® Model, as illustrated in Figure 4, shows the quadrants of the brain. If an individual, such as a mentor teacher or pre-service teacher, shows a preference for quadrant A, it indicates a preference for processing sound, fact-based knowledge. A person who favours quadrant B prefers controlled and comprehensive information processing; one who favours quadrant C values interpersonal settings; and one who favours quadrant D employs a more holistic view when thinking. The Whole Brain® Model (Figure 4) is therefore essentially a “representation of cognitive predilections, resulting in different thinking styles among individuals”, as Herrmann (1995) explains in Van Oordt, Van Oordt and Du Toit (2014:167).

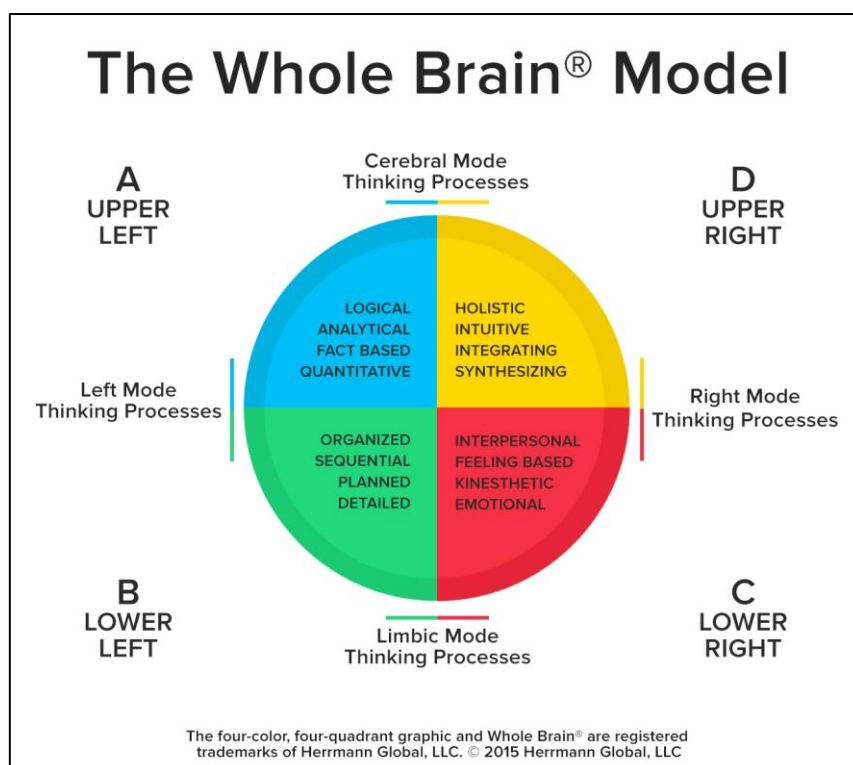


Figure 4: Herrmann's Whole Brain® Model

Compared to similar models, the model by Herrmann illustrated in Figure 4 is described as “powerful and useful” (Hughes *et al.*, 2017:4). According to the Whole Brain® Model, each brain quadrant is characterised by different thinking styles. Hughes *et al.* (2017) argue that the brain is primarily designed to be whole. The quadrants are connected and contribute to one’s learning (De Boer *et al.*, 2011), and therefore to the development of professionalism.

The HBDI® is a psychometric assessment consisting of 120 items that quantify thinking preferences (Herrmann, 1995) and determine the kind of cerebral activity an individual favours at a specific time. The HBDI® scientifically authenticates evidence regarding one’s learning, abilities and circumventions (Herrmann, 1989). The HBDI® produces consistent data regarding thinking patterns and includes 81 preference groupings, with 80% of society falling under 12 main brain profiles (Herrmann, 1995).

In recent years various terms relating to the field of Whole Brain® Theory have emerged, which I choose to refer to as constructs. I regard that these developments add to the current body of knowledge of mentoring in education and action research as scholarships. Whole Brain® Teaching (De Jager, 2011) and Whole Brain® Learning was first introduced (De Boer *et al.*, 2011; Herrmann, 1995) after the development of Whole Brain® Thinking. Du Toit (2013) provides the following innovative designations: “Whole Brain® Action Research, Participatory Whole® Brain Action Research, Whole Brain® Professional Meta-learning, Whole Brain® Self-regulated Professional Learning, Whole Brain® Socio-constructivism, Whole Brain® Scholarly Activity, Whole Brain® Professional Learning, Whole Brain® Self-regulated Practitioner, Whole Brain® Scholarly Reflection, Self-enquiring Whole Brain® Scholar, Self-enquiring Whole Brain® Mentor, Self-enquiring Whole Brain® Leader, Self-enquiring Whole Brain® Education Practitioner” (Du Toit, 2013:1217, 1218, 1219, 1220, 1230). Although the above-mentioned constructs are extensive, there are no currently designed Whole Brain® Constructs for the context of mentoring in education. The development of the contemporary Comprehensive Whole Brain® Mentoring Model for education contexts will be discussed in Chapter 6. In the process of developing the model, new constructs were coined.

The participants and I completed the HBDI®. This instrument promotes harmony, tolerance and effective communication in mentoring relationships and during the

scholarly communities of practice sessions as it raises awareness of other participants' way of thinking. The mentor and the pre-service teacher therefore have to adapt their thinking preferences to those of the other person to achieve a holistic Whole Brain® Practice.

De Boer, Du Toit, Scheepers and Bothma (2013) created the Comprehensive Whole Brain® Model, which supports the facilitation of Whole Brain® Teaching and is discussed in section 2.5.6.2. The contemporary Comprehensive Whole Brain® Mentoring Model I developed may foster mentoring in the education context in a Whole Brain® Manner.

2.5 MENTORING

The term mentoring had its origin in Greek mythology (Bynum, 2015). Mentor is a character in Homer's *Odyssey*, written 3000 years ago, who was depicted as a knowledgeable and loyal guide assigned to look after Odysseus' son Telemachus during the Trojan War. This archetype draws attention to the importance of healthy relations during mentoring. However, the mentoring process has changed during the past 50 years (Feiman-Nemser, 2012) from involving an experienced person who assists a younger one on his or her journey to being a more reciprocal relationship between the mentor and the mentee.

Mentoring is used differently in different situations, and for different purposes (Kemmis, Heikkinen, Fransson, Aspfors & Edwards-Groves, 2014), but I am troubled by the idea that "everyone thinks they know what it is and have an intuitive belief that it works" (Allen & Eby, 2007:7). From a constructivist frame of mind, I dispute that mentoring in the field of education always succeeds, as Burghes, Howson, Marenbon, O'Leary and Woodhead (2009) mention that an established 30–50% of educators in England leave the profession within the first five years. Schunk and Mullen (2013:362) reason that "research has shown mentoring to be effective, but not explained why". I therefore decided that, in order to answer the research questions stated in Chapter 1, the participants and I needed to decide on our interpretation of what mentoring involves.

2.5.1 Specifying mentoring

The definition and models of, and approaches to mentoring are discussed according to their value for the mentoring of pre-service teachers. Bozeman and Feeney (2007) claim that mentoring research commenced with Kram's article in 1985, which is the most frequently cited work in this research field. According to Crow (2012), no universal definition exists for mentoring. Kemmis *et al.* (2014) and Crisp and Cruz (2009) regard mentoring as multi-faceted. In 2007, "more than 50 definitions of mentoring existed in research literature" (Dawson, 2014:137). Brondyk and Searby (2013:197) state:

"There are several factors that might explain this lack of empirically substantiated mentoring best practices in education. Mentoring is in the theory-building phase, where researchers are beginning to describe what it is in the field".

Dawson (2014) proposes that this construct should not be defined, but should be given new meaning and be contextualised. I suggest that mentoring be conducted in a Whole Brain® Manner, with a view to allowing pre-service teachers and mentor teachers to cultivate their self-regulated professionalism.

Mentoring in educational contexts is gaining popularity worldwide (Fletcher & Mullen, 2012). The various approaches to, and models for mentoring meet varied needs (Clutterbuck & Megginson, 1999). In pre-service teacher mentoring, a unique and sophisticated "triad alliance" is established between the mentor lecturer, the mentor teacher and the pre-service teacher (Fraser, 2018:1). Ambrosetti (2014) declares that in Europe mentoring is non-directive and concentrates on mutuality and reciprocity, while American mentoring is directive and focuses on sponsorship, networking or career outcomes. I agree with Geber and Nyanjom (2009), who points out that these Western perceptions of mentoring may not be appropriate in the African context. The notion of the spirit of ubuntu, which is mentioned in the South African constitution (South Africa, 1993), is part of the South African culture and includes human virtues such as compassion and cooperation. I am of the opinion that mentoring practices might differ to some extent in different institutions, countries and cultures, which is something that should be considered.

Clutterbuck and Megginson (1999) recommend that diversity should be taken into account during mentoring. In South Africa, both males and females of different ethnic groups, cultures, convictions and languages are employed in the education sector. The participants and I therefore agreed that we should have our own specifications for mentoring in our practice. The mentor teachers and I incorporated similar innovative types of mentoring in practice. As indicates in Chapter 1, we strived to transform our practice. A practice is a “socially established, cooperative human activity” (Kemmis *et al.*, 2014:155). Kemmis and Heikkinen (2012) use the term “practice architects” in the title of their article. In the context of this study, I preferred the Whole Brain® Practice Constructivists, as will be explained in more detail in Chapter 3.

I concur that mentoring is not in the theory-building phase, but rather in the construction phase, during which we develop our own meaning for this construct. The participants and I constructed mentoring for ourselves according to our thinking preferences, as introduced in the South African education sector. The questions we asked were not: What are we doing? or How are we improving?, but rather: How are we transforming? In brief, I did not define mentoring, but we specified and agreed to mentor collaboratively in our authenticated practices by applying a continuous Whole Brain® Participatory Action Research process.

2.5.2 Mentoring models

During pre-service teacher mentoring at the Institution of Higher Education where I am employed, specific timelines are prescribed when certain things need to happen during the Work Integrated Learning period. When a final-year education student is placed with a mentor teacher in a classroom, the pre-service teacher is not familiar with the specific school or classroom culture. Learners are usually present in the classroom while mentoring is taking place. I will discuss pre-service models mentioned in the relevant literature in order to explain the two models for self-regulated professionalism that I constructed for the short courses.

In Figure 5, the first model is described by Ambrosetti *et al.* (2014) as holistic. The pre-service teacher mentoring roles are outlined. The authors distinguish three mentoring components, namely: “Relational, developmental and contextual components”, as illustrated in their article titled “Maximising the potential of mentoring”. The relational component represents the relational nature of mentoring; the development component focuses on the attainment of personal and professional goals; and the contextual component in Figure 5 focuses on the aspects of developing to teach.

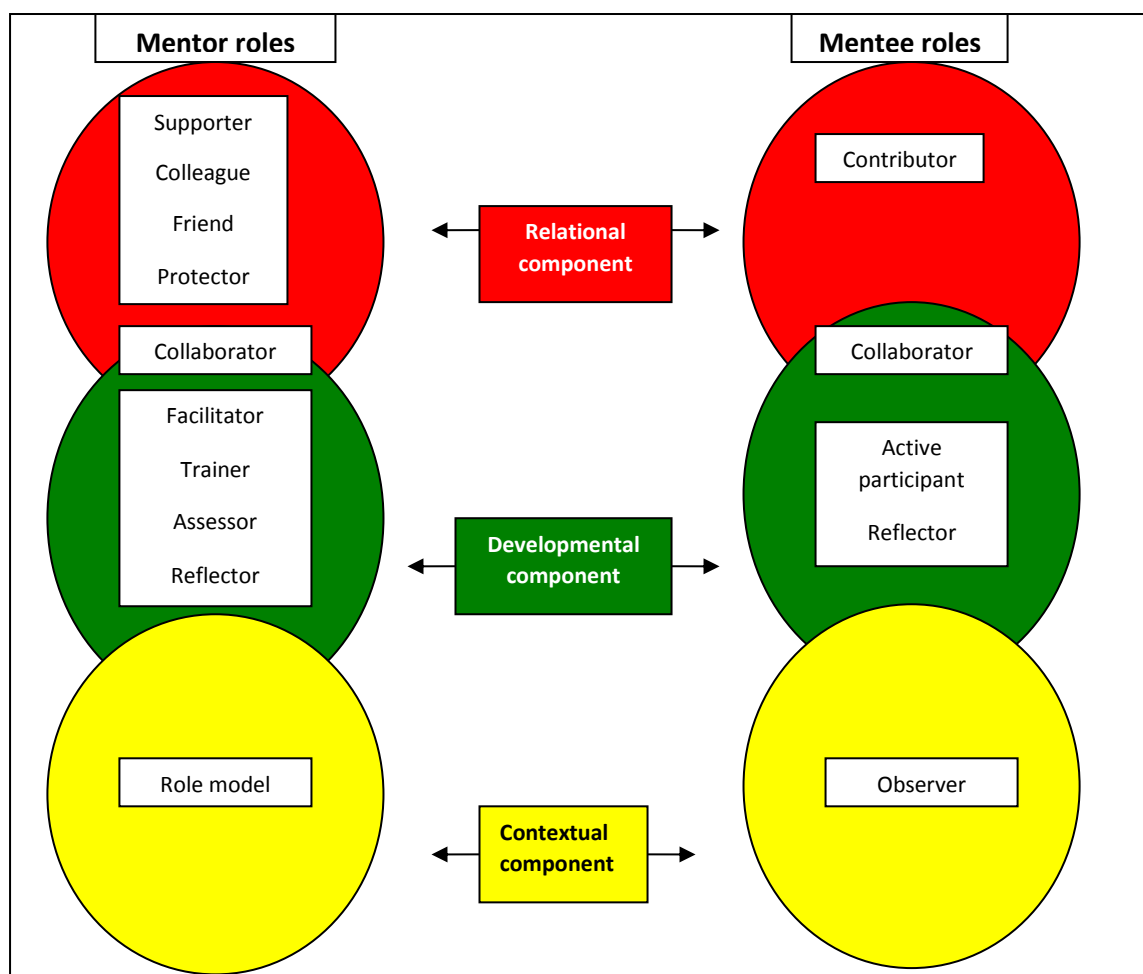


Figure 5: Components of mentoring (Ambrosetti *et al.*, 2014:231)

The mentoring model in Figure 5 further delineates the variances between the mentor and the pre-service teacher’s roles (Ambrosetti & Dekkers, 2010). I agree with this model since unless the roles of the mentor teacher and the pre-service teacher are clearly defined, mentoring relationships will continue to function only

according to predetermined opinions. Mentor teachers, *inter alia*, base their conceptualisation of mentoring on their experiences as students (Butler & Cuenca, 2012), but in a 21st century setting this viewpoint can be problematic for the preparation of pre-service teachers.

I perceive the “roles and corresponding components of mentoring” in Figure 5 (Ambrosetti & Dekkers, 2010; Ambrosetti *et al.*, 2014) to be one dimensional and static and do not consider this to be an all-inclusive model as no reference is made to the self as an individual with specific thought preferences. I also do not regard the mentoring model in Figure 5 as reciprocal. In the contextual component, it should preferably be possible for the roles of role model (the mentor) and the observer (the final-year student) to be switched, so that the mentor teacher becomes the observer. I agree with Ambrosetti *et al.* (2014:230) that a pre-service teacher is an “active participant”, but I do not regard a mentor teacher as being a “trainer” or “facilitator” in the pre-service mentoring context. In the Whole Brain® Mentoring process, final-year education students and their mentor teachers are committed to a reciprocal relationship.

Another mentoring model that I considered was that of Butler and Cuenca (2012), which describes a mentor teacher as either playing the role of a coach, support or network mediator to a pre-service teacher and connects with the identification Buell (2004) made of the three models of mentoring: “Cloning, nurturing and friendship”. The cloning model depicts mentors as dominating pre-service teachers, which is problematic as the mentor teachers would then be merely creating replicas of themselves. The nurturing model creates a safe atmosphere, with the mentor teacher as the parent figure. In my opinion, this approach is not useful in the authentic teaching profession where beginner teachers work unaided. The friendship model displays an equal relationship in which pre-service teachers and the mentor teachers function as peers, but in this case the pre-service teachers do not take responsibility for their professionalism. In general, the models by Buell (2004) provide a useful guideline for mentoring, but it seems to me that the individual thinking preferences and a variety of mentoring practices or types of mentoring were not taken into account.

Race, gender, personality, skills (Ragins & Kram, 2007) and thinking preferences (De Jager, 2011) are some of the critical factors that influence mentoring relations. South Africa has a complicated political history and faces specific challenges in education (Gravett *et al.*, 2015). Currently no suitable model exists in the literature for the mentoring of pre-service teachers in South Africa. The contemporary Comprehensive Whole Brain® Mentoring Model I developed for the education context will be discussed in Chapter 6.

2.5.3 The mentoring process

According to Ambrosetti *et al.* (2014:234), prospective teachers go through the following phases during mentoring and before entering the profession (Figure 6): “The preparation for mentoring, pre-mentoring towards mentoring and post-mentoring.”

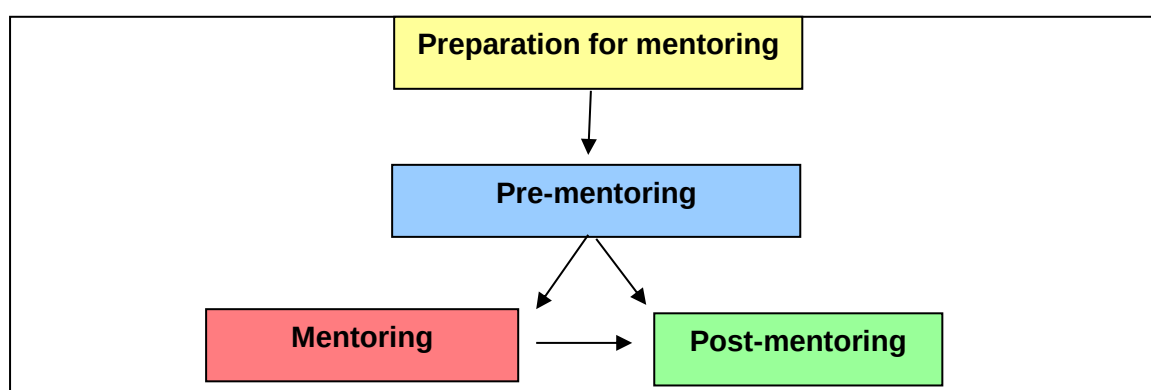


Figure 6: Mentoring phases (Ambrosetti *et al.*, 2014:234)

There is a correlation between the work of Ambrosetti *et al.* (2014) in Figure 6, and that of Stroot, Faucette and Schwager (1993) 20 years earlier. According to Stroot *et al.* (1993), pre-service teachers go through the following phases before entering the profession: “Anticipatory socialisation, the professional socialisation and the organisational socialisation phases” (Stroot *et al.*, 1993:442). Final-year education students initially learn about the profession during their school years. The second phase is their preparation as teachers and the final (post-mentoring) phase is when the pre-service teachers evolve into qualified teachers (Stroot *et al.*, 1993).

Ambrosetti *et al.* (2014:234) explain that the first two phases in Figure 6 provide a foundation for the mentoring relationship during Work Integrated Learning. I view these first two phases as relating to Stroot *et al.* (1993) “anticipatory socialisation phase”, during which the required knowledge and skills for mentoring are provided and prospective teachers pursue opportunities, strive towards goals and accept responsibilities. The third phase in Figure 6 is mentoring, which is about the attainment of articulated goals, linking to the “professional socialisation phase” of pre-service teacher preparation (Stroot *et al.*, 1993). The last phase from Ambrosetti *et al.* (2014) is labelled post-mentoring as seen in Figure 6. The pre-service teachers redefine their objectives or evaluate their development by connecting to the “organisational socialisation phase” (Stroot *et al.*, 1993), which is when they enter the profession. While comparing the phases identified by Stroot *et al.* (1993) and Ambrosetti (2014), I realised that self-regulation has to be central during the mentoring of pre-service teachers in order to successfully enter the profession. I propose a constructivist approach to professional learning and mentorship in the pre-service mentoring context.

Since the pre-service teachers and I facilitated learning in our practice, I was interested in the various learning style theories. Willingham, Hughes and Dobolyi (2015:266) define learning styles as to how “individuals think and learn in different ways”. The notion is that learning takes place according to an individual’s style of learning. A review by Howard-Jones (2014:2) revealed that more than 95% of teachers in the “United Kingdom, the Netherlands, Turkey, Greece and China” agreed that learning is more successful when the preferred learning style of a learner is used during the facilitation of learning. I reviewed several learning theories, including Gardner’s Theory of Multiple Intelligences (Gardner, 1983) and Kolb’s (1984) experiential learning model.

I opted for the implementation of Whole Brain® Learning (Herrmann, 1996) and self-regulated learning (Biggs, 1985) in the pre-service teachers’ and my own facilitation practice. The Comprehensive Whole Brain® Model (De Boer *et al.*, 2012) supported us in the implementation of Whole Brain® Learning and Whole Brain® Teaching. The Biggs model (Biggs, Kember & Leung, 2001) in Figure 7 is based on the construct meta-learning (Wolvaardt & Du Toit, 2012), an equivalent of self-regulation that

focuses on the constructivist idea of directing your learning. I made some alterations to the “3P model of teaching and learning” (Biggs *et al.*, 2001:136): In the presage phase, which involves not only the prior knowledge of the learner, but includes student factors such as the individual’s HBDI® profile, I altered the teaching context to the facilitation context, thereby including the curriculum and professional learning. In the process approach, participants use self-regulated learning. The product phase, according to Biggs, is the desired outcome of the process, as shown in Figure 7.

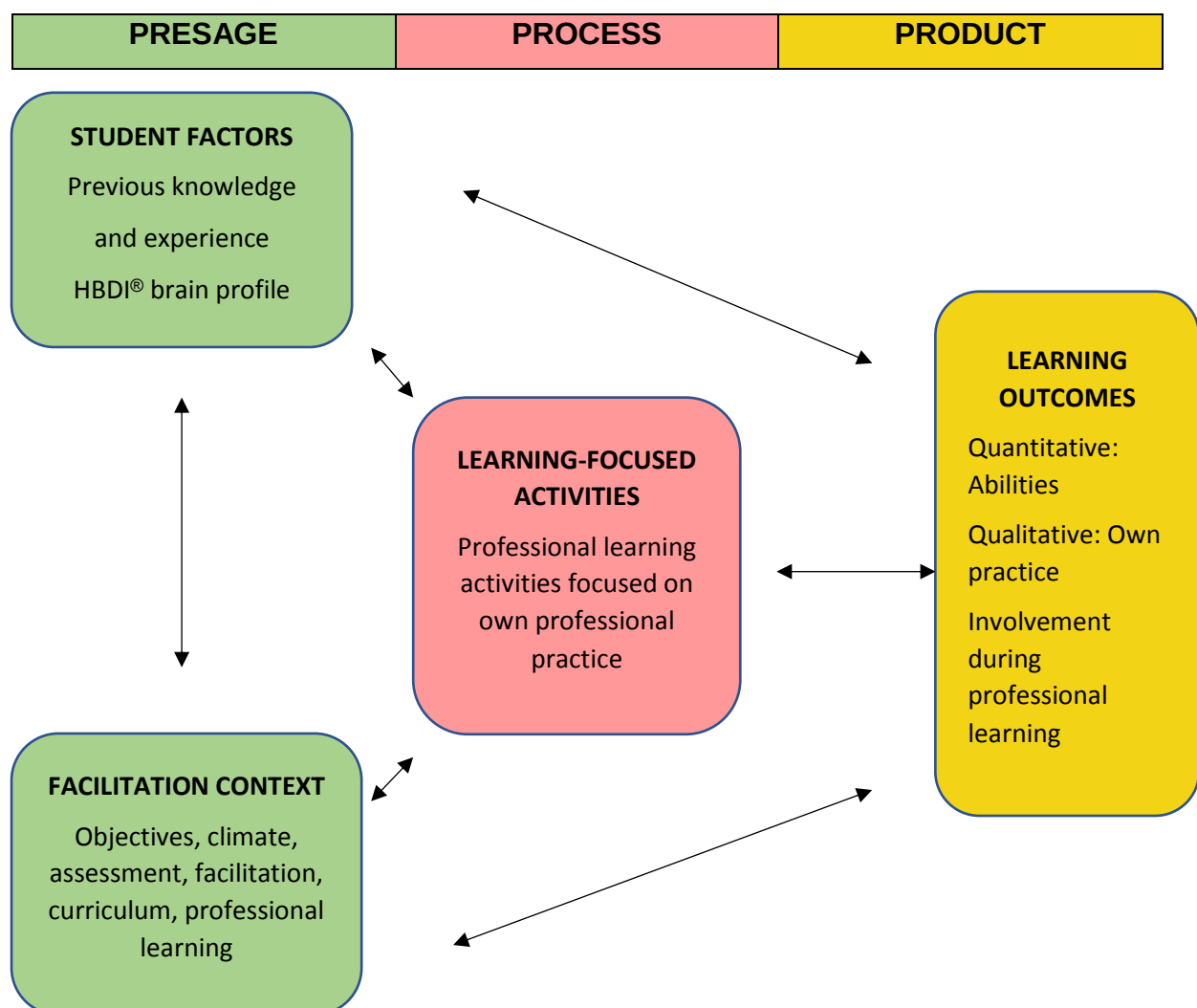


Figure 7: Adapted 3P model of facilitation (Biggs *et al.* (2001:136)

The model in Figure 7 has never been used during mentoring. I propose that self-regulation be implemented in the mentoring construct. I developed self-regulation processes for both mentor teachers and pre-service teachers for the unique South

African context and with due consideration of the phases of mentoring (Ambrosetti *et al.*, 2014), the roles of mentor teachers and pre-service teachers and the mentoring model by Schunk and Mullen (2013). Biggs *et al.* (2001) and Zimmerman (2008) self-regulating models also influenced the two self-regulated professionalism models I developed, as illustrated in Figures 8 and 9.

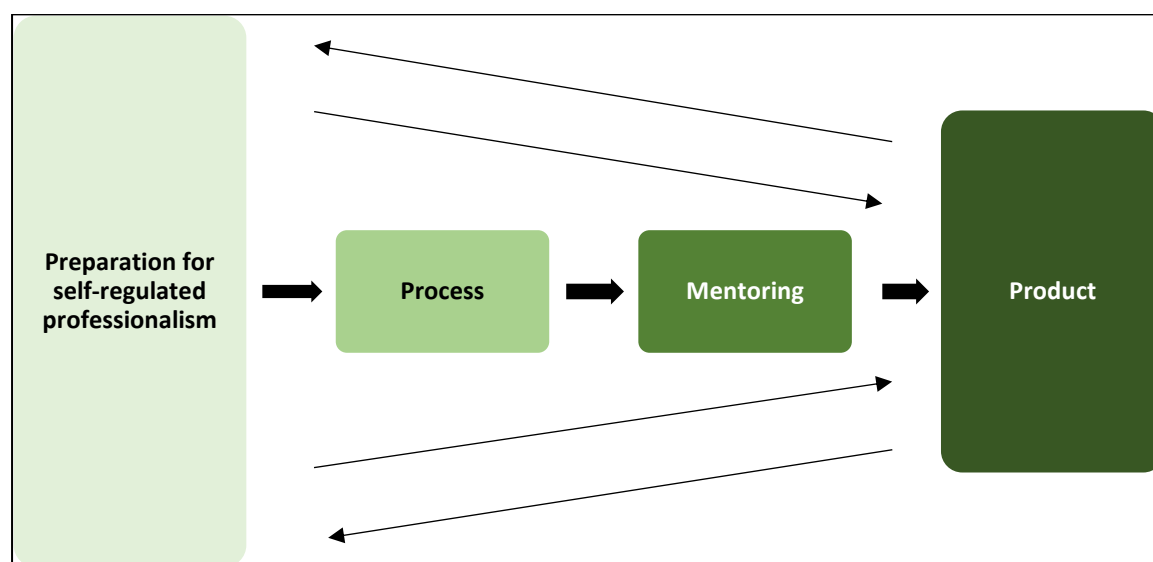


Figure 8: Mentor teacher self-regulated professionalism process

The self-regulated professionalism process of the mentor teachers is illustrated in Figure 8 and further details are provided in Table 1. This process was introduced as part of the mentor teacher scholarly community of practice sessions. The mentor teachers reflected on their own and their pre-service teachers' goals, addressed their professional learning and progressed through the self-regulated professionalism process in their mentoring practice.

Table 1: Phases in the mentor teacher's self-regulated professionalism process

Preparation for mentoring	In this phase, which included task analysis, the foundation was laid for their mentoring practice. Before mentoring commenced, the mentor teachers clarified their viewpoints and goals. A mentor teacher scholarly community of practice was established. In this phase, the group contemplated on the expectations, goals, roles and communicative processes of their mentoring practice. Viewpoints were

	challenged, quality mentoring explored, and the self considered as part of the we in the scholarly community of practice.
Pre-mentoring	Thinking preferences were regarded while developing the self as a brand. Innovations in practice were explored and the first action research process was conducted in the various mentoring practices.
Mentoring	During mentoring the mentor teachers' role with regard to professional learning was challenged. The how and why of their own empowerment was considered. Who is responsible and what is needed? The challenges faced by pre-service teachers were taken into account and the second action research cycle took place.
Post-mentoring	The last phase of the self-regulated professionalism process entailed self-reflection about the mentor teachers' professional learning and their mentoring practice. In the mentoring relationship and in the mentor teacher scholarly communities of practice, the focus was on redefining goals and visions or assessing the progress made.

The self-regulated professionalism process for mentor teachers during mentoring, as explained in Table 1, includes the idea by Brondyk and Searby (2013) of best practice. The pre-service teacher self-regulated professionalism process illustrated in Figure 9 shows the development final-year students strived to achieve during the Work Integrated Learning period.

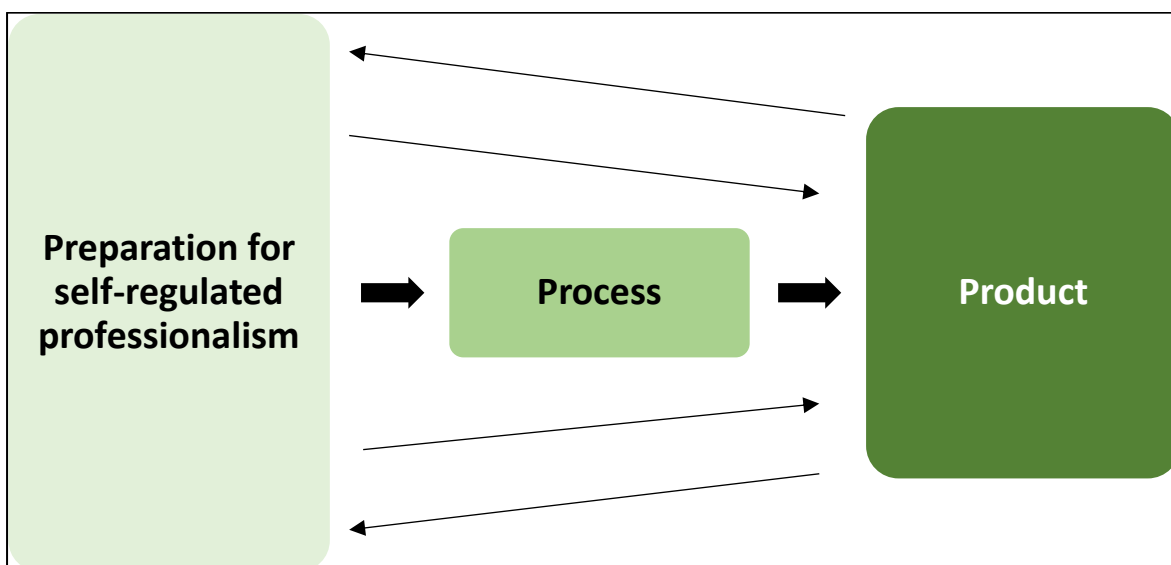


Figure 9: Self-regulated professionalism process for pre-service teachers

The self-regulated professionalism process for pre-service teachers as illustrated in Figure 9 is described in Table 2. It was used during the pre-service teacher scholarly community of practice sessions and in their teaching practice. The phases are regarded as to progress, but not having an outcome in the product stage of assessment (Biggs, 1985).

Table 2: Phases in the self-regulated professionalism process for pre-service teachers

Preparation for self-regulated professionalism	A scholarly community of practice was established with other final-year education students. The group contemplated on their expectations regarding their teaching practice. The self was also considered. The first action research cycle took place in their practice.
Process	Challenges were considered and the second action research cycle took place. Whole Brain® Thinking in the pre-service teacher scholarly community of practice was also considered. The second action research cycle in the pre-service teacher's teaching practice was conducted.
Product	The last phase of the self-regulated professionalism process entailed self-reflection about professional development and teaching practices. In the mentoring relationship and the pre-service teacher scholarly community of practice the focus was on redefining goals and visions, or assessing the progress made.

The process of self-regulated professionalism, as explained in Table 2, also included consideration of best practices (Brondyk & Searby, 2013:189) in the teaching practices of the pre-service teachers. The models, as illustrated in Figure 8 and 9, were the self-regulated professionalism process on which the pre-service teachers, the mentor teachers and I embarked during our action research processes.

2.5.4 Mentoring partnerships

Every mentoring relationship is distinctive and “shaped by the individuals, their goals and the school context” (Patton, Griffin, Sheehy, Arnold, Gallo, Pagnano, Dodds, Henninger & James, 2005:313). The partnering of a mentor and a pre-service teacher is imperative in the mentoring context of final-year education students. According to Ambrosetti *et al.* (2014), pre-service teachers have mentoring experiences that range from positive to harmful. The effect of harmful mentoring,

also mentioned in Chapter 1, is candidly described by Ehrich *et al.* (2011:23) as follows: “Poor mentoring can be worse than no mentoring at all”.

Various reasons can be found for the negative mentoring experiences of some pre-service teachers. There is a clear need for the professional development of mentor teachers. Hudson (2013) states that excellent mentor teachers are unfortunately few in number, but recommends that every teacher should participate in mentoring at some stage during their careers. When a pre-service teacher is placed with a mentor teacher, the message communicated is that the mentor is a specialist in his or her practice (Butler & Cuenca, 2012). However, I am not sure that a quality mentor is always the best teacher in the school. Although not all teachers working with pre-service teachers are successful as mentor teachers (Ambrosetti, 2014), I with various researchers that all educators have the ability to mentor (Hennissen, Crasborn, Brouwer, Korthagen & Bergen, 2011; Wang & Odell, 2002). I am of the opinion that mentoring abilities can be developed (Hennissen *et al.*, 2011) with the focus on the self-regulated professionalism of the pre-service teacher and the mentor teacher.

Another vital partnership during the mentoring of pre-service teachers exists between institutions of higher education and schools or managements and mentor teachers. Communication between a university and mentor teachers, and a shared vision, are of vital importance (Herrera, Kauh, Cooney, Grossman & McMaken, 2008). While some academics might claim that mentor teachers are not part of the professional landscape’s “high ground” (Schön, 1995), mentor teachers or school managements view university faculties as not sufficiently pragmatic with regard to what occurs in classrooms or schools in real-life contexts (Butler & Cuenca, 2012).

2.5.5 Benefits of, and challenges experienced when mentoring pre-service teachers

The 500 largest companies in the United States of America, which are known as the Fortune 500 companies, regard mentoring as essential for personal progression and a tool for career development (Bynum, 2015). Employees who are mentored are more productive and experience greater job satisfaction. Ehrich *et al.* (2011:8)

conducted a literature study of various education articles dealing with mentoring and found that 82% of the studies reviewed described mentoring as a productive process. Hudson (2013) states that mentoring can be advantageous to pre-service teachers, mentor teachers, schools and institutions of higher education across the board. Dominguez and Hager (2013) conducted a meta-analysis of more than 400 articles about adult mentoring practices in education and workplace settings. The advantages of mentoring were highlighted as the authors found evidence of 34 encouraging mentor outcomes, almost 50 advantages for mentees and 13 cases of organisational enrichment.

There are, however, various challenges or barriers in the authentic pre-service teacher mentoring situation. The alliances between schools and universities have been found to be tricky (Lynch & Smith, 2012). Universities are seen to be gaining from the collaboration without always adding anything of value to the partnership. Zeichner (2010) recommends the alignment of the goals and expectations of the university and those of the school and the mentor teachers. In the article by Long (1997) titled "The dark side of mentoring" it is mentioned that funding for mentoring is usually insufficient or has been terminated. Many South African schools do not have the resources needed to support teaching and learning, or a mentoring programme. Teachers are also not willing to pay for expensive courses. A mentoring programme should, therefore, be affordable and effective.

For a mentor teacher the additional work required by mentoring can be seen as, an additional obligation, stressful and time consuming (Walkington, 2005), especially when a pre-service teacher requires more than the usual assistance (Long, 1997). Pre-service teachers still feel insecure about their position and tasks in the mentoring relationship and mentor teachers are not always confident in their mentoring abilities (Ambrosetti, 2012). This situation is explained by the following statement: "Just because a student teacher is assigned a cooperating teacher does not mean the pre-service teacher will be mentored" (Hobson, Harris, Buckner-Manley & Smith, 2012:68).

I regard the liaison during pre-service mentoring as challenging. The mentor teacher and the pre-service teacher have different ways of communicating, think differently and are not in the same phases of their careers. The article "Mentoring across the

professions: some issues and challenges” (Ehrich *et al.*, 2011) reports that 48% of the relevant studies consulted highlighted mentor teacher problems, while slightly fewer articles mentioned problematic incidents experienced by pre-service teachers. Mentoring seems to offer substantially more benefits to final-year education students than to mentor teachers, only 17% of the articles on mentorship that were reviewed refer to the professional learning of the mentor teachers (Ehrich *et al.*, 2011). These statistics support recommendations made by Smit and Du Toit (2016) that professional learning for mentor teachers be introduced and investigated.

2.5.6 Types of mentoring

Three types of mentoring, namely peer mentoring, blended mentoring and Whole Brain® Mentoring were introduced with a view to promoting self-regulated professionalism. The construct self-empowerment (Smit & Du Toit, 2016) explains how the three types of mentoring overlap with self-regulated learning.

2.5.6.1 Peer mentoring

In the article titled “Beyond solo-teaching”, Feiman-Nemser (2012) emphasises the fact that teachers currently pursue collaborating prospects rather than solitude and autonomy. My previous research indicated that beginner teachers have a need to be part of peer-mentoring groups (Smit & Du Toit, 2016). If this is true for beginners, the same may be true for pre-service teachers and their mentor teachers. Peer mentoring is theoretically based on socio-constructivism as a collegial mentoring approach. A mentor not only shares knowledge, information or experience with a mentee (Korhonen, Heikkinen, Kiviniemi & Tynjälä, 2017), and various researchers agree that in essence mentoring should be reciprocal, accommodating, interactive and collaborative (Cornu, 2005; Heikkinen, Jokinen & Tynjälä, 2012).

I incorporated peer mentoring into the two short courses and the two scholarly communities of practice. Peer mentoring was therefore primarily and continuously incorporated into the mentoring relationship between the mentor teacher and the pre-service teacher. Peer mentoring is used inclusively to support and be part of what Vygotsky termed the Zone of Proximal Development (Vygotsky & Cole, 1978),

as alluded to earlier in the construct frame. The peer mentoring process is described as a process during which “learning awakens a variety of internal developmental processes that can operate only when the student is interacting with people in his or her environment and cooperating with peers” (Vygotsky & Cole, 1978:90). In this instance the “students” include me as the overseeing mentor, the mentor teachers and pre-service teachers. The participants and I were involved in the innovation of our practice. Peer mentoring is valued as an essential part of becoming an instrument for transformation (Du Toit, 2012) with Whole Brain® Participatory Action Research as the research design.

2.5.6.2 Whole Brain® Mentoring

Whole Brain® Thinking is central to both the action research design we used and our mentoring or teaching practice. Whole Brain® Teaching (Herrmann, 1995) and Whole Brain® Learning is usually implemented to assist lecturers, teachers or presenters during the facilitation of learning. Bawaneh *et al.* (2010), however, observe that the successful implementation of Whole Brain® Teaching is pragmatically strenuous and facilitators may find it difficult to adopt this teaching theory in practice.

The Comprehensive Whole Brain® Model (Figure 10), created by De Boer *et al.* (2012), supports the facilitation of Whole Brain® Teaching and is an extension of the Herrmann (1995) Whole Brain® Model. In the Comprehensive Whole Brain® Model the four brain quadrants are illustrated. As shown in Figure 10, the Comprehensive Whole Brain® Model illustrates the “preferences, expectations, struggles and ways of facilitating learning” applicable to students’ experiences in the learning environment (De Boer *et al.*, 2015:57). The model is referring to every brain quadrant in terms of how a student would prefer the facilitation of learning to take place. A student’s expectations and what the student struggles with is also illustrated according to the preferences of each quadrant. In the middle circle, constructs are allocated to the brain quadrants according to what an individual is motivated by during the facilitation of learning. A learner who leans more towards quadrant C, but is attending a fact-based lecture might struggle with the lack of interaction during the session.

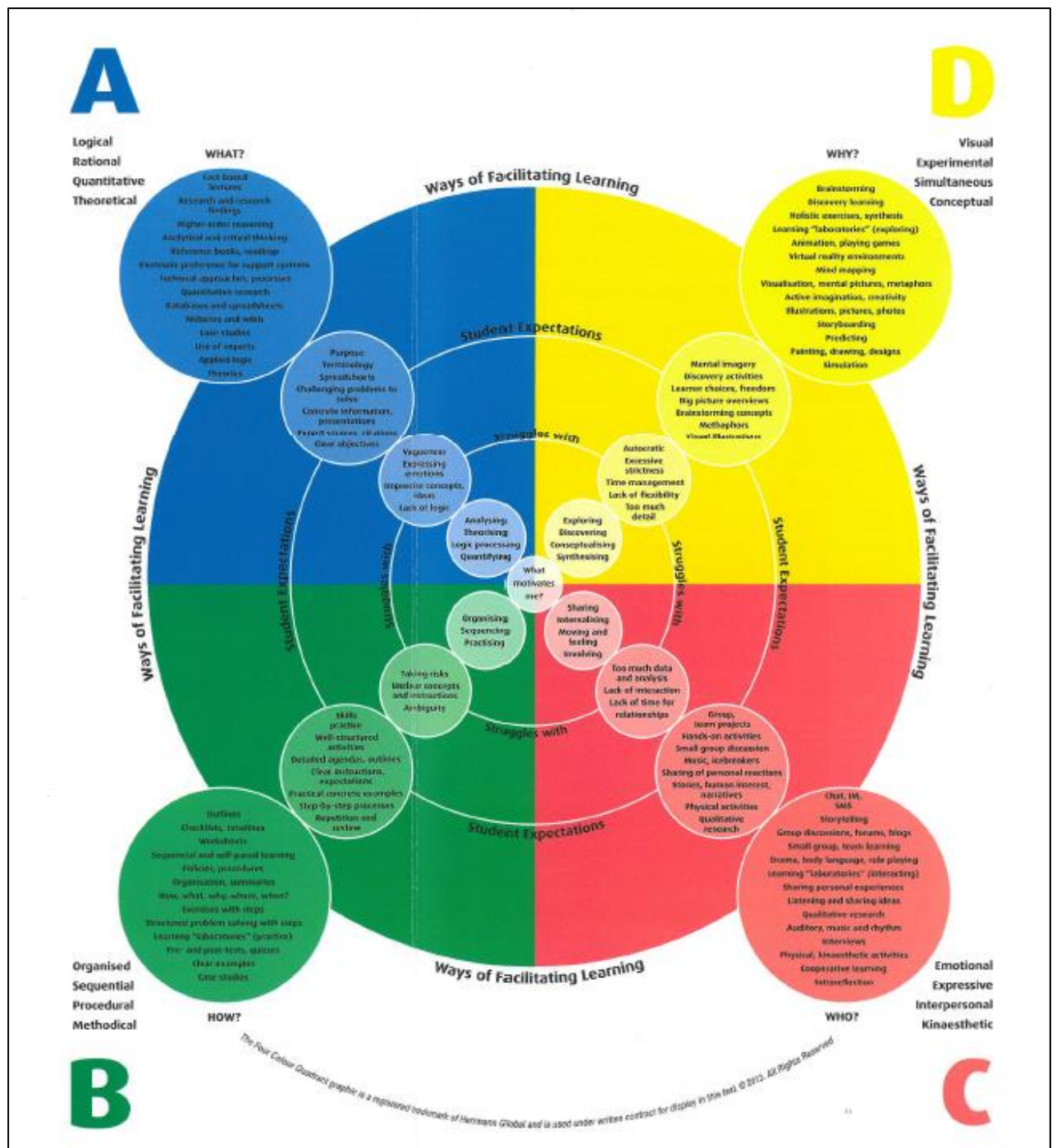


Figure 10: Comprehensive Whole Brain® Model (De Boer et al., 2015:58)

The construct Whole Brain® Mentoring (Du Toit, 2012) assisted the participants and me to acknowledge and accommodate one another's thinking preferences (De Boer et al., 2015) during mentoring. The implementation of Whole Brain® Mentoring in our mentoring practice means that the thinking styles of individuals accompanied one another (Herrmann, 1995). Whole Brain® Mentoring can therefore, as stated by Van

Oordt *et al.* (2014), support quality mentoring. I adapted the Comprehensive Whole Brain® Model in Figure 10 for application during mentoring in the education context as follows: The “ways of facilitating learning” in Figure 10 were changed to “becoming self-regulated professionals”. The question in the centre of the Comprehensive Whole® Brain Model relating to what motivates an individual was altered to the preferences during mentoring, as discussed and illustrated in Chapters 5 and 6.

2.5.6.3 Blended mentoring

For life-long professional learning to take place, the participants and I needed to be prepared to acquire “a different mix of skills than in the past” (World Economic Forum, 2016:1). According to Kramarski and Michalsky (2009), e-learning is a familiar method in the online facilitation of learning, and also closely linked to self-regulated learning. As early as in the 1990s, articles by Kram (1996) and Kram and Hall (1996) expressed concern about the effect of technology and the changing workplace on employees. I will first explore e-mentoring (electronic mentoring) and then explain the rationale for including blended mentoring as a type of mentoring in the pre-service teacher mentoring context.

E-mentoring, or virtual mentoring, is described by Hamilton and Scandura (2003) as the use of mainly online or electronic modes to provide interaction between the mentor and the mentee. DiRenzo, Linnehan, Shao and Rosenberg (2010), in Argente-Linares, Pérez-López and Ordóñez-Solana (2016:401) are confident that the “e-mentoring model is gaining acceptance” and providing alternatives for mentoring connections. Pre-service teachers need to be prepared to work in an interrelated, technological workplace. Bjork, Dunlosky and Kornell (2013) are convinced that e-mentoring offers innovative prospects for the development of final-year education students by providing an alternative type of mentoring in the modern era (Byrne, Dik & Chiaburu, 2008). Electronic media or online profiles on sites like Facebook, Twitter, WhatsApp and e-mail are increasingly being used at a personal and professional level (Zeidler, 2009). Murphy (2011) believes that these platforms can help employees gain skills for the workplace. The more than 500 million Facebook, Instagram, Twitter, LinkedIn and MySpace users emphasise the need for,

and importance of relationships (Fletcher & Ford, 2010) and for individuals to be part of a community that supports the notion of a reciprocal mentoring relationship.

I decided not to primarily use an e-mentoring tool, but rather the blended approach to mentoring as, in my opinion, the professional learning of mentor and pre-service teachers is ineffective when grounded solely in either a face-to-face or an exclusively online approach (Ice, 2006). I argue that some people may be uncomfortable with having solely cybernetic mentoring relationships, which are not as personal as face-to-face mentoring. Argente-Linares *et al.* (2016) suggest that when mentoring pre-service teachers, the personal relationship should still be established primarily through face-to-face mentoring as the mentor and pre-service teachers are mainly present in the same classroom. Murphy (2011), and more recently Argente-Linares *et al.* (2016) and Merritt and Havill (2016) have been calling for a “blended mentoring programme”. I regard blended mentoring as a complementary and appropriate mentoring alternative that may support traditional mentoring models (Murphy, 2011).

De Janasz, Ensher and Heun (2008) state that during blended mentoring demographics such as age, race, language or gender diminishes the effect or impact of differences between mentor and final-year education students. A more reciprocal relationship can develop. Blended mentoring was implemented in the short courses and provided the participating mentor and the pre-service teachers with opportunities to decide when or how to interact (Merritt & Havill, 2016). Blended mentoring was introduced to complement peer mentoring (Murphy, 2011) and Whole Brain® Mentoring. During blended mentoring, the mentor teachers and pre-service teachers moved between three different levels of interaction. I developed a model, adapted from the works of Daft, Lengel and Trevino (1987), and Merritt and Havill (2016:17), indicating the blended mentoring interaction intensity levels during pre-service mentoring (Figure 11). The three levels of blended mentoring and the extent to which they differ in richness or intensity are explained in Figure 11.

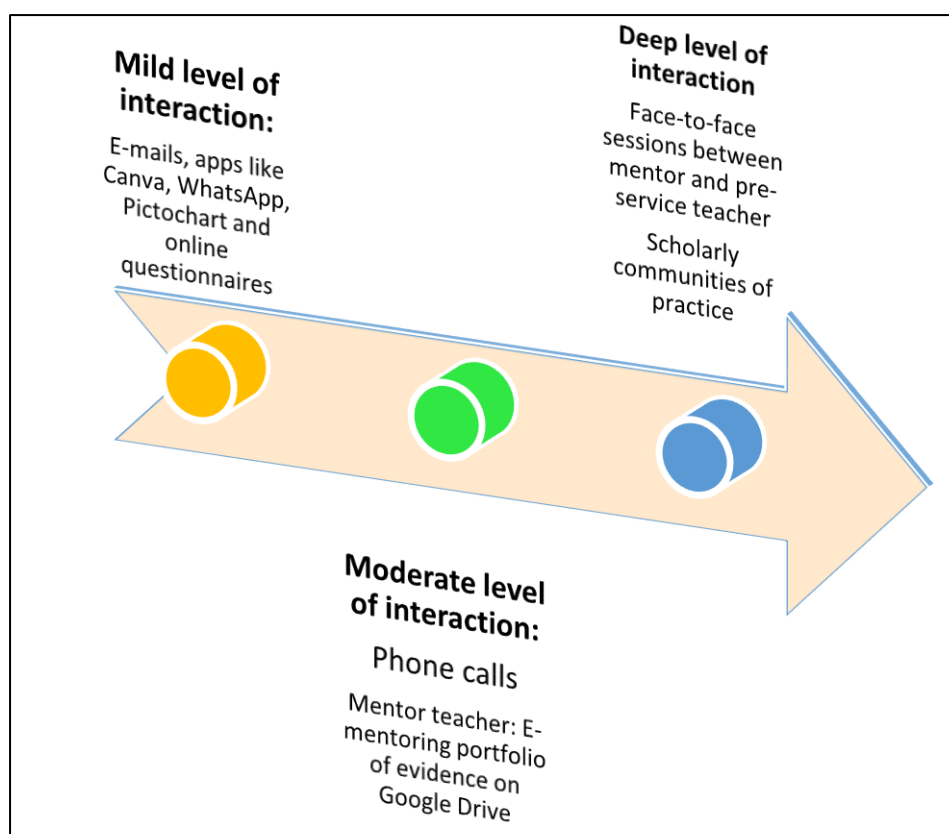


Figure 11: Interaction intensity levels of mentor and pre-service teachers during blended mentoring

In the mentoring relationships and as members of the scholarly communities of practice the mentor teachers, pre-service teachers and I interacted on the “mild” level of interaction intensity, as seen in Figure 11, by using e-mails, WhatsApp conversations and apps such as Canva and Pictochart. The second, “moderate” level of interaction included telephone conversations and the mentor teachers’ e-mentoring portfolios of evidence, which they completed as part of their assessment for the short courses. The mentor teachers were continuously working online to address their professional learning.

The mentor teachers developed their online portfolio’s of evidence in Google Drive under the title: “My self-empowerment in a community of practice” and included the work they had completed in the short course. Although the portfolio was focused on their professional learning, it did not take on the form of a blog. Roblyer and Doering (2014) describe an online portfolio as more orderly, structured and specialised than a

blog. Online portfolios, according to them, are “comprehensive, organised, collections of assets, descriptions and reflections” (Roblyer & Doering, 2014:224).

The mentor teacher portfolios included four self-reflective worksheets completed during each phase of the mentor teachers’ self-regulated professionalism process illustrated in Figure 8. The mentor teachers also included four mentoring opportunity worksheets, which they had completed with their pre-service teachers. The evidence of the two action research cycles they had completed was integrated. As part of their scholarly reflection, the mentor teachers made an executive summary, in either a Word document or on PowerPoint. A few mentor teachers used the app Canva to complete an infographic as part of their self-reflection. To conclude their portfolios of evidence, the mentor teachers included a poem they had written about the programme.

During the two short courses while using blended mentoring, the mentor and pre-service teachers (Figure 11) could choose the level of interaction intensity they wanted to use and how they would adopt blended mentoring in their practice. The mentor and pre-service teachers who preferred face-to-face mentoring at a specific time were free to opt to avoid using some of the electronic and online resources outlined in the mild interaction level, such as e-mail, if they found such communication to be impersonal and inadequate when they wanted to express distress or encouragement at a particular time during the mentoring process. Individuals might feel uncomfortable with regard to some of the privacy concerns due to the creation of records, which could cause trust issues (Smith-Jentsch, Scielzo, Yarbrough & Rosopa, 2008) between a mentor teacher and a pre-service teacher.

During informal and the structured face-to-face mentoring opportunities at their respective schools, the mentor and pre-service teachers communicated at the “deep” level of interaction, and participated in separate scholarly communities of practice sessions four times during the Work Integrated Learning period. To ensure quality in our mentoring practice, the mentor teachers and I used Whole Brain® Participatory Action Research to reflect on our use of blended mentoring and to take into account our different thinking preferences regarding the blended mentoring material with

which we were comfortable. Murphy (2011:619) describes the blended mentoring approach as “ideal and realistic in the wired 21st century”.

2.6 PROFESSIONAL TEACHER IDENTITY

I find it worth noting that the opinions that beginner, veteran and higher-ranking teachers have of their professional teacher identity are rather similar (Canrinus, Helms-Lorenz, Beijgaard, Buitink & Hofman, 2012). Canrinus *et al.* (2012:117) describe the essence of the development of teacher identity as dynamic.

2.6.1 Developing teacher identity

As stated earlier in this chapter, pre-service teachers are in their final-year of enrolment for a degree in education, but are not yet qualified educators (Ambrosetti *et al.*, 2014). Experiences, personal characteristics (Steenekamp, Van der Merwe & Mehmedova, 2018) and the information teachers acquire (Loyens, Rikers & Schmidt, 2007; Walkington, 2005) influence the development of professional teacher identity. Other factors that impact the development of teachers' identities include the requirements of the subject and the approach a teacher has to teaching and learning (Fraser, 2018). Professional teacher identities therefore develop explicitly from the perspectives educators have on “teaching and being a teacher” (Frick *et al.*, 2010:423) as a framework that will change throughout their careers. I will start this section by exploring the construct professional identity, the development of teacher identity, the transition from being a pre-service teacher to becoming a beginner teacher and finally, how, in the context of my study, I view professional teacher identity.

The construct “professional teacher identity” needs further elaboration as the term “identity” is widely used in the sphere of education and different types are discussed in the literature. Korthagen (2004), in Frick *et al.* (2010:423) refers to “mission identity”, and Farrell (2011:54) contemplates on “what they do” regarding a teacher's “role identity”. Friesen and Besley (2013:24) researched various identity distinctions, including “personal identity”, “social identity” and “ethnic or cultural identity”. Steenekamp *et al.* (2018) regard the development of teacher identity and its characteristics are essential in the professional workplace. In my opinion

professional identity is therefore influential in the context of pre-service teacher mentoring.

Feiman-Nemser (2012) points out that a beginner teacher is not yet the perfect teacher. I agree that more emphasis should be placed on the development of professional identity during the first five years after a teacher's entry into the education profession. Beginner teachers are "still learning to teach, no matter what their preparation" (Feiman-Nemser, 2012:16); therefore the self-regulated professionalism process needs to commence with pre-service teachers before they enter the profession. Beginner teachers hardly ever start their teaching careers with the required professional subject knowledge and skills to deal with the variety of learners or challenges in their teaching practice (Desveaux & Guo, 2011; Goddard, 2013). As novices, the linguistic, cultural and ethnic diversity of learners (Guo, 2014) needs to be taken into account if they are to be equipped to become accountable, considerate global citizens who are holistic in their thinking.

In essence, a final-year education student should be prepared to be a global teacher tackling the needs of 21st century learners (Guo, 2014). According to Tynjälä and Heikkinen (2011), and also Korhonen *et al.* (2017), pre-service teachers who are transitioning to becoming beginner teachers:

- experience feelings of insecurity regarding their future employment;
- feel that they have unsatisfactory information and competencies for the authentic workplace;
- feel anxious and hesitant;
- are of the opinion that they are undergoing a slow process of destruction;
- are uncertain regarding their expectations and role in the workplace;
- consider the importance of addressing their personal and professional development; and
- find that teacher preparation is detached from the real-life situation or that there is a divergence between theory and practice.

I support the idea that professional teacher identity is about the self (Beijaard, Meijer & Verloop, 2004; Farrell, 2011; Fraser, 2018) and regard that difficulties in the profession should be handled from a socio-constructivist perspective. The participants and I did not associate ourselves with only a single identity type, but as

practitioners we regarded the development of our professional teacher identity as encompassing all that is required in the profession. The development of a professional teacher identity is not a once-off final-year teaching preparation activity. I agree with Pillen, Den Brok and Beijaard (2013:87) that “professional identity is not a stable product, but a continually changing, active and ongoing process”.

The evolving teacher identity of pre-service teachers is specifically about them being confronted with their “teaching practices, teacher knowledge, beliefs and attitudes” (Steenekamp *et al.*, 2018:2). Early research on mentoring showed that young adults struggle with “role identity and role confusion” (Kram, 1983:609). As up-and-coming professionals, pre-service teachers therefore rely on their mentor teachers to assist them in refining a professional teacher identity, which is “not a fixed attribute of a person, but a relational phenomenon” (Beijaard *et al.*, 2004:108).

Whole Brain[®] Thinking was fundamental to the participants and my professional identities, a niche in the teacher identity field. The idea to initiate and describe our identity throughout our careers (Iswandari, 2017). In essence, the process we followed is specific to participatory action research and socio-constructivism, one of constructing meaning individually and with others (Du Toit, 2013). To construct one’s own meaning, it is necessary to explore one’s “living theory” (McNiff & Whitehead, 2012), which entails acknowledging the multi-dimensional character of a practice (Du Toit, 2013) while balancing the professional, personal and social dimensions within the identity of the self (Flores & Day, 2006). The mentor teachers and pre-service teachers worked in social and professional mentoring settings. Meaning was constructed during the scholarly communities of practice discussion, in the reciprocal peer mentoring relationship and through reflection, as will be discussed in the following segment.

2.7 REFLECTION

The first recorded reference to reflective thinking dates back to 1690, but it was Dewey (1933) who introduced and developed the notion of reflective practice (Hsieh & Chen, 2012). Reflection has been defined in different ways. Gravett *et al.* (2015:5), define it as “thinking that is focused, intentional and purposeful, and aims to deepen understanding and inform thought and action”. Educators are regularly requested to

reflect actively (Gravett *et al.*, 2015) or learn in a reflective manner (Du Toit, 2001) with a view to improving their practice. Reflection is thus a process and, according to Liu (2015), a skill. However, I agree with Jado (2015) that it is not always a natural activity. Effective reflection requires time and effort and can occur individually or together with others (Leijen, Allas, Toom, Husu, Marcos, Meijer, Knezic, Pedaste & Krull, 2014). I concur with Gravett *et al.* (2015:6), who emphasise the importance of reflection for veteran educators, since “experience does not always lead to learning”.

Reflection is valuable during Work Integrated Learning (Olsher & Kantor, 2012) as it helps pre-service teachers to make meaning of their teaching practice. I also consider reflection to be important for the development of a professional teacher identity, and Beijaard *et al.* (2004:114) compellingly affirm that “it is impossible to speak about the self if there is no reflection”. Leijen *et al.* (2014) call for active, reflective questioning during pre-service teacher mentoring in order to address professional identity, and Fraser (2018) states that reflection is valid activity during the development of student teacher identity.

I also agree with Du Toit (2001:337) who regard that “reflection is an integral part of self-regulated learning”. In my research study, I acknowledged the value of reflection as part of the process of cultivating self-regulated professionalism. In this section I concentrate mainly on the types of reflection discussed in the literature that I regard as applicable to the pre-service mentoring context. I describe the meta-reflection I do in Chapter 7. Furthermore, I explore the types of reflection the participants and I used during the two short courses and the action research process.

2.7.1 Types of reflection

Various types of reflection exist (Bergold & Thomas, 2012; Borg, Karlsson, Kim & McCormack, 2012; Schön, 1983; Thompson & Thompson, 2018). Schön (1983), in Leijen *et al.* (2014:315) focuses on the education context when referring to “reflection in action” and “reflection on action”, and Thompson and Thompson (2018:16) also include “reflection for action”. Critical reflection (Mezirow, 1990; Webster-Wright, 2009) is described as valuable during pre-service teacher education by Liu (2015:144), who defines it as “a process of constantly analysing, questioning and critiquing established assumptions of oneself, schools and the society”.

Du Toit (2018b) suggests a scholarly approach to reflection. In my study, the participants and I used scholarly reflection as proposed by Fringe (2013), cited in Du Toit (2013). During the Whole Brain® Participatory Action Research process, the mentor teachers, pre-service teachers and I contemplated on our practice in an academic manner. Scholarly reflection was significant as we made meaning in our practice.

Du Toit (2013) proposes the use of the HBDI® as a reflection instrument. The rationale for using the HBDI® in this participatory research was to remain focused during reflection, concentrating on one's thinking style preferences. However, in the pre-service mentoring context we did not merely deliberate on our thinking preferences, but also on those of the other participants. In the two scholarly communities of practice, as well as in the mentoring relationships, dialogues and multilogues were used during the reflection process. The self and others' practice transformation were therefore a cooperative Whole Brain® Endeavour and Whole® Brain Thinking vital in my construct frame. As the participants and I conducted Whole® Brain Participatory Action Research, we progressed, as recommended by Du Toit (2013), by taking action to do Whole Brain® Reflection and Du Toit (2018a:425) explains this process as "looking at the self from different perspectives".

Du Toit (2018b:9) describes meta-reflection as being constructed on the notion of "metacognition, thinking about one's thinking". In Chapter 7, I will reflect meta-reflectively (De Boer *et al.*, 2015; Du Toit, 2018a; Du Toit, 2018b). My reflection is multi-dimensional, which means that I reflect scholarly on the self, with my participants, about my facilitation practice and on how I conducted research in my study as an academic. With Whole® Brain Thinking informing my practice, I preferred to refer to Whole Brain® Meta-reflection (Du Toit, 2018a). I opted to classify my meta-reflection in a personal and epistemological manner (see Chapter 7) and used "personal reflexivity" and "epistemological reflexivity", identified by Borg *et al.* (2012:205), to structure my "meta-reflective narrative" (De Boer *et al.*, 2015:56). Since, in the context of my study I preferred to use terminology that fits my context and construct frame, I will refer in Chapter 7 to Whole Brain® Personal Meta-

reflexivity and Whole Brain® Epistemological Meta-reflexivity. to reflect on how the research transformed the self multi-dimensionally. Whole Brain® Epistemological Meta-reflection relates to the decisions I made in respect of the specific research design. To have a detailed and comprehensive understanding of my holistic practice (facilitation, design and research), I reflected in a Whole Brain® Personal Meta-reflective manner (Wolvaardt & Du Toit, 2015). The action research I conducted in my practice was a meaning-making process, therefore I reflected, as recommended by Du Toit (2018b), before, during and after the action research process. During meta-reflection, I reflected scholarly on my reflections on each of the four action research cycles. Du Toit (2018a:425) calls reflection of this kind reflection at “a meta-level of meaning-making”.

I regard that understanding our thinking preferences helped the participants and me to reflect in a scholarly manner. I developed a Whole Brain® Scholarly Reflection Model from the construct Whole Brain® Scholarly Reflection as coined by Du Toit (2013:5). This model and the other tools we used during the short courses are discussed in the following section.

2.7.2 Tools used to reflect

I will now briefly discuss the DATA process and the guided reflection protocol, which are two of several useful reflection tools for education practitioners. The DATA process was developed by Peters (1991) and includes four reflection steps, namely describing, analysing, theorising and acting. The DATA reflection process focuses mainly on improvement; therefore I did not introduce this process into my programme as the participants and I strived to transform rather than improve the self and our practice.

The second tool I considered was the “Guided Reflection Protocol” (Gravett *et al.*, 2015:14), which progresses through the following steps: Explaining what happened, reviewing why it happened, reflecting, considering what it means and detailing the implications for practice. The guided reflection protocol requires the reflection process to be completed in a particular order. I preferred a more imprecise reflection process that offered the possibility of customising reflection to suit one’s needs. In

my short courses I introduced the reflective journal, the SWOT analysis and the contemporary Whole Brain® Scholarly Reflection Model.

The participants and I kept a scholarly reflective journal throughout the Whole Brain® Participatory Action Research process. The self-reflective journal was included in the study manuals used for the short courses. The idea was that the participants and I would reflect continuously in a scholarly manner to make meaning in our practice. The second reflection tool I used was the SWOT analysis matrix (see Figure 12). The SWOT analysis is well-known and has been used extensively for strategic planning in various organisations and industries (Harrison, 2010). My introduction of the SWOT analysis process into the pre-service mentoring context was innovative. The SWOT process involved discussing and reflecting on the “strengths, weaknesses, opportunities and threats” of our practice.

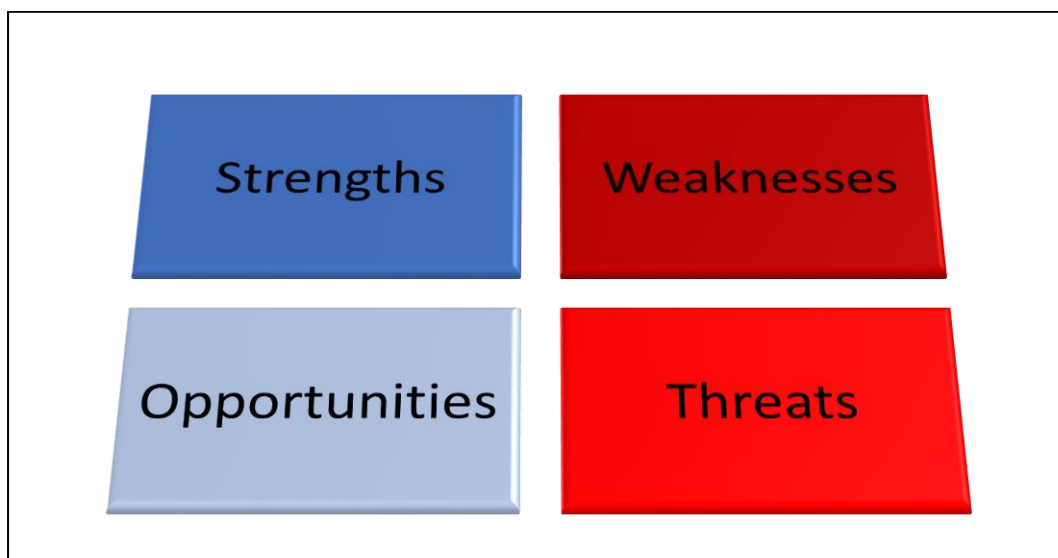


Figure 12: SWOT analysis matrix (Harrison, 2010)

In the short course, the participants and I used the SWOT analysis matrix (Figure 12) (Harrison, 2010) as follows: We reflected on information gathered or observations made in practice. We identified the strengths and weaknesses of the internal factors that influenced our individual practice in the classroom, the mentoring relationships and the scholarly communities of practice sessions. The participants and I also reflected on possible opportunities and threats, which were the external factors that

influenced practice. The participants and I further reflected, either in our practice or in a collaborative fashion on how the weaknesses could be changed to strengths and how the threats might be used to create opportunities.

In the short courses, the scholarly reflection process was directed by the Whole Brain® Scholarly Reflection Model, which had been inspired by the “Comprehensive Whole Brain® Model” (De Boer *et al.*, 2015:55) shown in Figure 13, in which quadrant A (blue) relates to the question What?; Quadrant B (green) asks How?; Quadrant C (red) asks Who?; and quadrant D asks Why?

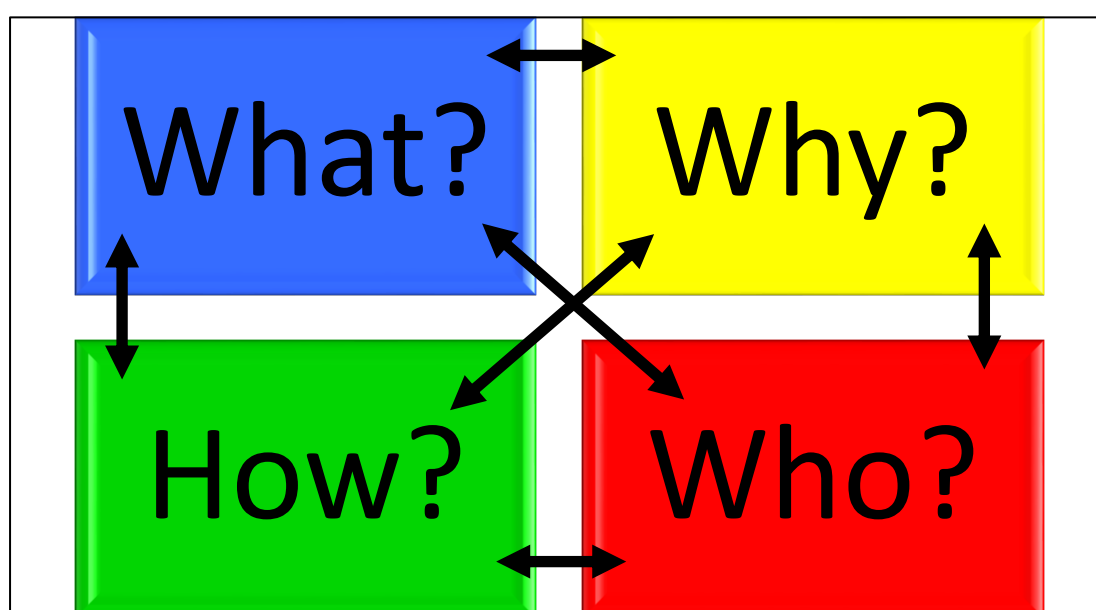


Figure 13: Whole Brain® Scholarly Reflection Model (De Boer *et al.*, 2015; Du Toit, 2013)

I explain the Whole Brain® Scholarly Reflection Model (Figure 13) by using as an example one of the reflective questions asked by mentor teachers in an individual scholarly reflection activity during the short courses. In the model, the mentor teachers were involved in scholarly reflection on how they used action research to transform their practice. In quadrant A (blue), they asked: What should I transform? In quadrant B (green) the mentor teachers reflected by asking: How can I transform my mentoring practice? In quadrant C (red) the scholarly reflective question was: Who do I need to consider when transforming my mentoring practice and who might be influenced? In quadrant D (yellow) they asked: Why do I need to transform my

practice? The Whole Brain® Scholarly Reflection Model simplified the use of the scholarly reflection process in practice as part of both individual and collaborative self-reflection. The model assisted the participants and me to reflect scholarly in a Whole Brain® Manner.

The Whole Brain® Scholarly Reflection Model does not require an individual to progress between the quadrants in a specific order. An individual can start with the model at quadrant D and progress to quadrant B with the option of returning to quadrant D, as indicated by the arrows in Figure 13. Reflection in this model is thus a process of asking Whole Brain® Scholarly Reflective Questions related to the self and practice. During the programme, the participants and I used the Whole Brain® Scholarly Reflection Model in Figure 13, the SWOT analysis (Figure 12) and the scholarly reflective journal together. Next, I discuss the self further in relation to the construct self-regulated professionalism.

2.8 SELF-REGULATED PROFESSIONALISM

Examples of self-regulated learning are found in the works of Socrates and Caesar, (Kulich, 1970), and Dewey (Ültanir, 2012) refers to self-regulation in his article :“A historical overview of the adult self-learner”. The concept of self-regulation came to the fore in the 1960s and 70s (Levin, 1967; Meichenbaum, 1977) when the effect of self-regulatory processes in the classroom as learners managed their learning was being investigated (Zimmerman, 2008). Self-regulated learning is still considered to be a complicated concept and is primarily concerned with the constructive regulation of learning in order to manage it effectively (Jado, 2015). Self-regulation is also known as “meta-learning”, “action learning” and “self-directed learning” (Wolvaardt & Du Toit, 2012:1255).

The construct professional learning (Webster-Wright, 2009), which is emphasised in this Whole Brain® Participatory Action Research study, uses a self-regulated process that involves taking responsibility to transform in one’s practice (Wolvaardt & Du Toit, 2012). Inter alia, the participants and I understood that we had to introduce new innovations in our practice with regard to the fields of information and communication technologies (Guo, 2014).

The World Economic Forum's industry agenda, "New Vision for Education," identified 16 skills needed in the 21st century workplace. The six foundational literacies identified included "literacy, numeracy, scientific literacy, ICT (Information and Communication Technologies) literacy, financial literacy together with cultural and civic literacy" (World Economic Forum, 2016:3). The four competencies recognised are "critical thinking or problem-solving, creativity, communication and collaboration" (World Economic Forum, 2016:3). With regard to a person's character, the six most essential qualities needed in the workplace are "curiosity, initiative, persistence or grit, adaptability, leadership and social and cultural awareness" (World Economic Forum, 2016:3). I regard the 16 skills listed by the World Economic Forum as crucial for pre-service teachers preparing to enter the education profession.

During the short course, the mentor teachers, pre-service teachers and I contemplated on the attributes specified in Table 3 to gain clarity regarding the attributes needed in the education sector in the 21st century.

Table 3: Essential attributes required in education in the 21st century (*Du Toit, 2017*)

Identify and analyse real-life problems and solve them in a creative fashion	Communicate by verbal and visual means	Reflect on the execution of tasks and become more effective	Develop professionalism
Manage change	Use technology	Become a visionary practitioner	Enact leadership skills
Organise and manage the self	Develop people skills with a view to developing others	Develop ability to contribute as a member of a community of practice	Demonstrate quality citizenship attributes
Be a lifelong learner	Act as a role model	Become a reflexive practitioner who promotes professionalism	Be action-oriented
Integrate information and information technology	Develop entrepreneurial capabilities	Develop an understanding of the knowledge economy	

UNESCO (2014) recognises the vital role of the teacher in ensuring quality education. The 19 attributes outlined in Table 3 emphasise the importance of having quality professional learning opportunities for teachers. According to the South African Department of Basic Education (Department of Basic Education, 2015), a large number of teachers in South Africa lack access to high-quality continuous professional development opportunities. Teachers experience various demands in their practice. In my opinion, the identification and acquisition of the attributes listed in Table 3 are essential for quality teaching, and therefore also for quality pre-service teacher mentoring. Evolving authentic conditions oblige “a need for self-initiated and self-managed learning” (Bjork *et al.*, 2013:418) as part of life-long professional development. Bjork *et al.* (2013:435) identify three “counterproductive assumptions”: First, the assumption that mistakes need to be prevented; second, that educators lack the necessary appreciation for professional learning; and third, that “learning should be easy”. Bjork *et al.* (2013) argue that these assumptions about professional learning are likely to result in a fixed mindset (Yeager & Dweck, 2012), which would limit educator development. Bjork *et al.* (2013:418) commend self-regulation as a survival tool. Professional self-regulated learning is thus regarded as an exciting but also challenging process. I understood that the pre-service teachers, mentor teachers and I have to adapt to the changing 21st century education environment to take responsibility for our professional learning. In this context the construct self-regulated professionalism combines the constructs self-regulated learning and professional learning. The process we implemented for self-regulated professionalism was similar to the approach proposed by Wolvaardt and Du Toit (2012:1255) and included the following steps:

- Plan own self-regulated professionalism by creating and working to attain goals in own practice.
- Execute the plan by conceptualising innovative ideas to address professionalism.
- Observe implementation in own practice by finding ways for implementing innovations to bring about transformation.
- Construct and transform own self-regulated professionalism and practice.

Self-regulated professionalism as a construct is regarded as a journey of self-empowerment, an essential 21st century feature (De Boer *et al.*, 2015) and a Whole Brain® Activity. The self in this context is a “whole-brained person with specific thinking preferences”(Du Toit, 2013:2). Self-regulated professionalism is a constant process of “learning about learning” (Hugo *et al.*, 2012:130), or learning about professionalism, which is more applicable in this unit of analysis. Next, the self-regulated professionalism of pre-service teachers and mentor teachers will be discussed.

2.8.1 Pre-service teacher self-regulated professionalism

I agree with Jado (2015) that higher education institutions need to develop self-regulated life-long learners. Self-regulation is fittingly regarded to be imperative in pre-service teacher preparation during the transition from being a student to becoming a teacher (Campbell & Brummett, 2007). Literature offers little information on the use of self-regulated learning in the context of mentoring. In their article titled: “Toward a Conceptual Model of Mentoring Research: Integration with Self-Regulated Learning”, Schunk and Mullen (2013:363) state that “if quality mentoring is taking place, self-regulated learning is playing an influential part”. The self-regulated approach to professionalism for pre-service teachers (Figure 14) focuses on the transformation of the self and education practice.

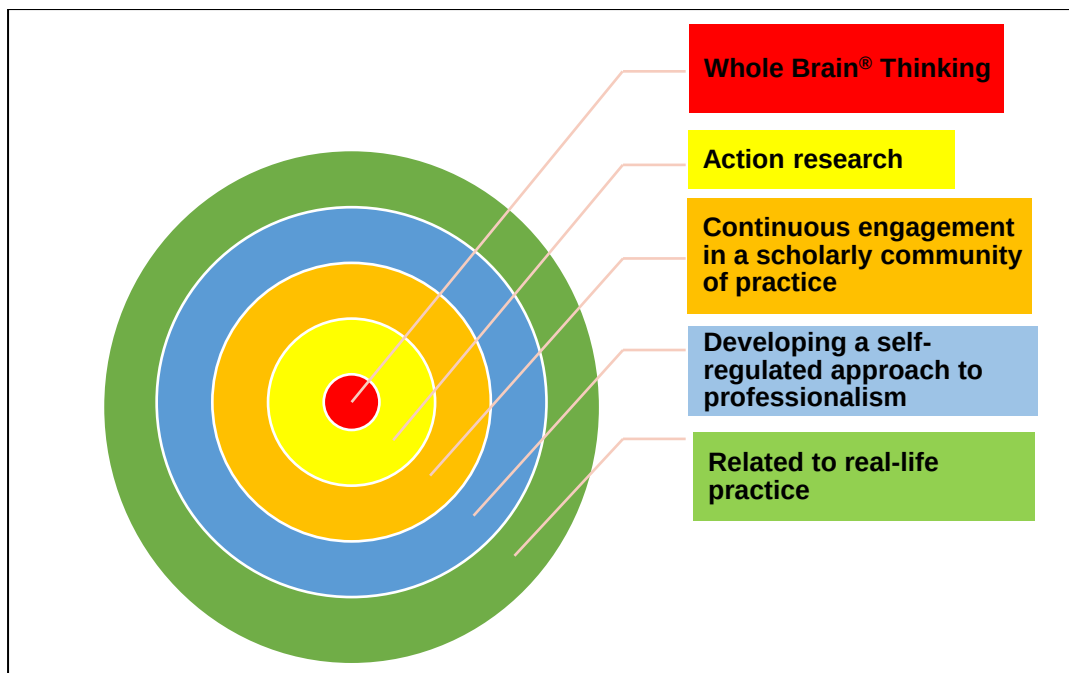


Figure 14: Pre-service teacher approach to self-regulated professionalism

When mentor teachers mentor pre-service teachers using a self-regulated approach to professionalism, they do not direct the final-year students, but are instead open to novel ideas and allow the pre-service teachers to solve problems on their own (Mukeredzi, 2016). As seen in Figure 14, Whole Brain® Thinking informs the self-regulated approach to professionalism. Hugo *et al.* (2012:130) refer to self-regulation as a “voyage of discovery”. Pre-service teachers therefore have the opportunity to reflect and discover who they are and what they can do while seeking meaning in their professional practice.

2.8.2 Mentor teacher self-regulated professionalism

During self-regulation in an authentic environment, we empower the selves (Hugo *et al.*, 2012; McLaren & Purpel, 2004). Self-regulated professional development does not happen in isolation. Cornu (2005) states that during mentoring the professional development of all those involved is valued. I am therefore of the opinion that unless mentor teachers regulate their professionalism, self-regulation competencies might not be developed in the pre-service teacher.

Webster-Wright (2009) agree with (Cornu, 2005) and add that life-long learning is valued. I therefore concur that mentor teachers need to carefully manage their continuous professional development or learning. However, the question that arises is: What is quality professional learning? Bissonnette and Caprino (2015) maintain that professional learning needs to be addressed as an essential and challenging aspect of the education profession. Self-regulated professionalism is about becoming. It is not about being a final product. In my opinion a short workshop setting thus not desired. To transform the self and one's practice, one needs to continuously take responsibility for one's professionalism, which is something that is not always realised. I agree with Bissonnette and Caprino (2015) that the more traditional approaches to professional development, such as short workshops, online courses or conferences, are not teacher-centred or the best mode of life-long professional learning. According to Bissonnette and Caprino (2015), teachers' professional development needs to undergo a metamorphosis by avoiding frivolous processes or the idea that professional learning is only needed when provided by their employers. Like Blau, Cabe and Whitney (2011), I support a more continuous form of professional learning. As seen in Figure 15, the Whole Brain® Self-regulated professionalism approach for mentor teachers focuses on mentor teachers transforming their pre-service mentoring practices.

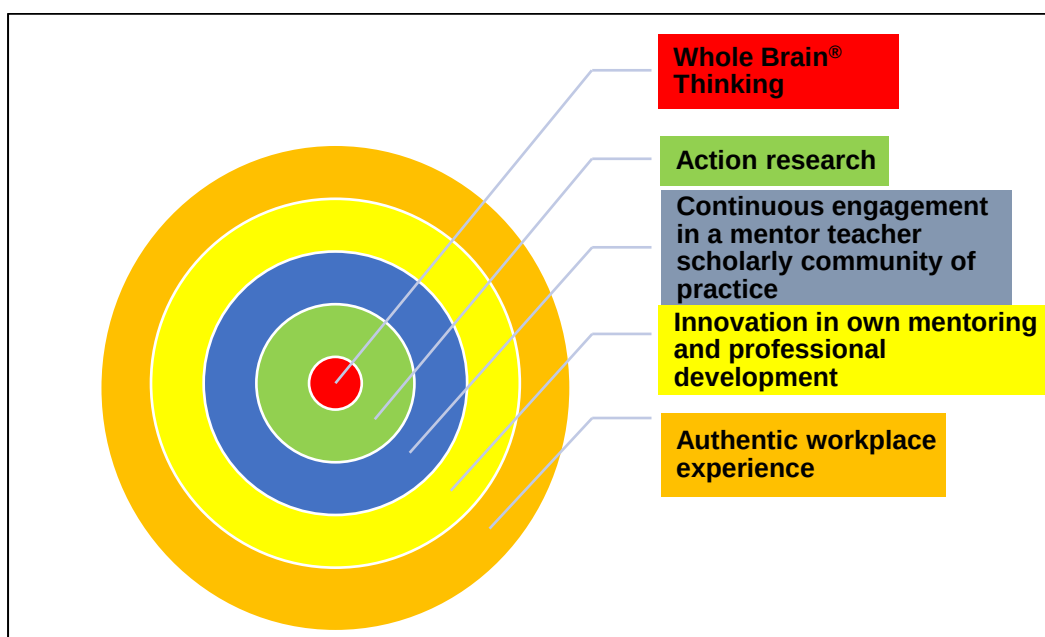


Figure 15: Mentor teacher approach to self-regulated professionalism

In the self-regulated professional approach depicted in Figure 15, the mentor teachers established their vision and used action research in the scholarly community of practice sessions and in the mentoring relationship with the pre-service teachers. During peer mentoring, the mentor teachers challenged and supported one another while being honest about their own needs (Hill, 2009). In Finland, mentoring is focused on mentees learning from mentors and vice versa, with the emphasis on quality (Korhonen *et al.*, 2017). Hanegan, Friden and Nelson (2009) state that mentoring should be authentic and dedicated to the practice of the mentor teacher, as outlined in Figure 15.

2.9 SCHOLARLY COMMUNITIES OF PRACTICE

The most effective professional learning occurs within a learning community (Ioannidou-Koutselini & Patsalidou, 2015). Korhonen *et al.* (2017:154) mention it endorses life-long professional learning and the following types of communities for development exists: “Collaborative action research groups, teacher study groups, collaborative inquiry and a peer group mentoring model”. In recent years the constructs professional learning community (Hord, 2009) and community of practice (McPhail, 2016) have become more topical. The different kinds of learning communities are easily muddled. The South African Department of Basic Education values the utilisation of professional learning communities, as stated in the “Strategic Planning Framework for Teacher Education and Development in South Africa, 2011-2015 (ISPFTED)”. In the school setting, a professional learning community concentrates on the improvement of learner performance.

Since my study was not focused solely on teaching and learning, I preferred to implement a community of practice that is focused predominantly on the continuous and holistic professional development of teachers. Wenger (2011:1) defines a community of practice as a “group of people who share a concern or passion for something they do and learn how to do it better as they interact regularly”. MacPhail, Patton, Parker and Tannehill (2014:39) regard the focus to be on professional learning as “discussion, analysis and problem-solving” are used over a period of time. Self-defined common learning or professional interests are communicated.

Due to the theoretical socio-constructivist underpinning of my study, I preferred using the construct scholarly communities of practice (SCoP), as coined by Du Toit (2013). In the short courses, Whole Brain® Participatory Action Research was also implemented. The two scholarly communities of practice included one for the pre-service teachers and one for the mentor teachers. A scholarly approach was followed with regard to the construct community of practice. The scholarly communities of practice sessions were aimed at scholarly discourse and meaning-making while progressing through the following stages, as depicted in Figure 16.

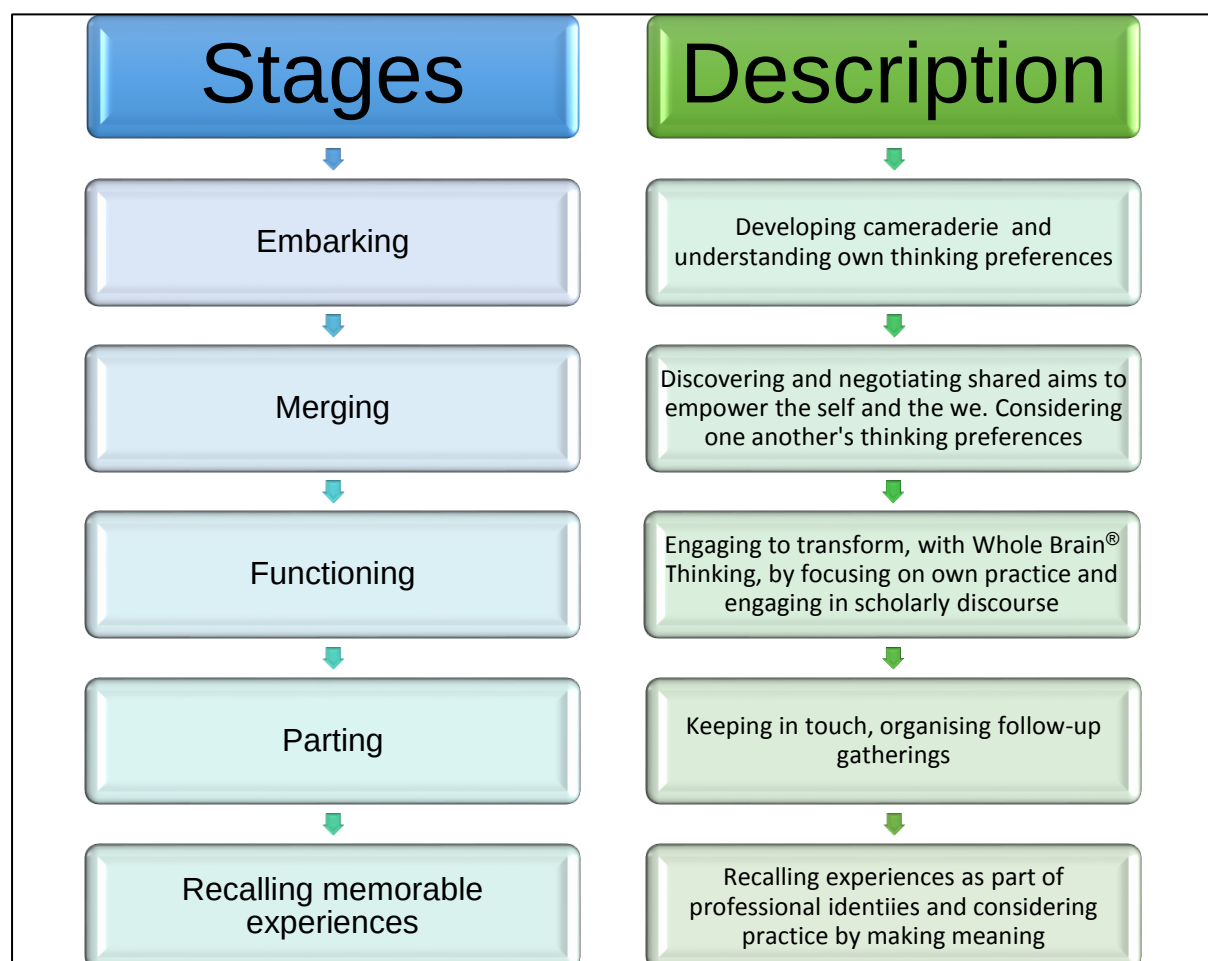


Figure 16: Adapted SCoP stages for the mentor and pre-service teachers (MacPhail et al., 2014; Wenger, 1998)

As illustrated in Figure 16, the first stage the mentor teachers, pre-service teachers and I underwent in the scholarly communities of practice entailed becoming a

scholarly community. We negotiated our objectives, engaged with new ideas and recalled some experiences before parting. The scholarly communities of practice sessions entailed professional dialogue (Korhonen *et al.*, 2017) aimed at achieving personal and collective empowerment to transform practices. In essence, members enhanced the potential of the self and others, as recommended by Hugo *et al.* (2012). For peer mentoring to take place, the mentor and pre-service teachers in their scholarly communities of practices were required to be committed, share competence and have shared goals while learning from and with one another.

In a scholarly community of practice, the focus is on real-life experiences (MacPhail *et al.*, 2014). Wenger and Wegner-Trayner (2007) identify three components of a scholarly community of practice. I adapted these components and visually depicted them in Figure 17. By using Whole Brain® Participatory Action Research for my study, I differentiated the scholarly community of practice from other communities. In Figure 17 I used a triangle to signify our two scholarly communities of practice as being sound, with the pre-service teachers and mentor teachers depending on and learning from one another (Whitcomb, Borko & Liston, 2009). As MacPhail *et al.* (2014) recommend, the members of our scholarly community of practice shared practices, values and information with one another. I regarded us to be Whole Brain® Practice Constructivists.

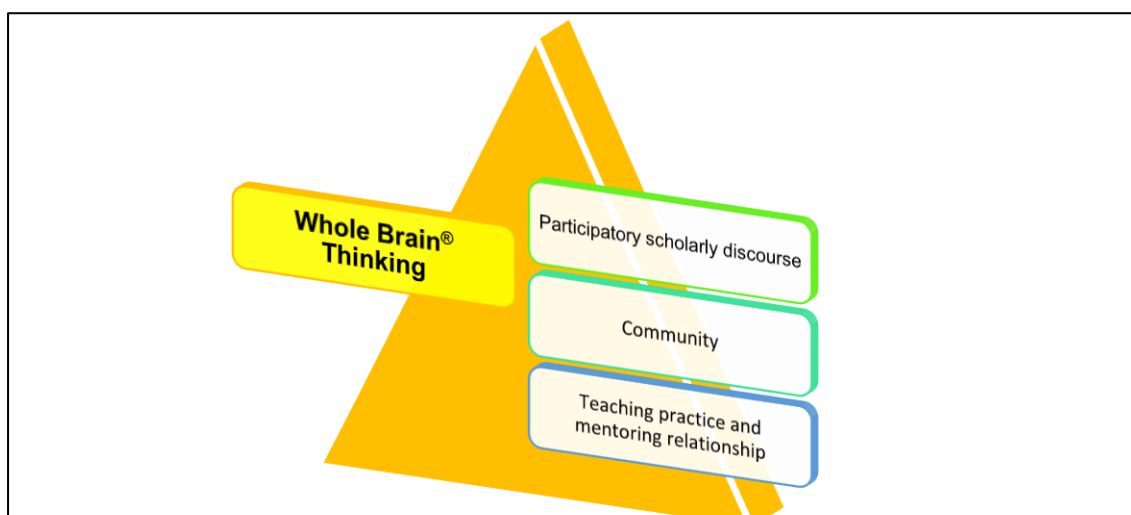


Figure 17: Adapted components of a scholarly community of practice (Wenger & Wegner-Trayner, 2007)

As seen in Figure 17, the members of the scholarly community of practice had similar domains of interest and Whole Brain® Thinking was aligned to all the aspects of our practice. During the scholarly communities of practice discussions, I ensured that we had a clear goal (Moon, 2014). In Figure 17, the third component of practice refers to how a scholarly community of practice can evolve through regular contact. Over the ten-week Work Integrated Learning period the participants gathered for the face-to-face encounters. They could also communicate with one another on their WhatsApp groups at any time. Wenger and Wegner-Trayner (2007) affirm that a scholarly community of practice develops particular experiences, channels and ways of tackling problems. The mentor teachers, pre-service teachers and I introduced innovations into practice and progress were evident during the Work Integrated Learning period.

The motive for introducing the mentor and pre-service teachers to peer mentoring in their respective scholarly communities of practice was multi-faceted: It provided support as the participants reflected and conducted action research to nurture their self-regulated professionalism, but we also shared transformative mentoring and teaching ideas. To some extent my role during the scholarly community of practice sessions was that of a member, but I acted mainly as the facilitator, the developer of the short courses and overseeing mentor.

2.10 DESIGN AND DEVELOPMENT OF CURRICULA

Although the global educational curriculum setting first made its appearance in the 1820s (Wiles & Bondi, 2015), the book “Curriculum” by Bobbitt (1918) was the first published work in this field. Taba (1962), cited in Voogt, Westbroek, Handelzalts, Walraven, McKenney, Pieters and De Vries (2011:1236), describe a curriculum as “a plan for learning”. The construct curriculum is similar, but is defined in more detail by Wiles and Bondi (2015:5) as “the desired goal or set of values that can be activated through a development process, culminating in experiences for learners”. A curriculum was thus seen by these scholars from a pragmatic point of view as a blue-print for the learning process. I will now explore the clarification of curriculum design in the professional learning field in a higher education context by referring specifically to the short courses I developed.

Over the centuries, curriculum models have undergone many changes. The latest curriculums are designed from a 21st century perspective (Gosper & Ifenthaler, 2014). Curriculum design is done in various ways and for different situations. Currently aspects such as globalisation, 21st century skills and evolving technologies force the reconsideration of curriculum content worldwide (Wiles & Bondi, 2015). The curriculum for the basic education sector in South Africa has been redesigned and adjusted numerous times since the end of apartheid. Gosper and Ifenthaler (2014) maintain that no mutual perception of the construct curriculum exists in the higher education sector. According to Print (1993), a curriculum is categorised as an experience, an intention and a process focused on personal development. I, agree with Gosper and Ifenthaler (2014) that a curriculum is influenced and informed by its purpose. For the short courses I developed, I did not want to merely share content, I wanted a Whole Brain® and self-regulation approach to the curricula. I like the notion Jiang, Meng, Zhao, Shan and Hauptmann (2015) propose in terms of “self-paced curriculum learning”. In this construct, the curriculum is generated by the learners and incorporates their prior learning.

The 3P model from Biggs *et al.* (2001) illustrated in Figure 7, informed the curriculum design in my study. The presage, process and product factors were regarded as interconnected and the thinking preferences of participants, their prior professional knowledge and the incorporation of technology were considered in the presage phase and thus impacted the process of cultivating self-regulated professionalism. The final product for the mentor teachers, the pre-service teachers and me therefore was the transformation of practice and the self.

The two short courses were positioned, according to Moon (2014), in the post-school education training field. The word training is actually not correct in this regard as I was not imparting a skill, knowledge or directives for behaviour. A self-regulated approach was used in the pre-service mentoring context. I prefer the use of the construct facilitative mentoring (Du Toit, 2017). The mentor teacher short course I developed was accredited by the South African Council of Educators (SACE) and the logo is illustrated in Figure 18.



Figure 18: Logo for the mentor teacher short course

The logo depicted in Figure 19 below was used for the pre-service teacher short course in self-regulated professionalism for pre-service teachers:



Figure 19: Logo for the pre-service teacher short course

I designed and developed the curricula for the short courses for mentor teachers and pre-service teachers (Figure 18 and Figure 19). As recommended by Wiles and Bondi (2015), the self-regulated professional learning experiences of the pre-service and mentor teachers guided the design process and the initiation of the activities. The study material and study manual developed for the curricula are attached as Appendices C to F.

2.10.1 Curriculum design and development process

I initiated the curriculum development process by reviewing learning theories to support the planning, development and evaluation of the curricula in question. Socio-constructivism is the value preference that has as its main idea the construction of knowledge, or making meaning for the self and practice. Stenhouse (1975) recommends a student-centred approach, and Moon (2014) suggests that students should have input when a curriculum is developed for them. The mentor and pre-service teachers were actively involved in the professional learning process.

The curricula I designed for the short courses were well-planned and the contents included “research and literature” (Ambrosetti, 2014:33). As recommended by Wiles and Bondi (2015), I started by considering the objective of the short courses and doing the necessary analysis before proceeding with the design phase. The short courses were then implemented and as the last step the programme was evaluated. I had to make sure that the curricula were sufficiently detailed and authentic in terms of the participants’ practices.

During the curriculum design process, I had to consider the cost-effectiveness of the programme I was developing and established who the eventual customer would be (Moon, 2014). In this instance, the mentor teachers and their fourth-year students were the direct customers, but indirectly the Institution of Higher Education where I was employed, the participating schools where the mentor teachers taught, and the education sector could eventually benefit. The schools and the University were responsible for supporting the mentor teachers and the pre-service teachers by ensuring that they had time available to participate in the programme.

Whole Brain® Thinking and self-regulated professionalism while using an asset-based approach (Du Toit, 2009:1222; Du Toit, 2012) were among the innovations the participants and I introduced in the short course I facilitated and in the mentoring and teaching practices. Tanner and Tanner (2007:457) highlight the influence of innovation in practice and in curriculum development when they boldly state that “policymakers are literally in love with the word innovation”.

Since Moon (2014) measures the success of a short course by the degree to which the course curriculum is applied to the participant’s authentic workplace, the impact that the short course would have on practice, the manner in which time would be

utilised and how applicable the components would be were carefully considered. In the mentor and pre-service teacher courses the participants completed most of the coursework in their practice.

2.10.2 Mentor teacher short course curriculum

The short course for the mentor teachers was designed essentially to nurture their self-regulated professionalism. The approach to professional learning is graphically illustrated in Figure 20.

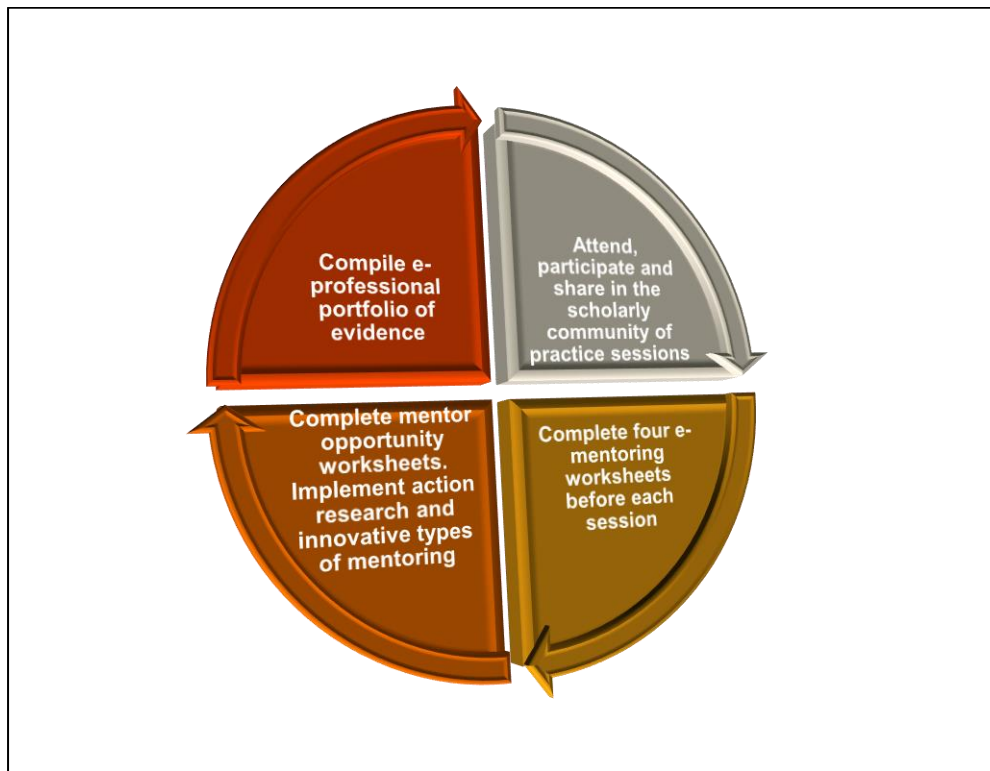


Figure 20: Mentor teacher professional learning framework

During their professional learning (Figure 20), the mentor teachers participated in four scholarly communities of practice sessions. They completed four e-mentoring worksheets and had mentoring opportunities with their pre-service teachers. The mentor teachers compiled an online professional portfolio of evidence for the purpose of the final assessment.

The purpose of course for mentor teachers, as outlined in the study manual, was:

To empower mentor teachers professionally with a view to assisting them in becoming transformative and reflective in their mentoring practices. The programme focused on Whole Brain® Thinking, action research, a community of practice and mentoring practice.

The outcomes of the programmes were measured to ensure a degree of calibration. The outcomes of the short course for mentor teachers are provided in Appendices C and D. Since the mentor teachers were formally assessed, they could receive the South African Council of Educators' continuous professional development points. In the assessment programme of the mentor teacher short course, the formative assessment included 50% of the final mark, calculated as follows: An individual self-assessment of the online worksheets they completed as part of the portfolio contributing 20%. The collaborative peer assessment completed by the mentor teachers and pre-service teachers at the end of the Work Integrated Learning period a further 20%; and the mentor teacher scholarly community of practice group assessment contributed the final 10%. The remaining 50% of the mentor teachers' final assessment mark was awarded for the online portfolio of evidence submitted in Google Drive, which I assessed.

2.10.3 Pre-service teacher short course curriculum

The pre-service teachers were registered fourth-year students at University and could not be formally assessed for SACE points. Each final-year education students received a certificate for completing the short course. The pre-service teacher development framework is illustrated in Figure 21.

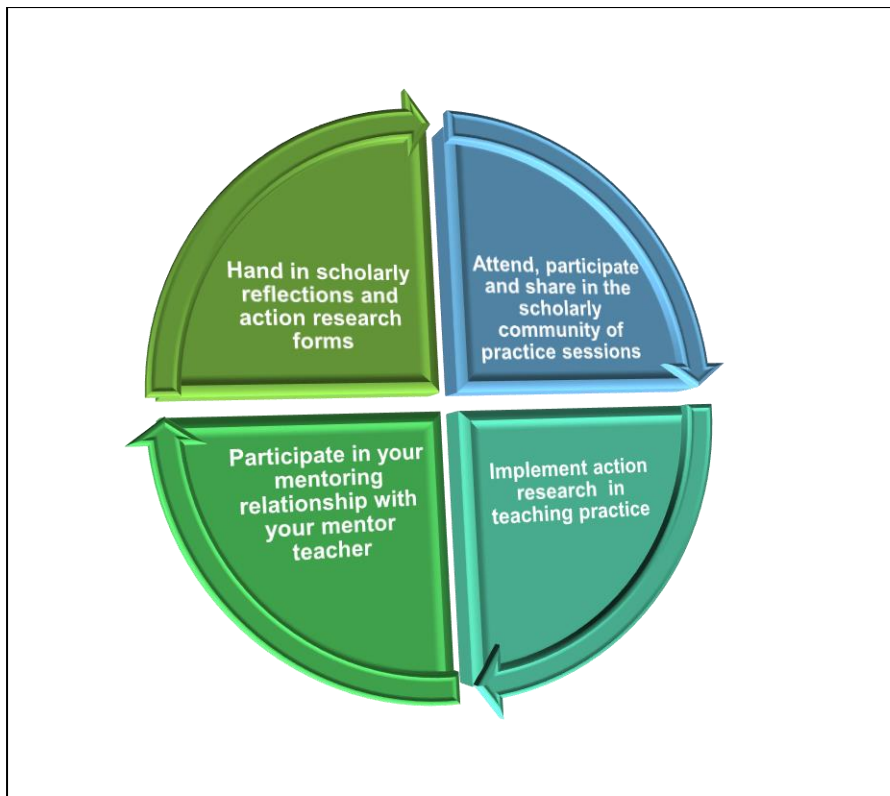


Figure 21: Pre-service teacher development framework

During the Work Integrated Learning period, the pre-service teachers attended and participated in four scholarly communities of practice sessions, as outlined in Figure 21. In their teaching practice they conducted action research twice, using observation sheets and learner feedback questionnaires. The final-year education students had four mentoring opportunities with their mentor teachers. The pre-service teachers submitted their completed study manuals to me, which included their action research observations, reflections and self-evaluations.

The pre-service teachers were required to reflect on how they had incorporated the levels of Bloom's Revised Taxonomy (Krathwohl, 2002) in their lessons during the first and second action research cycles. The original "Taxonomy of Educational Objectives", which was published by Bloom, Engelhart, Furst, Hill and Krathwohl (1956) is a tool for measuring learning goals or broad educational goals in education practice. Bloom's Taxonomy assists facilitators as it provides possibilities and congruence between the purpose, activities and assessment opportunities in a course. This organisational structure is divided into several major categories, including "knowledge, comprehension, application, analysis, synthesis and

evaluation” (Krathwohl, 2002:212). The original taxonomy was revised in 2001 in a two-dimensional framework that combined the knowledge and cognitive process dimensions and is known as the “Taxonomy Table” (Krathwohl, 2002:218). The categories were revised as follows: Knowledge was named *remember*, comprehension became *understand*, and application, analysis and evaluation were simply changes to the verbs *apply*, *analyse* and *evaluate*. Synthesis became *create*, which is the highest category in Bloom’s Revised Taxonomy. The pre-service teachers used the action research cycles in their teaching practice for reflection and pondered on how they had incorporated the levels of Bloom’s Revised Taxonomy, how they had implemented the curriculum, facilitated the lesson and finally prepared the learners for assessment. This will be discussed in Chapter 4.

The purpose of the course for the pre-service teachers was:

To empower pre-service teachers with a view to becoming self-regulated professionals, focused on Whole Brain® Thinking, action research, a scholarly community of practice and self-regulated learning.

The outcomes of the short course for pre-service teachers, which was designed to nurture the final-year education students’ self-regulated professionalism, are shared in Appendices E and F. The outcomes I formulated for the short course for pre-service teachers was informed by Whole Brain® Thinking. A scholarly reflection I did on the curricula I developed will follow in Chapter 4.

2.11 CHAPTER CONCLUSION

In this chapter I reviewed an assortment of literature, ideas, viewpoints and constructs relating to the topic of this study, identified what I agreed with and established what was lacking. I also explained how I developed the short courses. The Baobab tree depicted at the beginning of this chapter symbolises the South African landscape. I recognised the importance of understanding the unique South African context in terms of professional development and mentoring. In Chapter 6, I will discuss the Comprehensive Whole Brain® Mentoring Model, which I developed specifically for the education context. As stated earlier, the Baobab tree also symbolises the transformational nature of my research study and therefore the self

and our practice. In Chapter 3 I shall describe how the participants and I used the Whole Brain® Participatory Action Research design in our practices.

CHAPTER 3

SAPLING: THE STEMS OF MY RESEARCH DESIGN



Artwork 3: “The love we shared” by J. Best (*Best, 2011*)

3.1 INTRODUCTION

The original work by Best (2011) featured here represents the authentic spiralling participatory action research process that the participants and I executed by implementing Whole Brain® Participatory Action Research. We worked in unison, and the participatory nature of this process is symbolised by the overlapping and tangled branches depicted in the painting (Artwork 3).

I structure this chapter in such a way that the reader is invited to appreciate the contemporary research design known as Whole Brain® Participatory Action Research, which will be discussed and explained in detail. The specific participatory action research characteristics will be reviewed, discussed and explained and the sampling procedure, data collection and analysis of this action research study will be clarified.

3.2 ACTION RESEARCH

As stated in Chapter 1, the participants and I wanted to create our meaning as individuals and as a group, and therefore opted to use participatory action research.

The mentor teachers, pre-service teachers and I were engaged in deconstructing our practice to promote our professional development (McAteer, 2013) as a form of professional learning (McNiff & Whitehead, 2012). A review of the background to action research will be included to give the reader a better understanding of the chosen action research design.

3.2.1 Deconstructing action research

Action research has different forms, names, terminology and purposes and aims to “explore, explain and describe the practice” (McAteer, 2013:13). Creswell (2012) and McAteer (2013) state that action research is intentionally pragmatic. I undertook a methodical, synthesised and vigorous joint research process by using a socio-constructivist theoretical frame and paradigmatic action research design. Whitehead and McNiff (2009:8) define practice in action research as “what we do”. In the pre-service mentoring context the participants and I were therefore placed within the research process. In action research, the process is tactic and dynamic, and requires the active involvement (McAteer, 2013) of both the participants and the primary researcher.

The action research design adheres to an ongoing process of inquiry (Creswell, 2012) and is accordingly termed practical / self-study / first-person / living theory action research (Creswell, 2012; McNiff & Whitehead, 2012). There are various perspectives and considerable discrepancies between the different forms, names and terminology found in the design of action research. McNiff and Whitehead (2012:13) discern between the following: “Collaborative action research, feminist participatory action research, educational action research and practitioner action research”. James, Slater and Bucknam (2012), and Morales, Abulon, Roxas-Soriano, David, Hermosisima and Gerundio (2016:467) discuss the most current applications of action research in the education sector:

“Action science (AS), community-based participatory research (CBPR), action learning (AL), appreciative inquiry (AI), living theory (LT), participatory action leadership action research (PALAR), and participatory action research (PAR)”.

I agree with McNiff and Whitehead (2012:8), who describes action research as “liberating” yet a typical process. People often feel they already use facets of this research design as they might reflect unintentionally in their practice. The following discussion of the historical and philosophical progression of action research will clarify my decision to use Whole Brain® Participatory Action Research in my study.

3.2.2 Historical, philosophical and transformational progression of action research models

Creswell (2012), McNiff (1984) and Tomal (2010) confirm that the term action research was coined by Lewin in the 1930s, and McAteer (2013) points out that Corey (1953) was later responsible for the development of action research with a more educational improvement notion. I agree with McAteer (2013:14) that action research first needs to be positioned “historically and philosophically”. An understanding of the progression of the research design is vital when trying to deconstruct it.

Action research progressed through three stages. Initially it focused mainly on addressing social problems involving the well-known and elementary action research process: “Plan, act, observe and reflect” (McAteer, 2013:29). The education sectors in England and America soon acknowledged the significance of the action research process, but in the 1950s and 1960s interest declined as researchers experienced the widening breach between theory and practice as problematic.

In the second phase, beginning in the 1970s, new action research projects with the focus on practice emerged. The work of Elliott (1978) and Stenhouse (1975) was vital in this regard. Elliott (1978) focused on the idea that the development of theory is authenticated through practice, and not the other way around. The “Classroom Action Research Network” in Great Britain, together with researchers like Habermas and Kemmis, initiated the idea of liberating teachers to reflect on their practice (Creswell, 2012:578). Contrasting with this form of empowerment was the persistent theme found in the metaphor of Schön (1983 & 1995), illustrated in Figure 22, which depicted the differences between the “high ground” and “swampy lowlands” of professional landscapes.

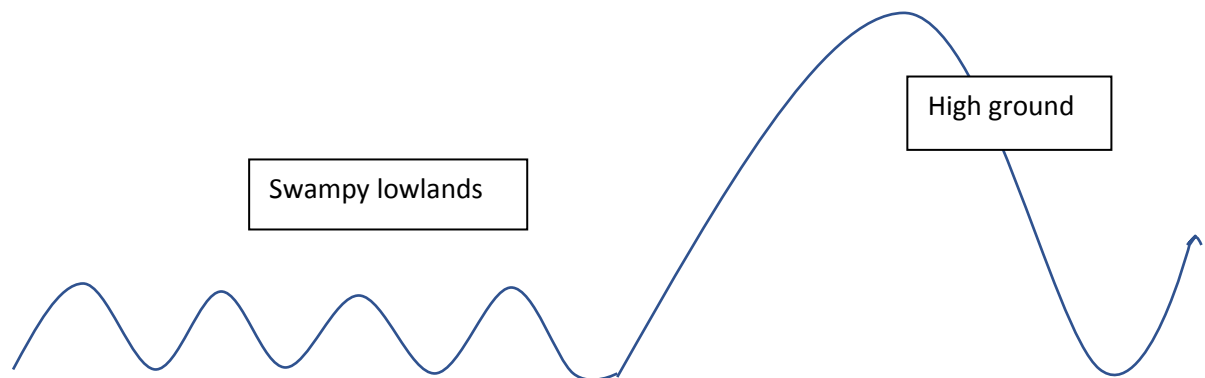


Figure 22: Professional landscapes typology (Schön, 1995), cited in McNiff and Whitehead (2012)

According to Schön, non-academics such as teachers mostly dwell in the “swampy lowlands” in the field of research. The influential intellectuals (Schön, 1995) responsible for the development of conceptual theory reside on the “high ground” of the professional landscapes typology (Figure 22). I noted that, according to McNiff and Whitehead (2012), university researchers and even classroom teachers believe that educators are unable to construct a theory on their own. The perception was therefore that any valid research process demanded the presence of a professional researcher (Stenhouse, 1975). This viewpoint changed over time, and in my Whole Brain® Participatory Action Research process I also defied it. As action research progressed, researchers and teachers started working together to generate meaning (McNiff & Whitehead, 2012) using an action research design. As education professionals, the participants and I, as the primary researcher, worked in a reciprocal fashion to construct meaning.

In the professional landscape, action researchers need to be objective during the action research process. Nicholas and Hathcoat (2014) suggest that challenges can be overcome by continually striving to be reflexive. As action research is a self-directed process (McAteer, 2013), the pre-service teachers, mentor teachers and I had to be cautious when we observed, reflected and evaluated our practice. We had to pay attention to critical advice and act on it. Critics from the “high ground” might argue that action research is not a “serious methodological approach” (Nicholas &

Hathcoat, 2014:5). I disagree as I regard the process undertaken by the mentor teachers, pre-service teachers and I as methodologically innovative.

The contemporary last phase in the historical development of action research focuses on the educator as a researcher (Creswell, 2012). In the education context, Rowley (2014) identifies two effects in this regard, namely taking action in your practice and producing knowledge. I view it as a meaning-making process. McAteer (2013) regards action research as being practical, but also theoretical in its approach. While a para-scientific approach is often adopted in research in education, action research derives from constructs like authenticity, participation, the self, innovation, transformation and relatability (Du Toit, 2012; McAteer, 2013). In the present-day action research sphere, researchers can share their work on various forums, in performances, in online journals, on blogs or during school discussions (Creswell, 2012). In the next section, I will deliberate on the physiognomies of participatory action research and explain how I conducted Whole Brain® Participatory Action Research.

3.3 PARTICIPATORY ACTION RESEARCH

Participatory action research is linked to the work of Orlando Fals Borda, Paulo Freire, Jurgen Habermas, Ernest Stringer and Stephen Kemmis, and was introduced in the 1940s and 1950s (Creswell, 2012; McNiff & Whitehead, 2012). This type of research was initially used as a form of social inquiry. Communities, schools and corporations used participatory action research for empowerment. I do not agree with the view of Price (2001) that action research is primarily an instrument for critical reflection, but would rather refer to it as “insider research” (McNiff & Whitehead, 2012:13), or a process of creating your “living theories of practice”. Participatory action research is theoretical in the sense that connections are continually made between theories and practice (Chabot *et al.*, 2012). The focus is on helping individuals and the collective to discover and understand their own and others’ practice (Creswell, 2012) to create meaning (McAteer, 2013).

I agree with McNiff and Whitehead (2012:13) that “action research and participatory action research have the same undertone”. Action research is, in essence, collaborative, even though in a participatory action research project involvement is

not only a part of the process, but central to every aspect of the course of action (McNiff & Whitehead, 2012). The participants were therefore not merely passive providers of opinions. The term participatory action research is alternatively termed “collaborative action research or participatory research” (Creswell, 2012:582). Langhout and Thomas (2010:61) correctly label participatory action research as “collaborative methodology”. While I agree that it is an “emancipatory approach to research” (Borg *et al.*, 2012:11), I acknowledge that the participatory establishment of open and authentic participation is an intricate process (Borg *et al.*, 2012).

As the principal researcher, I admitted the importance of continuous reflection, as suggested by Borg *et al.* (2012). I continuously exercised scholarly reflection, which empowered me to facilitate the research process. I moved back and forth between the stages of “reflection, data collection and action” (Creswell, 2012:589), reiterating and reviewing procedures to demonstrate the vibrant nature of action research. I therefore regard participatory action research as a dynamic, collaborative process with different spirals and cycles representing all the contributors to a project.

Tomal (2010), Coghlan and Brydon-Miller (2014), as well as Elliott (1991), perceive action research processes as orderly. I agree that, to some extent, there should be a plan of action, as Creswell (2012) proposes. However, the design of the research is definitely not always predictable and could in some stages be unsettling, uncertain and confusing (McNiff, 2013). Borg *et al.* (2012) fittingly compare the action research process to a dance. I endeavoured to choreograph a dance of connections between the co-constructors that captured “the unique personal experience of each participant whilst at the same time paying attention to the action, liberation, illumination, transformation and ultimate human flourishing” (Borg *et al.*, 2012:12). I perceive the Whole Brain® Participatory Action Research a joint venture empowering to the participating self and we.

3.4 WHOLE BRAIN® PARTICIPATORY ACTION RESEARCH

During the participatory action research process I regularly acknowledged the dynamic, “multi-layered and synchronous” nature of the process (Du Toit, 2012:1219). I regard action research as a Whole Brain® Scholarly endeavour (De

Boer *et al.*, 2012) and also as a professional “learning theory” (Wolvaardt & Du Toit, 2012). The participants and I made meaning in our practice. The focus was not on solving a problem or confronting an authentic issue (Creswell, 2012), but on developing a creative paradigm, a visionary model (Du Toit, 2012), as we attempted to transform our practice while regulating the professional self.

To understand the character of Whole Brain® Participatory Action Research in our practice, I questioned what precisely “practice” entailed in my research. A practice is classified as a “socially established, cooperative human activity” (Kemmis *et al.*, 2014:155) with cognitive, psychomotor and affective characteristics. I was intrigued by the term “practice architectures”, used by Kemmis *et al.* (2014:155) to refer to the process of developing one’s practice. However, during the Whole Brain® Participatory Action Research process the mentor teachers, pre-service teachers and I not only developed our practice, but actually transformed it (McAteer, 2013). Having chosen the socio-constructivism and Whole Brain® Thinking theories, I opted to refer to the selves in our practice as “Whole Brain® Practice Constructivists” since action research is a process during which our separate practices proliferated into one. This manifested during mentoring and in our scholarly communities of practice as we constructed meaning in our mentoring and teaching practice. The action research process was cyclical, each cycle informing the next one (McNiff & Whitehead, 2012) with a view to transforming our Whole Brain® Constructivist practices.

The mentor and pre-service teachers were, therefore, taking on additional roles as constructivists, Whole Brain® Practitioners and action researchers. The pre-service teachers used this research design in their teaching practice and the mentor teachers employed Whole Brain® Participatory Action Research in their mentoring practice. I used it in the scholarly communities of practice sessions with the mentor and pre-service teachers. The participants and I incorporated the principles of Whole Brain® Thinking (Du Toit, 2013) into our practice. Next I discuss the features of my chosen research design.

3.4.1 Whole Brain® Participatory Action Research features

The course of action for this Whole Brain® Participatory Action Research design has a socio-constructivist, ideological foundation (Creswell, 2012). The procedures of data collection and analysis (Creswell, 2012) are impacted by the notion of constructing meaning and, eventually, knowledge in the fields of action research and mentoring. I will now discuss the participatory action research features identified by Kemmis and McTaggart (2000), cited in Creswell (2012:583) from the background of the Whole Brain® Participatory Action Research process as applied in my study.

Participatory action research is foremost a “social process” or a shared development; therefore, in essence, participatory.

During the Whole Brain® Participatory Action Research process, the purpose of the social interactions was to develop the self and the we. Throughout the process, the participants and I reflected on our ontological, epistemological and practice transformational intents while the methodology outlined our actions. The objective was to cultivate our self-regulated professionalism and transform our practice.

Participatory action research is practical and reflexive

The Whole Brain® Participatory Action Research process was practical in the sense that the mentor teachers and I were researching our mentoring practice and the pre-service teachers used action research in their teaching practice. The participants and I progressed through the action research steps in each cycle while exercising scholarly reflection.

Participatory action research liberates, supports and improves

The mentor teachers and the pre-service teachers were not constrained in any way. The participants were liberated and were supported in transforming him or herself and their practice. As previously stated, I used an asset-based approach (Du Toit, 2012). I consider the inclusion of Whole Brain® Participatory Action Research in the short course for mentor teachers to be similar to the collective professional learning activities that have proved to be successful by more than 80% of the respondents in a 2010 Teaching and Learning International Survey (Ioannidou-Koutselini & Patsalidou, 2015). The Whole Brain® Participatory Action Research process is

distinct and emphasises my self-regulated professionalism, as well as that of the pre-service teachers and the mentor teachers.

3.4.2 Whole Brain® Participatory Action Research model

In order to validate and explain the cyclical non-linear process in Whole Brain® Participatory Action Research, I start with Lewin's original action research model. From there I progress to the participatory action research model and ultimately illustrate the Whole Brain® Participatory Action Research model. I also depict the model I used in my study in the form of a tree.

Various adaptations of Lewin's (1946) action research model exist, but in essence it is horizontal and cyclical and involves three phases, namely "Look, think and act". In the initial looking phase, data is collected, recorded and analysed. In the thinking phase, the data is understood and the priorities identified. In the last phase, which is acting, solutions are found and carried out. Recent action research processes described by Hodgkinson and Maree (1998), and Stringer (2014:9) explain the Action Research Interacting Spiral in an uncomplicated manner for first-time action researchers.

I agree with Creswell (2012) that a cyclical spiral best reflects the progression of action research, but prefer the upward ascending action research spiral process with cycles recommended by McNiff and Whitehead (2012). During the short courses, the mentor and pre-service teachers used action research in their practice. Pedler and Burgoyne (2008:320) recommend action research that combines "self-development with action for change". I prefer the construct transformation, as each participant took action, introduced innovations and evaluated their individual practice. An action-oriented approach to professionalism (Hugo *et al.*, 2012), which is a form of self-empowerment (Ross & Bruce, 2012), was used. The action research process for the mentor teachers, as included in their short-course manual, is detailed in Figure 23.

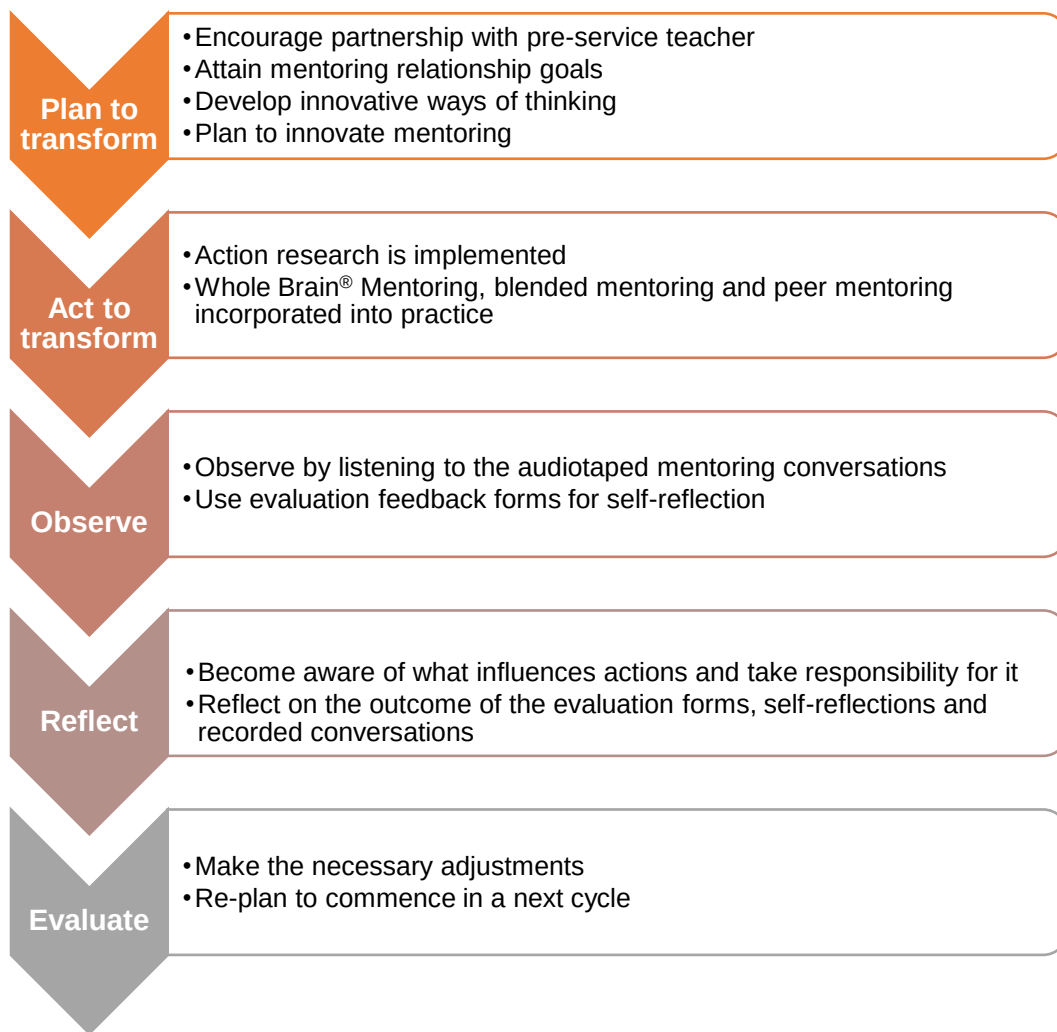


Figure 23: Mentor teacher action research approach to mentoring

Figure 23 illustrates the steps the mentor teachers used in their mentoring practice during one action research cycle. During the Whole Brain® Participatory Action Research study, the mentor teachers progressed through two action research cycles. Whole Brain® Thinking principles were used to plan to transform, act to transform, observe, reflect and evaluate steps. The pre-service teachers conducted action research relating to their teaching practice, as seen in Figure 24.

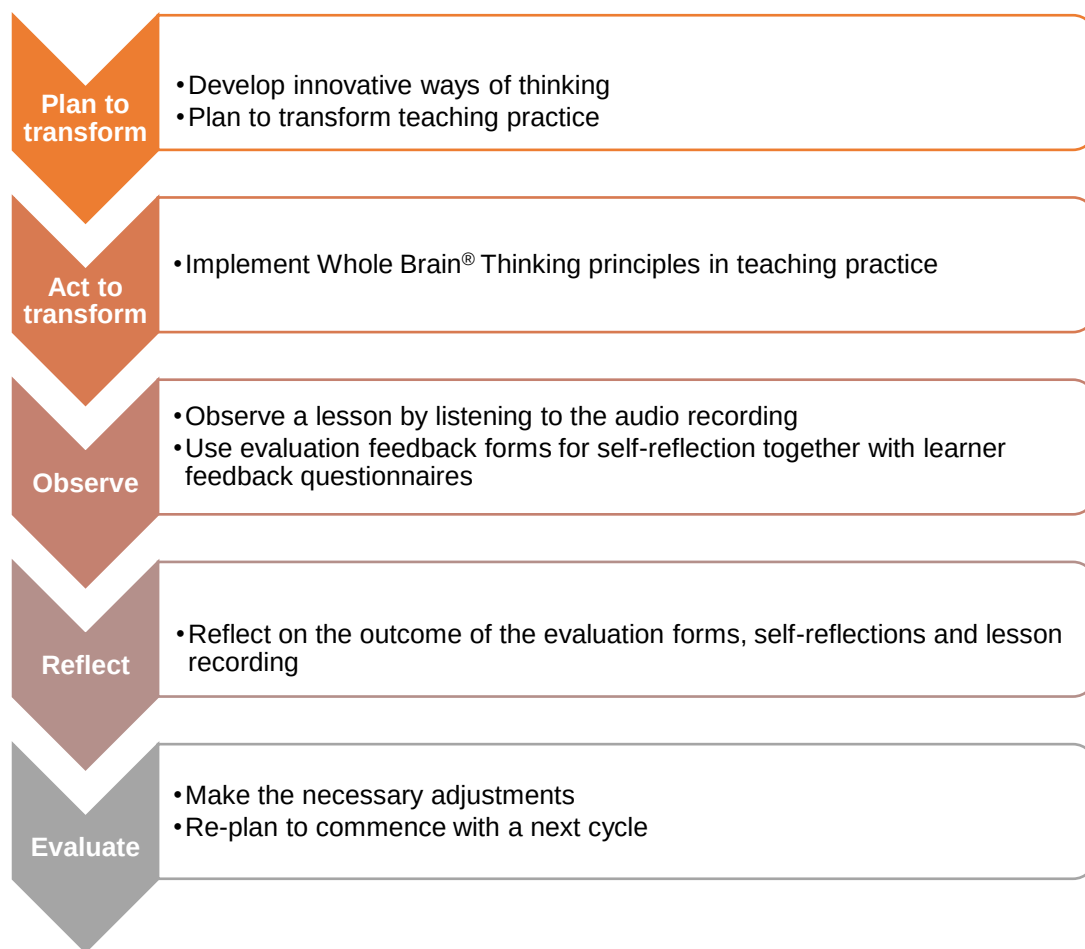


Figure 24: Pre-service teacher action research approach

During the pre-service teachers' action research approach, the final-year education students asked the question: "How can I transform my teaching practice?" As outlined in Figure 25, the pre-service teachers included Whole Brain® Learning in their practice and used action research in two of their lessons. The process then progressed to the second action research cycle by starting at the beginning again. In Figures 23 and 24 the action research process is illustrated as a linear process to communicate what is done in each step. However, the process took on the form of a cycle, as seen in Figure 25.

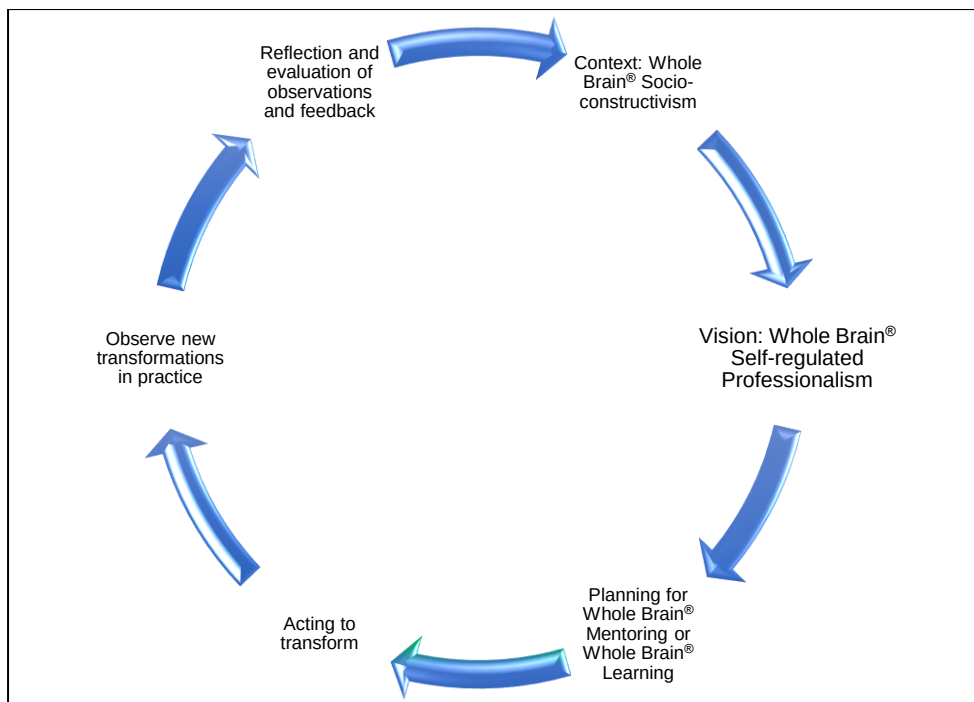


Figure 25: Whole Brain® Participatory Action Research cycle

In Figure 25, the Whole Brain® Socio-constructivism context and the vision were the starting points for the participants and my action research cycles. Our joint vision was to cultivate our self-regulated professionalism. The mentor teachers, pre-service teachers and I followed the steps indicated in Figure 25 by first planning for transformation in our practice and then acting by employing inter alia, the types of mentoring or Whole Brain® Learning. The mentor teachers, pre-service teachers and I then observed the audio or video material we had made during our mentoring opportunities, lessons or scholarly community of practice sessions. To evaluate the process, we reflected on the feedback we received in our practice. Finally, the mentor teachers, pre-service teachers and I re-planned and proceeded to the second cycle.

McAteer (2013) describes an action research process as “evolving, changing and messy”. I regard the action research process that we used as valuable, but also challenging. Our Whole Brain® Participatory Action Research projects progressed as Du Toit (1995) describe in trefoil or co-occurred. In Figures 23 and 24 the mentor and pre-service teachers focused on their practice only. I had to divert from these linear approaches to employ a more holistic participative action research process to incorporate all our practices discussed next.

3.4.3 Whole Brain® Participatory Action Research process

McNiff modified Lewin's one-dimensional action research model and introduced the first spiralling "generative model" (1984:46). McNiff's coiling action research model later pioneered into the three-dimensional spiral action research process developed by De Boer *et al.* (2015), which laid the foundation for the chosen Whole Brain® Participatory Action Research. In the model (Figure 26) I used a more flexible Whole Brain® Approach, indicating the ongoing action research process in a participatory manner. I deemed that which McNiff calls a "binocular vision" (1984:42) of "comprehensive open-endedness" to be appropriate for the multi-dimensional and participatory action research paradigm the participants and I used. The Whole Brain® Participatory Action Research process incorporated action research conducted by the participants and myself in a holistic manner and is illustrated in Figure 26. The process was influenced by "the action research for innovation model" (Hugo *et al.*, 2012:130) and the professional practice action research process (De Boer *et al.*, 2015).

In Figure 26, the holistic Whole Brain® Participatory Action Research process is illustrated. The process initially started with the pink area at the bottom of the model, illustrating my first baseline venture. Nine months before the action research study commenced I had conducted an exploratory quantitative study for which I designed two online surveys on Qualtrics. One survey was distributed via email to mentor teachers in fifty schools in Pretoria and the other was sent to final-year education students via Clickup Blackboard Learn.

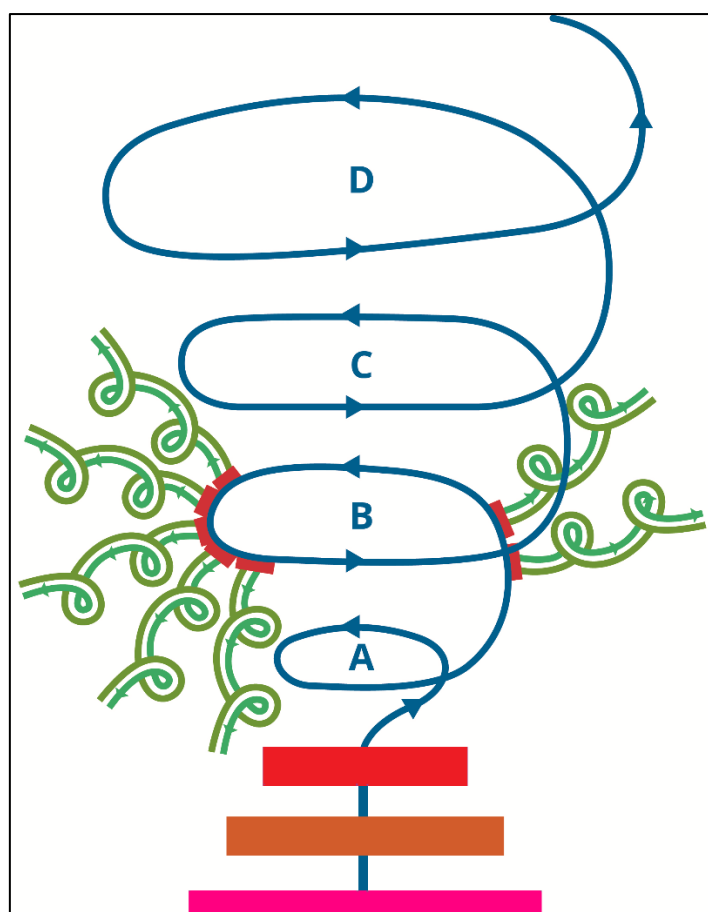


Figure 26: Whole Brain® Participatory Action Research process

The orange baseline venture represents the development of the curricula for the two short courses I developed for the mentor teachers and the pre-service teachers respectively. The third baseline venture, shown in red in Figure 26, included my thinking preferences after completing the HBDI® online. A professional HBDI® practitioner conducted a Whole Brain® Thinking briefing session with me to discuss my thinking preferences.

The blue spiral represents me as the principal researcher, the overseeing mentor and short course facilitator. I progressed through four action research cycles. In Cycle A, I facilitated separate scholarly community of practice sessions with the mentor teachers and pre-service teachers. Semi-structured focus group interviews were also conducted during that time. The participants were introduced to the programme and our expectations were shared. I also conducted action research in my practice.

In the blue spiral in the second action research cycle (B), the participants began with their action research, as seen in Figure 26. A joint scholarly community of practice session for the mentor teachers and pre-service teachers was conducted. In Cycle B a professional HBDI® practitioner offered a Whole Brain® Thinking workshop providing the mentor teachers and pre-service teachers with their individual HBDI® profiles. The mentor teachers were also introduced to the action research process they had to follow in their practice. I conducted action research in my practice, which is discussed in Chapter 4.

In the scholarly community of practice session with the mentor teachers in Cycle C, the focus was on how to transform one's mentoring practice. A semi-structured focus group interview was conducted and four innovative types of mentoring were discussed. In my action research Cycle C, I had a separate session with the pre-service teachers. This was an unplanned session that was organised when, after the pre-service teachers had completed their first action research cycle, a need for such a session became evident. I facilitated a session on the analysis of the feedback questionnaires they had received from the learners in their lesson. In Cycle C I conducted action research.

In cycle D (Figure 26), the mentor teachers and pre-service teachers participated in two separate scholarly community of practice sessions. The mentor teachers submitted their portfolios of evidence two weeks after this last session. Semi-structured focus group interviews were conducted to evaluate the short course. The mentor teachers and pre-service teachers reflected on how their self-regulated professionalism was cultivated. The participants reflected on the effect of this programme on their mentoring and teaching practice.

In Figure 26, the spirals of the fourteen participating mentor teachers (dark green) and pre-service teachers (light green) are illustrated in the Whole Brain® Participatory Action Research process. Initially, 18 participants had started with the programme, but four did not proceed to conduct action research in their practices. Those two mentor teachers and two pre-service teachers completed only the HBDI®. As shown in Figure 26, the 14 spirals develop from my blue spiral in cycle B. For their baseline

study, the mentor teachers and pre-service teachers completed the HBDI® (shown in red) which overlapped into my action research Cycle B.

The mentor teachers and pre-service teachers progressed together and completed two action research cycles (I and II). The mentor teachers are represented by the dark green cycles in Figure 26. One mentor teacher, Elize, proceeded with a third action research cycle. After completing the short course for mentor teachers, Elize had registered for a master's degree, with my promotor and myself as her supervisors. In Chapter 4, her spiral is illustrated with an additional cycle represented by a dotted line.

The seven light green cycles represent the pre-service teachers. The seven final-year education students did action research twice on their teaching practices. They conducted Cycles I and II, which represented two lessons during which they had implemented Whole Brain® Learning into their practice.

3.4.4 Metaphorical depiction of the WB®PAR process

In Figure 27, the Whole Brain® Participatory Action Research process is metaphorically depicted in the form of an apple tree. The tree theme runs throughout my thesis, as explained at the beginning of each chapter and also seen in the titles for my chapters. The rationale for the metaphorical depiction of the Whole Brain® Participatory Action Research is twofold: First, in my HBDI® profile in Figure 33 in Chapter 4 I declare a preference for structured processing modes (quadrant B) together with interpersonal, visual modes in quadrant C, and holistic, creative modes in quadrant D. I therefore prefer illustrating the Whole Brain® Participatory Action Research process in a structured, but more visually creative manner. I furthermore found that the model in Figure 26 did not adequately illustrate the influence of this programme on stakeholders other than the participants and myself. In the focus group interviews, the participants suggested that the Whole Brain® Participatory Action Research process might also affect other stakeholders. I therefore created a visual representation of the Whole Brain® Participatory Action Research process (Figure 27) as a tree. The illustration was inspired by Gustav Klimt's painting titled, "Tree of life" (Klimt, 1909), which appears at the beginning of Chapter 4.



Figure 27: Metaphorical depiction of the WB®PAR process

In this metaphorical visual (Figure 27), the tree represents the holistic Whole Brain® Participatory Action Research study I conducted together with the mentor teachers and pre-service teachers. The three baseline ventures I undertook before commencing with the Whole Brain® Participatory Action Research process are depicted as knots or outgrowths on the trunk. The most substantial knot at the bottom represents the baseline survey I conducted, and the second the curricula I developed for the two short courses. The smallest knot in the tree trunk is the HBDI® I completed. After the three outgrowths or knots, my Whole Brain® Participatory Action Research spiral is illustrated by Cycle A, then B, thirdly C and lastly D are illustrated (Figure 27). In Cycle B of the spiral visible inside the trunk, knots or outgrowths are seen protruding from the trunk. These knots represent the HBDI® completed by the participating mentor and pre-service teachers and used as their baseline data. The 14 mounting spirals of the mentor and pre-service teachers grow from these knots and represent the two action research cycles completed by the participants.

The spiralling undulated and swirling branches at the top of the tree illustrate other probable stakeholders who were influenced by the Whole Brain® Participatory Action Research the participants, and I conducted. This include schools, future pre-service teachers, mentor teachers and the University. The branches at the top of the metaphorical tree do not grow in a specific manner or order and illustrate that the exact scope of the influence on the stakeholders and programme is not yet known. In Figure 27, the leaves and apples that are growing out of these spiralling branches represent the “blooming”, “fruit-bearing” and “ripening” growth stages of an apple tree. More is shared about these growth stages in Chapters 5, 6 and 7. A tree naturally undergoes seasonal changes. Based on the findings discussed in Chapter 4 I therefore estimate, that the effect(s) of this study may become evident during future seasons in the pre-service teacher mentoring context. The action research and self-regulated professionalism processes are ongoing. In the next section, I explain the methods I used in the exploratory quantitative baseline surveys and the Whole Brain® Participatory Action Research. The sampling procedures, data collection, analysis and evaluations will also be discussed.

3.5 SAMPLING

My discussion of the sampling method I used for the exploratory online baseline survey will be followed by an explanation of how I selected the participants for the Whole Brain® Participatory Action Research study. The sample groups were selected to assist me in understanding pre-service teacher mentoring as the central phenomenon.

3.5.1 Exploratory baseline study sample

I started by specifying the population and the two sample groups I wanted to use for the baseline study. The two population groups were mentor teachers and pre-service teachers teaching or studying in the Pretoria area, in the Gauteng province in South Africa. I used non-probability, convenience sampling to select the pre-service teachers as they were “available, convenient and representative” (Creswell, 2012:145) of the population. The sample frame included PGCE (Postgraduate Certificate in Education) students and Senior Phase (SP) and Further Education and

Training (FET) Phase pre-service teachers. The pre-service teachers' sample size was 280.

The pre-service teachers were placed at 50 secondary schools in Pretoria for the Work Integrated Learning period. The office for Work Integrated Learning at the University provided me with the names of the schools. The second sample frame consisted of mentor teachers who were mentoring the abovementioned final-year education students. I was unable to contact the mentor teachers directly as I could not obtain their contact information. I sent e-mails to the schools to request them to forward the online baseline survey to their mentor teachers. Snowball sampling was then used to select the mentor teachers who participated in the study.

3.5.2 Whole Brain® Participatory Action Research sample

Purposive sampling was used for the Whole Brain® Participatory Action Research process. According to Tomal (2010), this is the sampling technique used most frequently in action research. The two purposive sampling types that assisted me in selecting the mentor teachers and pre-service teachers were homogeneous sampling, to include participants with the same characteristics (Creswell, 2012). In this case it was mentor teachers or pre-service teachers working in secondary schools in Pretoria, Gauteng. Maximal variation, was useful for selecting a range of different types of secondary schools to participate in my study. The primary objective was to obtain a sample assuming to be representative of the population, as recommended by Batagiannis (2011).

In this Whole Brain® Participatory Action Research study, the subgroups initially consisted of nine mentor teachers employed in secondary schools in Pretoria, relatively close to the Institution of Higher Education where I worked. A mentor teacher had to be mentoring a fourth-year education student during the Work Integrated Learning period when the study was conducted. The initial nine participating pre-service teachers were chosen as they were BEd students in either the Senior Phase (SP) or FET (Further Education and Training) Phase. Some of the pre-service teachers were in the PGCE (Postgraduate Certificate in Education) programme.

Permission to collect data in public secondary schools (Grades 8-12) was obtained from the Gauteng Department of Basic Education. I consulted a member of the School Management Team (SMT) at each of the public schools I had identified to enquire about their willingness to participate. The Chief Executive Officers or chairpersons of the school boards of the selected independent secondary schools were contacted to ask permission for the study to take place in their schools. Finally, two independent English mixed-gender secondary schools and two independent Afrikaans mixed-gender public secondary schools agreed to participate. One Afrikaans secondary school for girls and one Afrikaans secondary school for boys, two English mixed-gender secondary schools and one English secondary school for boys also indicated their willingness to participate. Each participating school identified one mentor teacher who was willing to be part of the action research study.

When I progressed to the sampling of the pre-service teachers, I worked closely with the staff of the University's office for Work Integrated Learning. The personnel are responsible for the placement of final-year education students at schools. I initially communicated with the pre-service teachers via Clickup Blackboard Learn and explained to them what the Whole Brain® Participatory Action Research study entailed. Nine pre-service teachers agreed to participate and were willing to go to one of the participating schools already selected. The participating pre-service teachers specialised in the subjects taught by the participating mentor teachers, namely English, Tourism, Physical Sciences, Economics Management and Science, Life Orientation and History. In the next section I explain the data collection process.

3.6 DATA COLLECTION

I start by explaining how I used the baseline surveys to collect quantitative data and how I used a mixed-methods approach (Creswell, 2012) in the Whole Brain® Participatory Action Research.

3.6.1 Explanatory baseline study

I developed two cross-sectional online baseline surveys, one for mentor teachers and the other for pre-service teachers, which are attached as Appendices A and B. The baseline surveys were distributed to obtain an information base for the Whole

Brain® Participatory Action Research process. The purpose was to be able to measure and compare attitudes, beliefs, opinions and practices in the pre-service mentoring context. Some of the questions in the two surveys provided similar data, as discussed in Chapter 4. The mentor teacher and pre-service teacher surveys, however, differed in how the questions were presented, bearing in mind the experience and background of the respondents. Second, each of the two surveys included questions to be answered by the mentor teachers only, and others that were primarily intended for the pre-service teachers. I developed the baseline survey as outlined by Clow and James (2014): I selected the online survey development and distribution programme I wanted to use, made decisions about the layout of the survey, the types and flow of the questions and, lastly, evaluated and piloted the surveys before I distributed them online.

When I designed the surveys, I carefully considered as Smyth (2016) recommends how respondents might experience the surveys and their ability to answer the questions, which I constructed in a way that would encourage the two sample groups to respond. I wanted both sample groups to answer all the questions. I used terminology with which the participants were familiar and gave clear instructions. With regard to the visual design of the questionnaires, I employed the “written word” (Smyth, 2016:229). No pictures or graphs were used. I ensured consistency in the flow, font size and the type of questions asked.

I designed and distributed the two structured exploratory online surveys (Appendices A and B) through the Qualtrics software program. Once a question had been answered, the next one appeared, to be answered in a specific order. Both surveys had a split-questionnaire design (Clow & James, 2014) as the questions were divided into construct headings, as explained in Chapter 4. The first questions requested a respondent’s demographic information. The rest of the questions were developed after I had conducted an in-depth literature review. The pre-service and mentor teachers responded to multiple-choice questions by choosing one or more answers from the options provided. In some cases, the respondents selected one of many options. In three questions I used the Lickert four-scale model and asked the respondents to indicate the extent to which they agreed with a statement. Towards the end of the surveys, open-ended questions were asked and the respondents typed the answer(s) in the spaces provided. Before distribution, the language used in

the two surveys was edited. The design I used ensured that the completion of the surveys would not be too time consuming and that the instructions were clear.

The survey for the pre-service teachers was distributed internally through the virtual learning environment Clickup Blackboard Learn, which is used at the University where I am employed. In an e-mail sent to the final-year education students, I requested them to complete the survey by clicking on the link that I provided. The mentor teacher survey was sent to the participating schools as an attached link, using my Google e-mail account. The schools were politely requested to forward the link to the mentor teachers who were mentoring pre-service teachers. The mentor teachers had to click on the link and complete the online survey. In the following section, the data collection undertaken during the Whole Brain® Participatory Action Research process will be discussed.

3.6.2 Whole Brain® Participatory Action Research data collection

McAteer (2013) states that data collection and analysis phases are not separated during action research. During the Whole Brain® Participatory Action Research process the participants and I progressed in the same manner. We used a mixed-methods approach with data sourced by using qualitative and quantitative instruments (Creswell, 2012).

3.6.2.1 Instruments used by the pre-service teachers to source data

The pre-service teachers innovatively introduced Whole Brain® Learning into their teaching practice. The instruments used by the pre-service teachers to collect data are shown in an organisational chart in Figure 28. The orange boxes show the outcome of the HBDI® completed by the final-year education students as part of their baseline study. In the red boxes, the qualitative instruments used by the pre-service teachers are indicated. These include audio recordings and the photographs taken by the final-year education students during two of the lessons presented during the Work Integrated Learning period. The pre-service teachers listened to the audio recordings, completed observation sheets and did reflections to evaluate the process before proceeding to the following cycle.

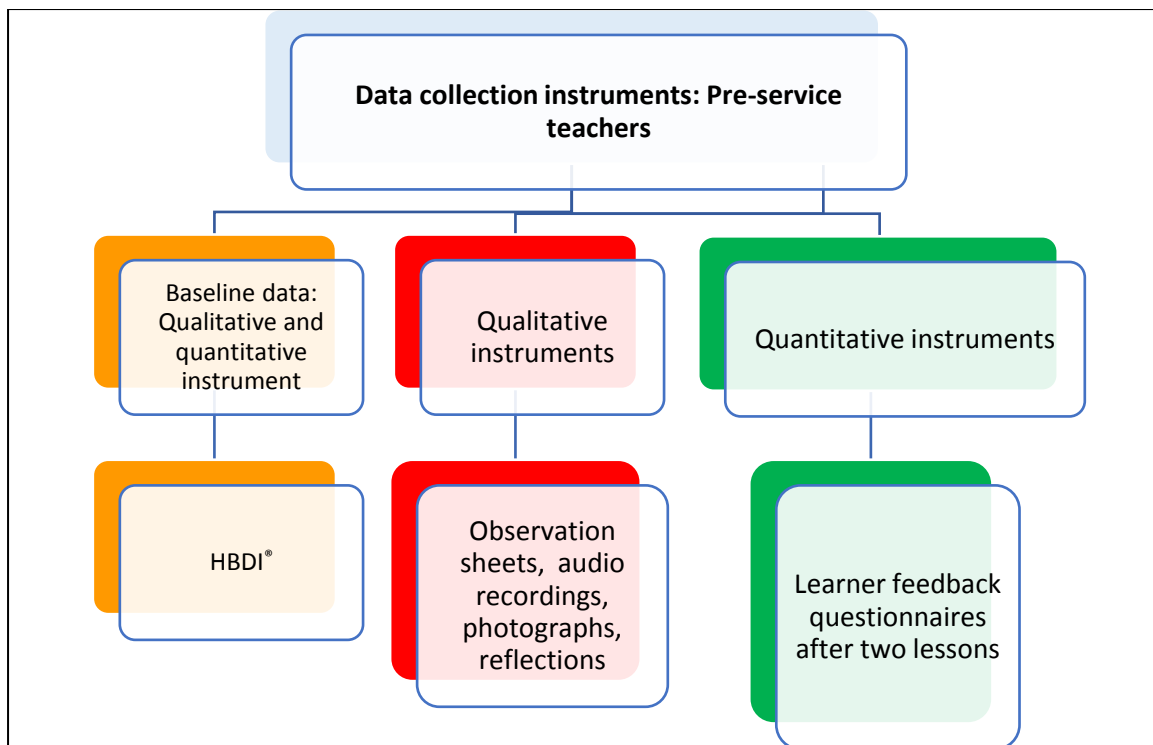


Figure 28: Data collection instruments used by the pre-service teachers to source data

Quantitatively, as illustrated in the green boxes in Figure 28, the pre-service teachers handed out feedback questionnaires to the learners after the two lessons they presented.

3.6.2.2 Instruments used by the mentor teachers to source data

The instruments the mentor teachers used to source data during the Whole Brain® Participatory Action Research process in their mentoring practice are illustrated in Figure 29. The orange boxes represent the HBDI® they completed. The mentor teachers used this instrument as their baseline study.

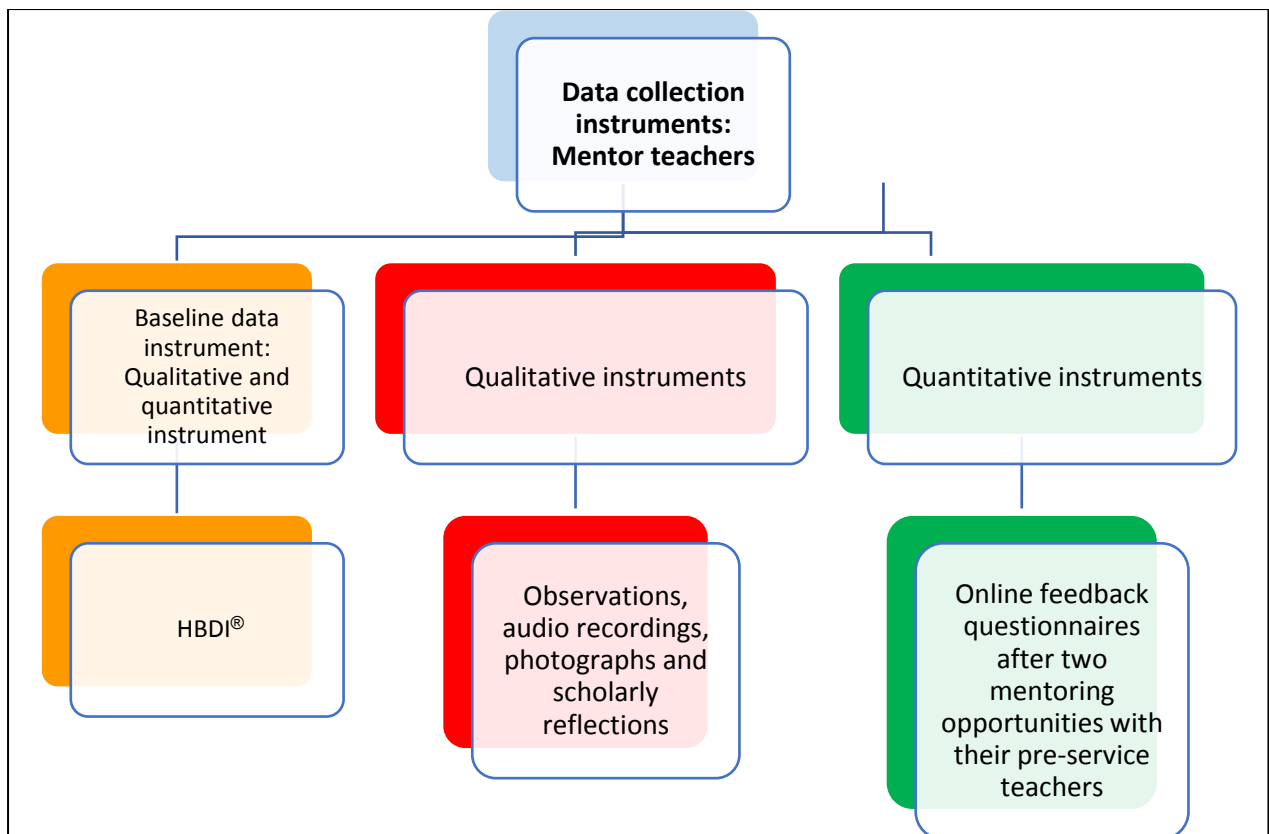


Figure 29: Data collection instruments used by the mentor teachers to source data

The participating mentor teachers introduced innovations such as blended mentoring, Whole Brain® Mentoring and peer mentoring into their mentoring practices. The red boxes in Figure 29 represent the qualitative instruments used by the mentor teachers to source data in their practice. They made audio recordings during their mentoring opportunities with their pre-service teachers. The mentor teachers took photographs to collect photographic-evidence and did reflections. Quantitative feedback questionnaires were completed anonymously by the pre-service teachers. These questionnaires were completed in the Qualtrics software program. I developed and distributed the feedback questionnaires to the final-year education students via e-mail and WhatsApp. The feedback from all the final-year education students was communicated to the mentor teachers during two of the scholarly community of practice sessions.

3.6.2.3 Instruments I used to source data

The instruments I used to collect data are organised in the organisational chart illustrated in Figure 30 below.

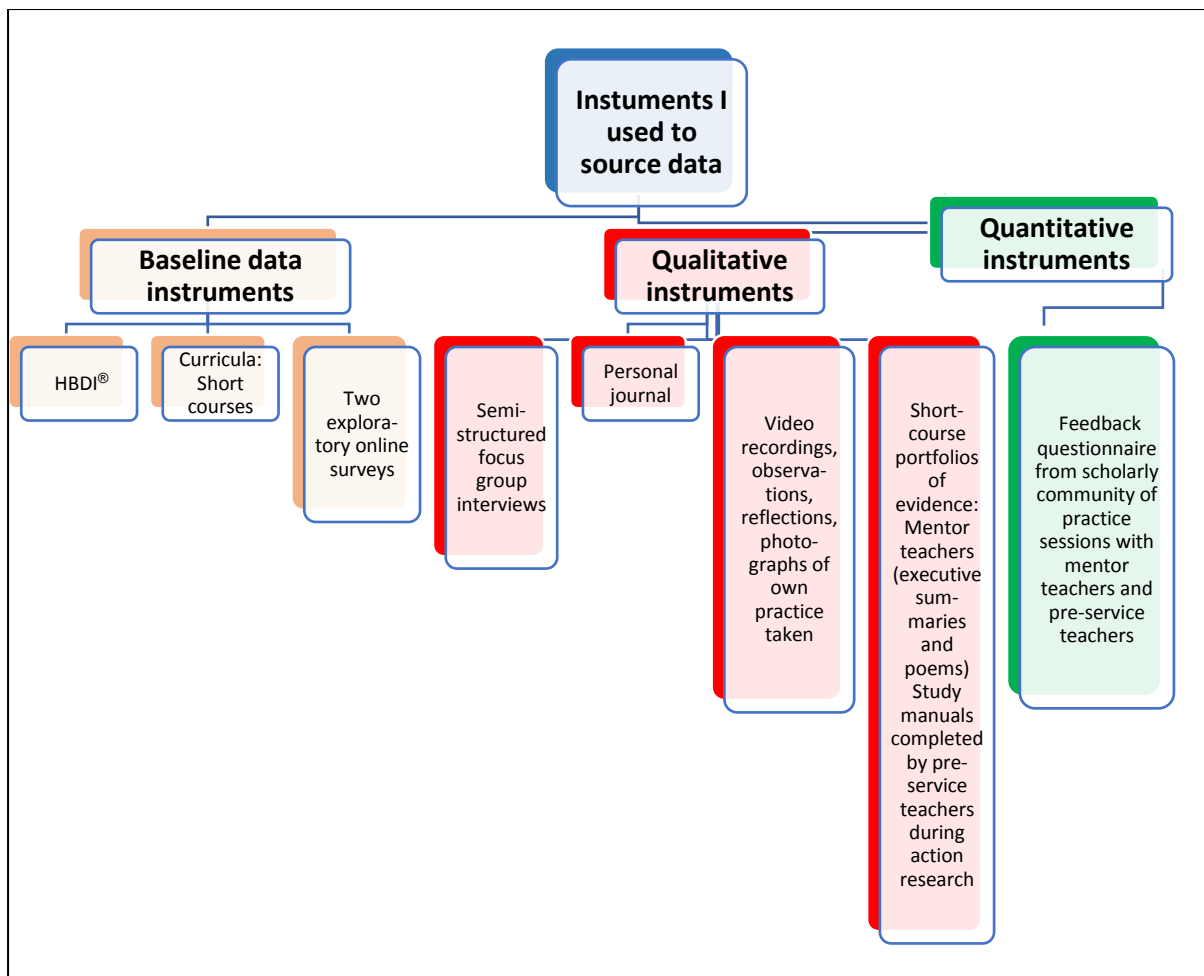


Figure 30: Data collection instruments I used to source data

The HBDI® I completed as a baseline study is illustrated in an orange box in Figure 30. Qualitative and quantitative data was sourced in accordance with my thinking preferences. The next orange box represents the curricula I developed for the two short courses. I reflected on, and evaluated it, as discussed in Chapter 4. The next baseline instrument I used signifies the two online exploratory surveys I sent out before initiating the Whole Brain® Participatory Action Research process.

The four red boxes indicate the qualitative instruments (Figure 30) used. Semi-structured focus group interviews were conducted during the scholarly community of practice sessions with the pre-service and mentor teachers. I maintained a personal journal throughout the research study. I made video recordings of the scholarly community of practice sessions so that I could afterwards observe my practice. I also took photographs to serve as photo-evidence. I reflected on how I had implemented

the types of mentoring and assessed my practice. The fourth qualitative instrument consisted of the portfolios of evidence the mentor teachers completed. In Chapter 4, I share some of their executive summaries, infographics and poems. The pre-service teachers completed their observations and reflections for the action research process in their short course study manuals, which I used to share their action research. The green box in Figure 30 represents the feedback questionnaires I handed out to each mentor and pre-service teacher at the conclusion of every scholarly community of practice session.

The participants and I collected a variety of data with a view to transforming our practice and the self. The analysis of qualitative and quantitative data will be discussed in the following section:

3.7 DATA ANALYSIS

In this section, I explain how I analysed the data gathered by way of the online exploratory surveys and the manner in which I reflected on the curricula I had designed. The HBDI® analyses are clearly stipulated. I also clarify the participants' and my own analyses of the Whole Brain® Participatory Action Research.

3.7.1 Data analysis of the baseline studies

In the following section, the data analysis I did of the baseline survey data, the curricula I developed for the two short courses and the HBDI® the participants and I completed are explained. The data is shared in Chapter 4.

3.7.1.1 Online exploratory baseline study surveys

The exploratory baseline quantitative data was gathered, prepared, organised and analysed by the Qualtrics program. I created an online codebook for every survey and used descriptive quantitative analysis to describe the trends that emerged from the data. Through this detailed analysis process, the data was summarised by depicting the results in graphs and tables. I compared the responses of the mentor and the pre-service teachers to the questions in the surveys and used bar and pie charts to report the data (see Chapter 4) and summarised the results of the surveys. The implications and possible explanations for the results are discussed in Chapter 4.

3.7.1.2 Baseline data analysis of the curricula

The curricula I developed by using the curriculum development structure of Wiles and Bondi (2015) guided the participants during the Whole Brain® Participatory Action Research process. I drew a comparison between this structure and the action research steps the participants and I used to analyse the short courses. I used the Whole Brain® Scholarly Reflection Model and the SWOT analysis, as explained in Chapter 2, to reflect on the curricula I developed in a scholarly fashion. I analysed my interviews with the mentor and pre-service teachers for qualitative feedback. I also analysed the development and implementation of the short courses in terms of how they assisted the participants to transform practice and conduct action research.

3.7.1.3 Analysis of HBDI® as baseline data

The data collection and analysis processes were organised and managed by the Herrmann South Africa group. The participants and I completed the instrument online and the HBDI®s were then analysed by the Ned Herrmann International Group at Lake Lure in the United States of America. A registered HBDI® practitioner held a debriefing session with the participants and me. The thinking preferences of every participant were shared. The HBDI® data of the participants and myself is described in Chapter 4 and includes an HBDI® profile of the thinking style preferences of every individual (qualitative data), a narrative explanation and a preference summary table.

3.7.2 Data analysis of Whole Brain® Participatory Action Research

Holland, Renold, Ross and Hillman (2008:15) claim “that participatory research rarely involves participants beyond the data generation stage and that involvement is minimal”. I do not agree with this and prefer to subscribe to the opinion by Huxham (2003) stating that participants are included in the analysis of a participatory action research project. In my Whole Brain® Participatory Action Research study, the participants were not only involved in the data generation phase, but also in the analysis of the data they had collected.

Data analysis proceeded through participatory action research phases, as proposed by Rowley (2014), which I adapted for this Whole Brain® Participatory Action Research (WB®PAR) study. The WB®PAR formative data analysis and the WB®PAR

summative data analysis phases. The two phases overlapped as illustrated in Figure 31.

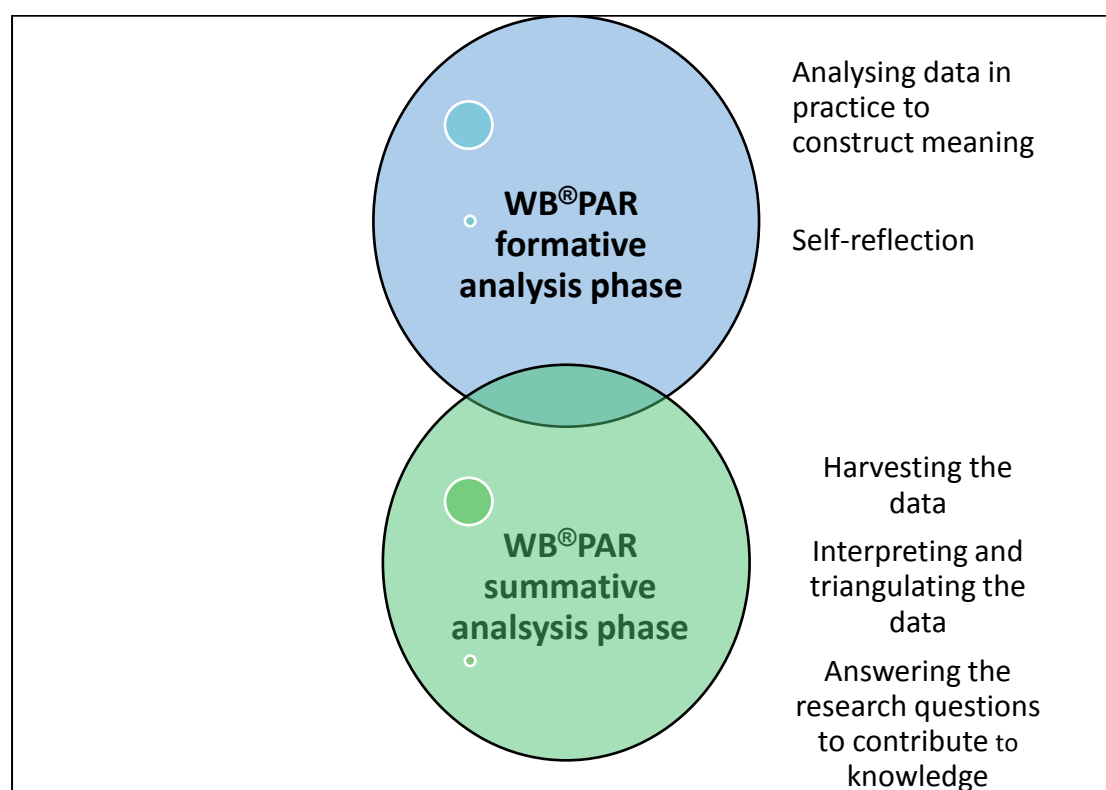


Figure 31: WB®PAR data analysis phases

During the WB®PAR formative data analysis phase, represented in blue in Figure 31, the participants and I primarily analysed the data from the action research we had conducted in our practice. Self-reflection was overlaid throughout the action research process. During the WB®PAR summative data analysis phase, I interpreted and triangulated the data provided by the participants and myself. Finally, I answered the research questions in Chapter 5. My contribution to the body of knowledge is discussed in Chapters 5 and 6.

3.7.2.1 WB®PAR formative data analysis phase

During the WB®PAR formative data analysis phase, each mentor and pre-service teacher progressed through two action research cycles as they generated and analysed data. I proceeded through four action research cycles.

3.7.2.1.1 WB®PAR primary formative analysis cycle

The pre-service and mentor teachers “observed” their practice by listening to their audio recordings. The participants reflected in a scholarly way by completing the observation sheets included in the study manual. The pre-service teachers assessed how they activated Whole Brain® Learning in their teaching practice and reflected on how they had addressed the levels of Bloom’s Taxonomy. The mentor teachers assessed how they had implemented the types of mentoring in their practice. I used action research during the scholarly communities of practice sessions. From the video recordings of the sessions, I could afterwards observe my practice and reflect on how I had incorporated Whole Brain® Thinking. I furthermore reflected on how I had included the levels of Bloom’s Revised Taxonomy and on how I had incorporated the types of mentoring into the scholarly community of practice sessions.

Photographs were taken in the participants’ and my own practice to serve as photo-evidence as part of the qualitative data. The photo-evidence showed how engagement (McNiff, Lomax & Whitehead, 1996) had taken place during our scholarly communities of practice sessions, a teaching practice or a mentoring opportunity. The photographs therefore provided evidence that practice and the self had been transformed.

The pre-service teachers used descriptive analysis to analyse the quantitative data obtained from the feedback questionnaires completed by the learners. The feedback data was numerically organised, prepared and analysed by the pre-service teachers. It was not necessary to use IBM’s (International Business Machine’s) SPSS (Statistical Package for the Social Sciences) program as the number of learners who had completed the feedback questionnaires in each pre-service teacher’s practice was relatively small. I assisted the pre-service teachers with the manual analysis of the feedback questionnaires as part of their professional learning. The pre-service teachers and I created a codebook considering the different variables. The results of the feedback questionnaires were used by the pre-service teachers to reflect on how they had activated Whole Brain® Learning in practice. They used bar charts to present the data. The response groups who had completed the feedback questionnaire in the mentor teachers’ and my practice were small. We did not

analyse the feedback statistically, but manually counted the responses given in terms of the extent to which the response group agreed or disagreed with the statements.

The mentor teachers, the pre-service teachers and I used the feedback to reflect on our practice. The mentor and pre-service teachers subsequently evaluated, re-planned and adjusted the action research process to proceed to the following cycle. The conclusions the participants and I drew from the quantitative and qualitative data received from our practices helped us to assess our practice in order to transform it.

3.7.2.1.2 WB®PAR secondary formative analysis cycle

The mentor, pre-service teachers and I understood that the analysis and collection process was never-ending. Scholarly reflection was interwoven with the rest of the formative analysis process to help us to make meaning of our practice.

3.7.2.2 WB®PAR summative data analysis phase

As the principal researcher, I had to make sense of the qualitative and quantitative data the participants and I had collected during the WB®PAR formative analysis phase. I merged the WB®PAR formative data analysis and WB®PAR summative data analysis phases. The summative analysis progressed through the following three phases, which Rowley (2014) identified and which I slightly altered for my study (Figure 32).

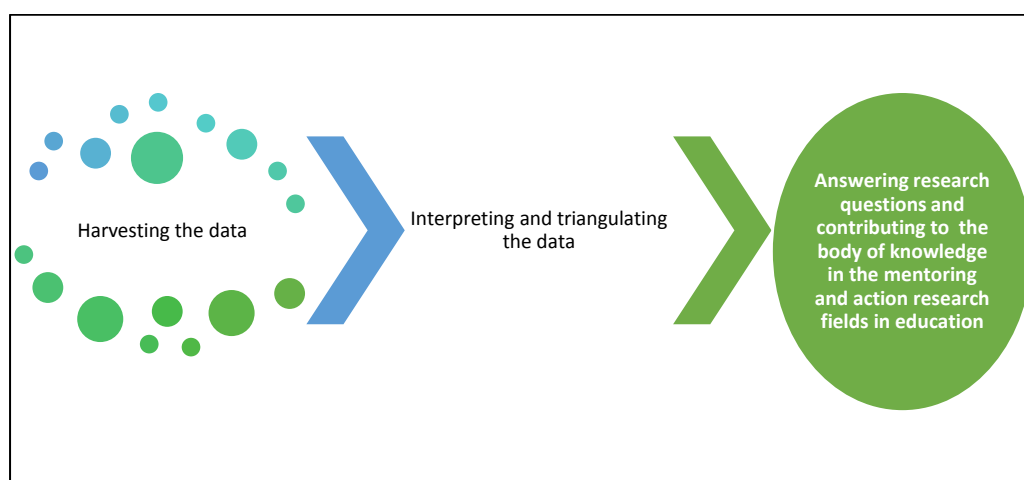


Figure 32: WB® PAR summative data analysis process *adapted from Rowley (2014)*

As illustrated in Figure 32, I harvested the data the participants and I had collected during the first phase. I then organised, interpreted and triangulated the data to answer the research questions.

3.7.2.2.1 Harvesting the data during the WB®PAR summative analysis phase

As is characteristic of action research, a large amount of data was generated during my study. During the first WB®PAR summative data analysis phase, I harvested the data by using the process recommended by Rowley (2014). I first acquainted myself with the different data sets the participants and I gathered. As Mason (2018) advises, I asked myself: What constitutes data in my study? Bearing the ontological and epistemological rationales of my study in mind, I read the data we had generated interpretively and reflectively (Mason, 2018) to gain an understanding of the data. Working interpretively, I constructed what I thought the data meant as I was interested in the constructs to which the data might lead. While reading the data reflectively, I positioned the participants and myself as part of the data collected, since we conducted research in our practice. I organised all our qualitative data which included photographs, personal journals, audio recordings, video recordings, interview transcriptions, poems, infographics, executive summaries and self-reflective graphs. Epistemologically the participants and I wanted to construct meaning in our practice. During action research, I was concerned with how the participants and I developed professionally. I made comparisons between, inter alia the action research cycles of a participant and explained the findings. In the following summative step of interpretation and triangulation, I used construct analysis to analyse the interview transcriptions. I also used the adapted triangulation matrix to answer the research questions.

3.7.2.2.2 Interpreting and triangulating the data in the WB®PAR summative data analysis phase

I attempted to conduct my research in accordance with how Du Toit (2018b:4) describes his action research practice: “Constructivist thinking tints my way of conducting research”. The participants and I used Whole Brain® Participatory Action Research, and in Chapter 1 I explained my preference for using a construct frame, which links to the idea by Du Toit (2018b) refers to the continuous process of

constructing meaning as a “construct process”. I viewed the data collection, and specifically the way in which I analysed the data, from a different frame of mind and opted to use the construct analysis approach (Du Toit, 2019b) to interpret the qualitative data. The use of construct analysis I used in my study is original. As this approach to analysis developed mainly from constructivism, I used and referred to constructs rather than themes. I first explain what had influenced the development of construct analysis and then disclose how I employed this approach in order to interpret the data.

I initially thought to employ thematic analysis (Miles & Huberman, 1994) to interpret the data. The thematic analytical approach developed from grounded theory (Coghlan & Brydon-Miller, 2014). Later the constructivist grounded theory (Duckles, Moses & Moses, 2019) emerged, which focused on using an inductive approach to the construction of knowledge from evolving data. Knowledge or theory was then constructed as an outcome of the researcher’s interpretation of the participant’s story. Since I wanted to acknowledge the voices of all the participants, I started incorporating aspects of narrative analysis (McAlpine, 2016) into my approach to analysis as well. However, I realised that narrative analysis was not suited to my study as my focus was not mainly to interpret the stories of the participants. Thematic analysis was also not suited to my specific research design as I did not want to recount only the events or experiences of the participants. Instead, in this WB®PAR summative analysis phase, I interpreted the meanings the participants and I had made in our practice with a view to constructing knowledge. As a constructivist researcher, I thus preferred a constructivist approach to the analysis of qualitative data, which means that I did not refer to themes, but to constructs. Next I explain how I used construct analysis for the interview transcripts.

In the mentor teacher and pre-service teacher communities of practice, I engaged with the video recordings of the semi-structured focus group interviews respectively. The recordings were transcribed. I started interpreting the transcriptions and initially categorised them to form a general idea of the bulk of the interview data, which is also called the “preliminary exploratory analysis” phase (Creswell, 2012:243). I then progressed to work in the Atlas Ti Version 8 program, starting by constructing two files, or “projects”, as they are referred to in Atlas Ti. The one file contained the

transcriptions of the interviews I had conducted with the mentor teachers and the other comprised of the transcriptions of the interviews with the pre-service teachers. The terminology used in the Atlas Ti program is mostly similar to that used during thematic analysis. The analysis program refers to, inter alia, projects, codes, coding and coding groups (Archer, Janse van Vuuren & Van der Walt, 2017). Although I used this program to assist me during the analysis of the interview transcripts, I changed the terms. I now explain how I conducted the analysis by using the new terms I had created for construct analysis.

During thematic analysis, the process is called “coding”. However, I did not only want to review, sort and sift the data (Gibbs, 2014), but also wanted to share the meaning of the data that had been analysed and constructed in practice by the participants and which had been discussed during the interviews. I thus do not refer to “coding”, but use the term “constructify”. After interpreting the transcriptions in the Atlas Ti program, I identified and generated preliminary sub-constructs. During the constructifying process, I compared these sub-constructs and created “construct groups”. I labelled the emerging groups and looked for overlapping sub-constructs in the mentor teacher and pre-service teacher interviews, after which I progressed to develop constructs from the interview data. The constructs that emerged from the focus group interviews are discussed in Chapter 4.

In the final phase of the WB®PAR summative analysis process, I summarised the main findings by triangulating the evidence from the different qualitative and quantitative data sources. To assist me with this, I developed a triangulation matrix (Table 4) to identify the data sets that could be used and merged to answer the research questions.

Table 4: WB®PAR triangulation matrix

The sub-research questions	Data sets that contributed to answering the research questions
1. How can I, as the principal researcher, initiate self-regulated professionalism in scholarly communities of practice?	Interview transcripts, my personal journal, observations and data from participants' feedback questionnaires, the poems written

	by the mentor teachers and the literature I reviewed in Chapter 2.
2. How are the mentoring practice and self-regulated professionalism of mentor teachers transformed?	Interview transcripts, action research evaluations that were done by the mentor teachers, feedback questionnaire data from pre-service teachers, executive summaries or infographics, personal logos, personal development and mentoring, quality personal graphs and the literature review.
3. How are the practice and self-regulated professionalism of pre-service teachers transformed?	Interview transcripts, action research evaluations that were done by the pre-service teachers in their practice, feedback from learners and the literature review.
4. What will a Comprehensive Whole Brain® Mentoring Model for education entail?	Interview transcripts, the Whole Brain® Participatory Action Research process the participants and I conducted in our practice and a literature review.

As seen in Table 4, various qualitative and quantitative data sets were triangulated. During the final triangulation step, the emerging sub-constructs from the participants' and my data sets were identified. I then progressed to selectively choose and merge the sub-constructs into constructs to eventually identify the key constructs in order to answer the research questions above.

3.7.2.2.3 Constructing knowledge

In the last process of the WB®PAR summative analysis phase, I shared the knowledge constructed in the mentoring and action research fields. I interspersed the WB®PAR formative analysis phases data with what further emerged from the summative data analysis phase. I reduced the data and described the emerging constructs by keeping the construct frame (Chapter 1) and research questions in mind. In Chapter 5, I answer the research questions and discuss my conclusions based on my findings. In Chapter 6, I explain what a Comprehensive Whole Brain® Mentoring Model for education entails.

3.8 MANNER IN WHICH METHODOLOGY, VALIDITY AND ETHICS WERE INTERWOVEN

Iphofen (2011) refers to a responsible researcher as someone who examines and understands the interwoven nature of ethical and methodological principles in their work. The relationships I had with the participants as co-constructors of meaning were fundamental. I tried to avoid bias. I strived to ensure reliability and validity by being consistent during the data collection and analysis phases. I used a mixed-methods approach (Winter, 2000) and I qualitatively tried to embrace my involvement in the study. Quantitatively I strived to make sure that I gave a valid, reliable account of what I intended to do.

The data collection process took place in an open and intimate milieu. Participants were not “coerced to participate” (Creswell, 2012:588) and were free to end their involvement in the research study at any time, without negative consequences. I attempted to apply the three ethical principles, beneficence, non-maleficence and autonomy (Ramrathan, Le Grange & Higgs, 2017), in my research practice. Brydon-Miller and Maguire (2009:244) advise using what they call “covenantal ethics” in specifically participatory action research. The ideas they specified are outlined. I also explain how I attempted to act in an ethical manner:

Genuine and transparent involvement

I attempted to always act in the best interest of the participants. I obtained ethical clearance for my research from the Ethics Committee of the University. The Dean of the Faculty of Education and the Gauteng Department of Basic Education gave permission for my study to take place. I complied with the standards stipulated by all the parties involved. The principals of the schools where the mentor teachers were teaching were vital gatekeepers who gave consent for the study to take place. The participants gave their informed consent and knew that participation was voluntary and anonymous. To ensure anonymity, I used pseudonyms instead of the participants’ real names. Participating schools or institutions were also not named.

Respect for one another's understanding of the independent and non-hierarchical practice

I showed respect for the other participants throughout the action research process by acknowledging their thinking preferences. In the Whole Brain® Participatory Action Research design study, I had the dual roles of being the overseeing mentor, curriculum developer and facilitator of the two short courses, while at the same time being the principal researcher. As Ramrathan *et al.* (2017) advise, I reflected continuously on my dual roles during the action research process. As this was a participatory study, I advised the participants to do the same. I openly acknowledged that with this dual role in my practice I was in a quandary, but I remained open about the process.

Positive and sustainable social change as an objective in the process

I chose to include the pre-service teachers and mentor teachers in as many segments of this Whole Brain® Participatory Action Research process as possible. McNiff and Whitehead (2012:164) recommend having “critical friends or a validation group”. The mentor and pre-service teachers and I fulfilled these roles for one another as we cooperated in considering the best practice ideas for our Whole Brain® Constructivist practices. Plans of action were constructed and clarified while the participants and I reflected on how we could transform our practice. I therefore used a variety of data collection methods to have several data sources (Creswell, 2012). The mentor and pre-service teachers were free to look at any of the transcripts or other data whenever they wanted to. I will store the data in my storage facility on my password access computer for 15 years. It is also saved by my promotor at the Institute of Higher Education where he is employed, as prescribed by the Institute's Ethics Committee.

3.9 CHAPTER CONCLUSION

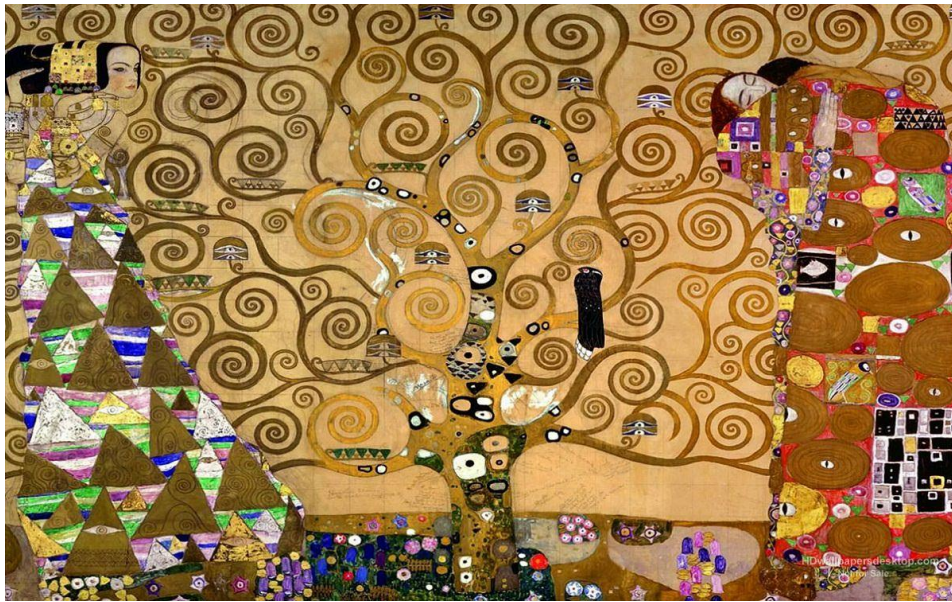
In the Whole Brain® Participatory Action Research process I focused on maintaining positive relationships with my co-constructors. I was fully aware of the fact that the mentor and pre-service teachers were busy at their schools and that their

participation in the study required extra effort. The Whole Brain® Participatory Action Research process was not always linear and I had to acknowledge that the activities might challenge the participants (McAteer, 2013), who regulated their practice during the action research process.

In this chapter, action research, its history, philosophical progression and specific Participatory Action Research characteristics were reviewed to enhance the reader's understanding of the chosen research design. The Whole Brain® Participatory Action Research design was explained in detail. The methods I used, the sampling procedure, data collection, analysis and the soundness of this action research study were clarified. The findings will be discussed in Chapter 4.

CHAPTER 4

BUDDING: HARVESTING THE FINDINGS



Artwork 4: “Tree of life” by Gustav Klimt (*Klimt, 1909*)

4.1 INTRODUCTION

In this chapter, I will discuss the findings of my initial baseline study and share the findings the participants and I harvested during the Whole Brain® Participatory Action Research. Gustav Klimt’s oil painting titled “Tree of life” (Klimt, 1909) symbolises the endlessness of the Whole Brain® Participatory Action Research process we conducted. Although the findings are discussed in this chapter, the process is ongoing for all the participants. The swirling, spiralling and undulating branches reaching for the sky depicted in Artwork 4 symbolise the complex process that had started when we embarked on the Whole Brain® Participatory Action Research journey. I will begin with a description of the quantitative baseline study, followed by a contextualisation of the HBDI® results and a delineation of the qualitative and quantitative data sets of all the participants (the pre-service teachers, mentor teachers and myself) as we conducted action research on our practice in the WB®PAR formative data analysis phase. The use of gold epitomises the focus on the self and our collective empowerment during the short course. The human figures in the painting emphasise the self and the we. The mentor teachers, pre-service

teachers and I have different thinking preferences, and in this chapter on “budding” I also share the findings I harvested as part of the WB®PAR summative data analysis phase described in Chapter 3.

4.2 ONLINE EXPLORATORY BASELINE STUDY SURVEYS

The baseline study was conducted nine months before the commencement of the Whole Brain® Participatory Action Research study with the distribution of two cross-sectional electronic surveys, as discussed in Chapter 3. The sample groups were current Senior Phase (SP) and Further Education and Training (FET) Phase pre-service teachers and their mentor teachers at schools in Pretoria in the Gauteng province in South Africa. Attitudes, beliefs, opinions and practices were measured and compared.

Two structured online surveys were designed. One was distributed for pre-service teachers by using Clickup Blackboard Learn and the other was sent to the mentor teachers via e-mail. According to Shih and Fan (2009:26), the e-mail survey response rate is approximately 20%. In this case, the average response rate for the pre-service teachers was 55%. The mentor teachers’ rate was lower at 20%, which is in line with the general e-mail response rate. In my opinion the low mentor teacher response rate was due mainly to the fact that I was unable to make direct personal contact with them. The e-mail survey was first sent to the schools which then distributed it to the teachers. Another reason for the low response rate could have been that some mentor teachers did not feel comfortable about answering online surveys.

In the pre-service teacher survey, the respondents were asked questions about persons who had significantly influenced their teacher identities. The final-year education students rated their most recent mentoring experience while sharing the problems they had experienced during the Work Integrated Learning period. In the mentor teacher survey, the participants were requested to indicate the number of years they had been in the teaching profession and the number of years they had been mentoring. The mentor teachers were also asked to rate their ability to mentor and comment on the challenges presented by having to act as a mentor to a pre-service teacher. In the exploratory baseline study, a number of similar constructs

were explored, but the questions were asked differently, acknowledging the backgrounds and experiences of the respondents. In the pre-service teacher and mentor teacher surveys, I asked questions relating to the following constructs: Mentoring experiences and the extent to which pre-service teachers were prepared for their entry into the teaching profession. The respondents also answered questions about suitable mentoring approaches, partnering during mentoring and the fulfilment of roles during the mentorship process. The mentor and pre-service teachers commented on the possible benefits of being mentored or mentoring a final-year education student. Other questions related to areas in which pre-service teachers needed more mentoring with regard to educator roles, aspects of teaching and learning, and teacher professionalism. Checklists and rating scales were used. In the case of some questions the participants could give more than one response.

4.2.1 Demographic information about respondents requested in the surveys

The 102 participating pre-service teachers were heterogeneous. Afrikaans- and English-speaking participants accounted for 51% of the total, while 13% spoke Northern Sotho, 9% stated that their home language was IsiZulu, and the rest spoke IsiSwazi, IsiXhosa, Ndebele, Sesotho, Tswana and XiTsonga. The mentor teachers and pre-service teachers who completed the surveys were predominantly female (61%).

Of the 65 teachers who completed the online survey for mentor teachers, 57% were Afrikaans and 18% English speaking. Level one teachers accounted for the majority of the respondents, while 37% were heads of departments and 12% held positions in school management. With regard to mentor teachers, 22% were beginner teachers and the majority (50%) had 11 to 20 years teaching experience. It is especially noteworthy that the majority of the mentor teachers (53%) had up to five years of mentoring experience, which indicates that there is no correlation between the number of years in the teaching profession and the number of years acting as a mentor for pre-service teachers.

4.2.2 Results of the baseline surveys

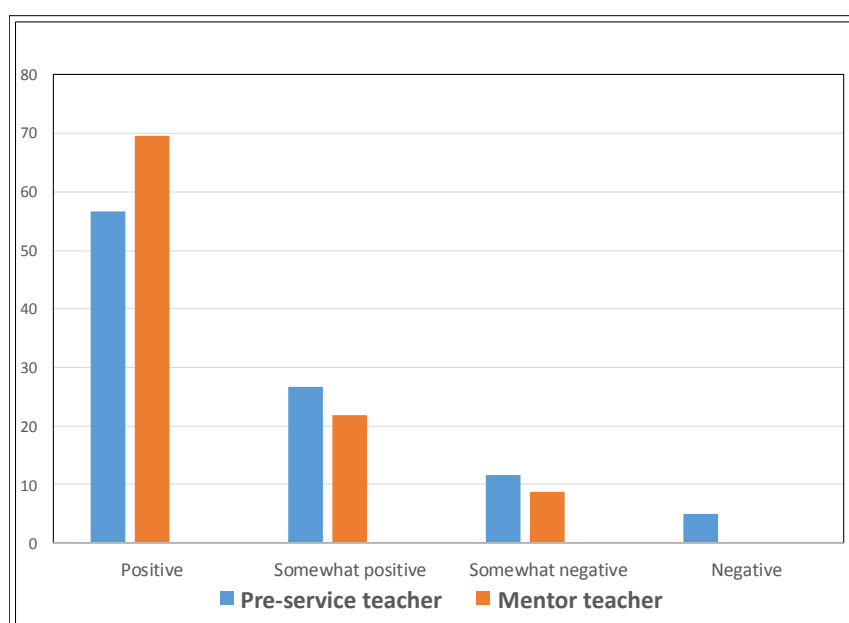
Next I discuss the results that emerged from the constructs listed in Table 5. These constructs were included in the exploratory online baseline surveys of the mentor teachers and pre-service teachers.

Table 5: Constructs in the baseline surveys

Mentoring: Experiences, benefits and challenges	Influence on the development of pre-service teacher identity
Pre-service teacher mentoring: Capability, roles, mentor selection, approaches and partnering	Pre-service teacher: Preparedness for the profession

4.2.2.1 Experiences, benefits and challenges during the pre-service teacher mentoring period

The mentor teachers reported predominantly positive mentoring experiences (90%) during the preliminary baseline study Work Integrated Learning period, with only 10% reporting somewhat negative experiences, as illustrated in Graph 1.



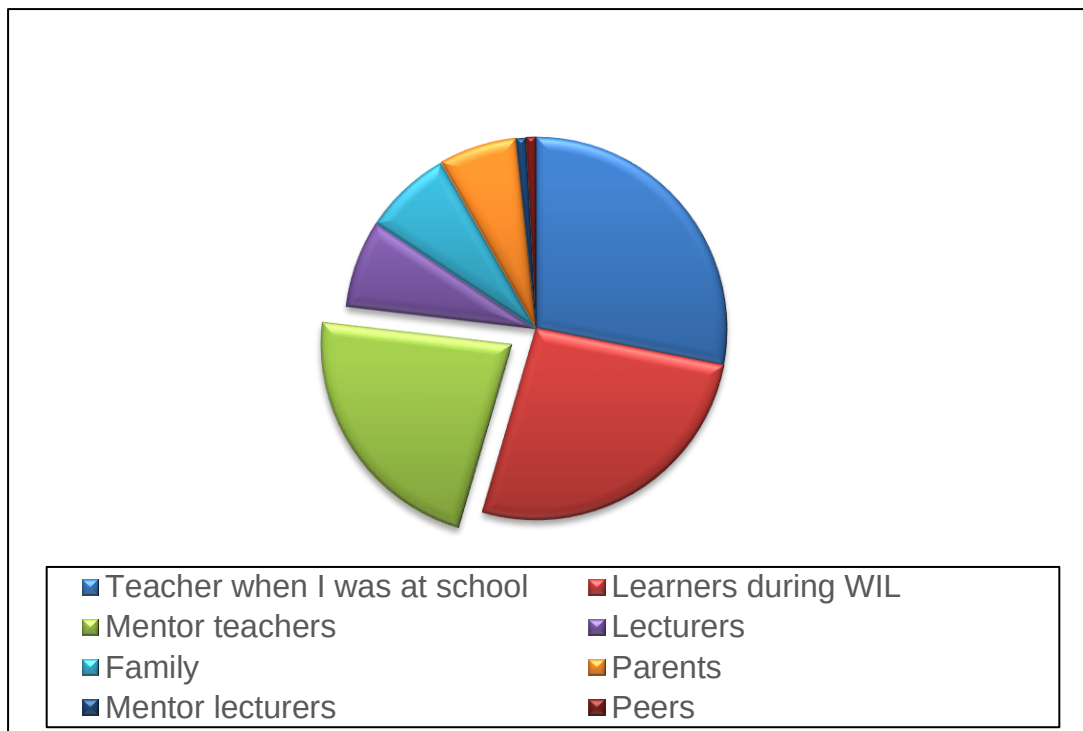
Graph 1: Results of the baseline surveys regarding mentoring experiences

The data provided by the pre-service teachers indicated a slightly different scenario, with 83% having had somewhat to very positive mentoring experiences. As shown in Graph 1, none of the mentor teachers had very negative mentoring experiences, while 5% of the pre-service teachers reported very negative experiences. The pre-service teachers indicated that the main benefit of the mentoring relationship was that they had gained classroom management skills (21%), followed by developing professionally and being prepared for the teaching practice. The key challenges faced by the pre-service teachers during the Work Integrated Learning period included learner behaviour (32%), workload (15%) and communication between the school and the University (12%). A cause for concern was that 5% of the pre-service teachers indicated that they had received no significant assistance from their mentor teachers during the Work Integrated Learning period.

The mentor teachers (17%) rated the opportunity to develop future teachers as the most significant benefit of mentoring pre-service teachers. They furthermore indicated that the mentoring relationship encouraged them to reflect on their teaching practice (13%), to inform themselves of the most current teaching methods (11%) and to develop professionally (11%). The majority of the mentor teachers (36%) also indicated that they had not experienced any challenges during the pre-service teacher mentoring period. However, 30% of the mentor teachers did indicate that mentoring had been a challenge as the final-year students were not prepared for the realities of the profession.

4.2.2.2 Influence on the development of pre-service teacher identity

Some pre-service teachers (7%) stated that their lecturers did not have a significant influence on their professional teacher identity development (Graph 2), while only 1% of the mentor lecturers who mentored the final-year education students during their Work Integrated Learning experience had influenced the development of their teacher identity.

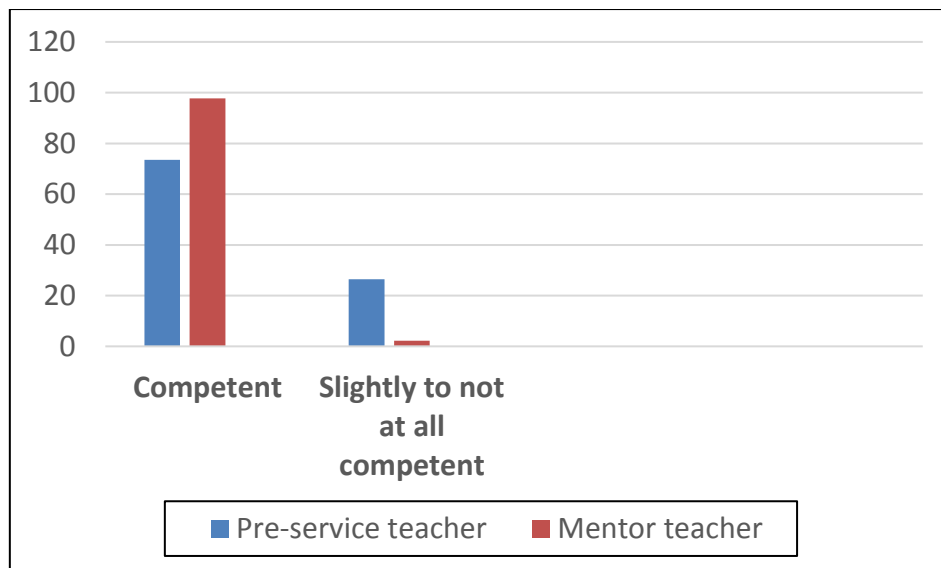


Graph 2: Development of pre-service teacher identity

The value of mentoring in the school context can be seen in Graph 2. The pre-service teachers stated that while they were still at school, their teachers (28%), and the learners (26%) whom they taught during the Work Integrated Learning period had influenced the development of their teacher identities. The mentor teachers (22%) also had a significant influence on the development of their pre-service teacher identities.

4.2.2.3 Pre-service teacher mentoring: Competence, roles, mentor selection, approaches and partnering

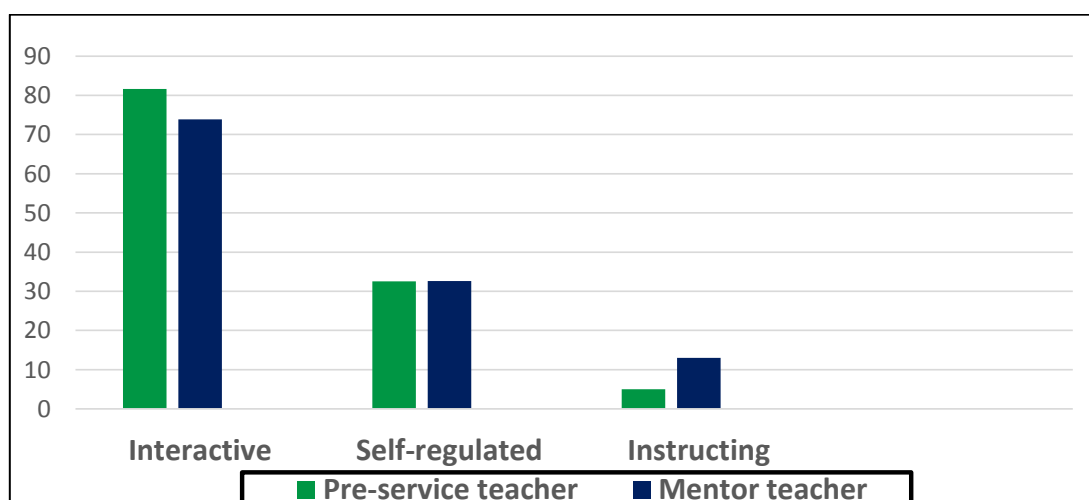
In this section, I discuss the responses obtained through the baseline surveys with regard to the competence of mentor teachers to mentor, the approach they used, how mentors need to be selected and the role descriptions of the mentor and pre-service teachers. As can be seen in Graph 3, the pre-service teachers (26%) were of the opinion that the mentor teachers were only marginally, or not at all competent to mentor.



Graph 3: Mentor teacher competence with regard to mentoring pre-service teachers

As shown above, only 2% of the mentor teacher respondents considered themselves to be slightly competent to mentor a pre-service teacher. I find the result in Graph 3 noteworthy since more than 50% of the mentor teachers indicated that they had less than five years of mentoring experience, which to my mind is an indication that they were relatively inexperienced in the mentoring field.

The independent variables in Graph 4 indicate that the pre-service teachers and mentor teachers had mostly the same idea regarding their preferred approach during pre-service teacher mentoring.



Graph 4: Preferred pre-service teacher mentoring approach

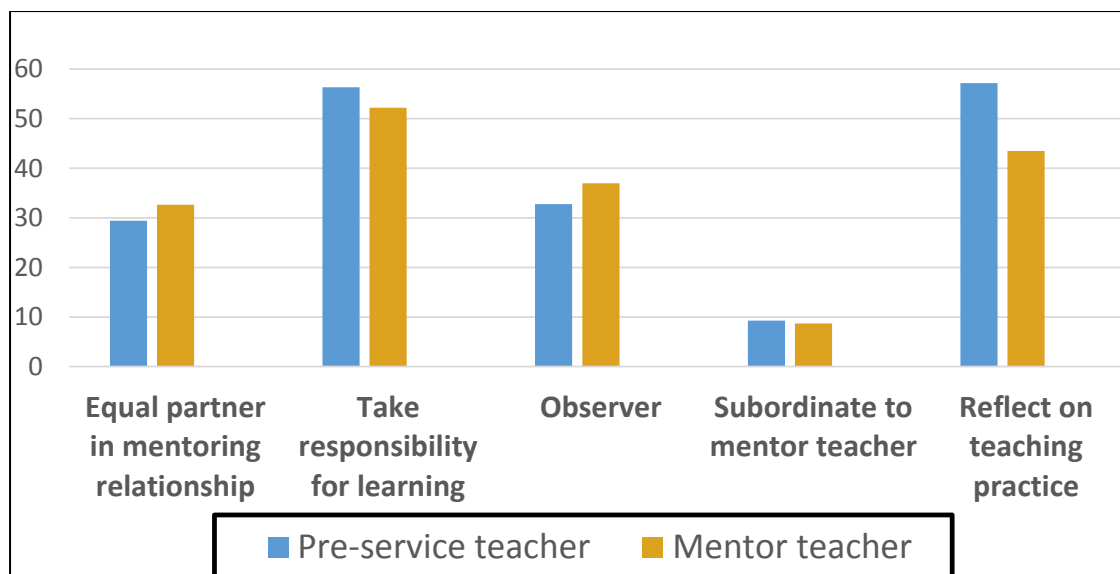
As seen in Graph 4, the most preferred approach was an interactive mentoring approach that enabled the mentor and pre-service teacher to influence one another (69% of pre-service teachers and 64% of mentor teachers). The respondents furthermore favoured a self-regulated mentoring approach during which the mentor teacher allows the pre-service teacher to learn through observation, reflection and action (27% of pre-service teachers and 25% of mentor teachers. In Table 6, the mentor teachers (n=65) and pre-service teachers (n=142) selected the characteristics they deemed a mentor teacher should have. Their first choice was that the mentor teachers should be subject specialists.

Table 6: Favoured characteristics of mentor teachers

Characteristics of teachers selected to mentor	Pre-service teachers (n=142)	Mentor teachers (n=65)
Subject specialist	29%	28%
In the profession for ten years or more	11%	17%
Reflects on teaching practice	15%	12%
Trained in mentoring approaches	12%	11%
Improving professionally	13%	10%
Reflects on mentoring practice	10%	10%
Any teacher in school	2%	6%
In the profession for less than ten years	5%	3%
Postgraduate qualification	2%	3%
Part of school management	4%	1%

The mentor teachers (17%) indicated that they preferred a mentor to have been in the profession for ten years or more (Table 6). The pre-service teachers indicated a preference for mentor teachers who reflected on their teaching practice (15%), developed professionally (13%) and were trained in mentoring approaches (12%).

As can be seen in Graph 5 below, the pre-service teachers and mentor teachers regarded taking responsibility for own learning (pre-service teachers 30% and mentor teachers 31%) as the principal role pre-service teachers need to fulfil during mentoring.



Graph 5: Role of the pre-service teacher during mentoring

From Graph 5 it is also clear as the respondents regarded that pre-service teachers should reflect on their teaching practice (pre-service teachers 31% and mentor teachers 26%). There is a contrast between the baseline data and current research on the roles of mentor teachers and pre-service teachers (Ambrosetti *et al.*, 2014), as shown in Figure 4, Chapter 2. These authors do not mention the importance of mentor teachers and final-year education students to take responsibility for their professional learning.

The pre-service teachers and mentor teachers had different perceptions of the role of a mentor teacher, as can be seen in Table 7 below. As highlighted in green, the pre-service teachers expect their mentor teachers to observe, reflect and take action (20%). However, as indicated in red, only 8% of the mentor teachers regarded these steps as essential and rather wanted to act as role models for the pre-service teachers. These opposing expectations could be the reason for 26% of the pre-service teachers not seeing their mentor teachers as competent to mentor (Graph 3).

Table 7: Roles of mentor teachers

Roles of mentor teachers	Pre-service teachers n=142	Mentor teachers n=65
A facilitator who encourages the pre-service teacher to learn through observation, reflection and action	20%	8%
Role model	17%	26%
Encourager during mentoring	15%	21%
Coach or leader	14%	12%
Expert in field	11%	12%
Assessors of the practice of pre-service teachers	11%	9%
Protector	6%	5%
A reflector of mentoring practice	4%	6%
Friend	2%	1%

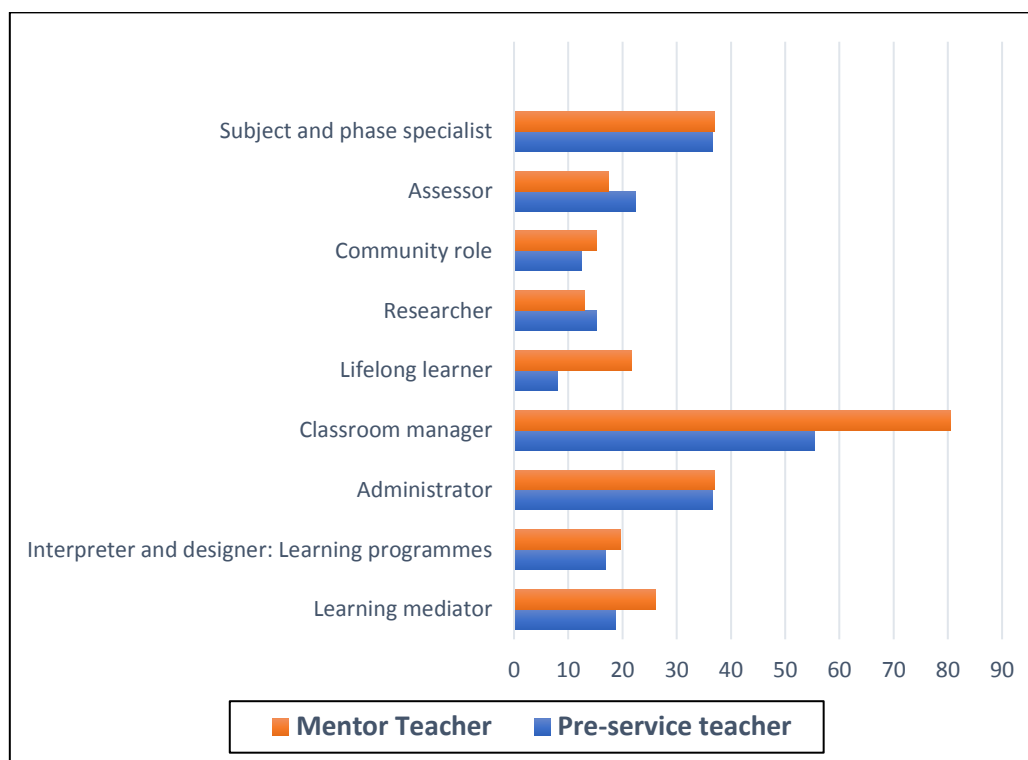
The exploratory baseline data clearly show that neither the mentor teachers nor the pre-service teachers prefer a mentor teacher to be a friend to a final-year education student (Table 7).

4.2.2.4 Preparedness of pre-service teachers for the profession

To establish an information base for the Whole Brain® Participatory Action Research study, I asked three qualitative exploratory questions in the two online baseline surveys. The mentor teachers and pre-service teachers indicated the extent to which, in their opinion, the pre-service teachers were prepared for the profession: Three variables were explored, namely educator roles, teaching and learning, and teacher professionalism.

In the two surveys, the mentor teachers and pre-service teachers reflected on the educator roles in which they thought pre-service teachers to need more mentoring before entering the profession. I considered the educator roles in the “Norms and standards for educators” document (Department of Basic Education, 2000) while

formulating the questions. The respondents' replies are shown in the bar chart below (Graph 6).

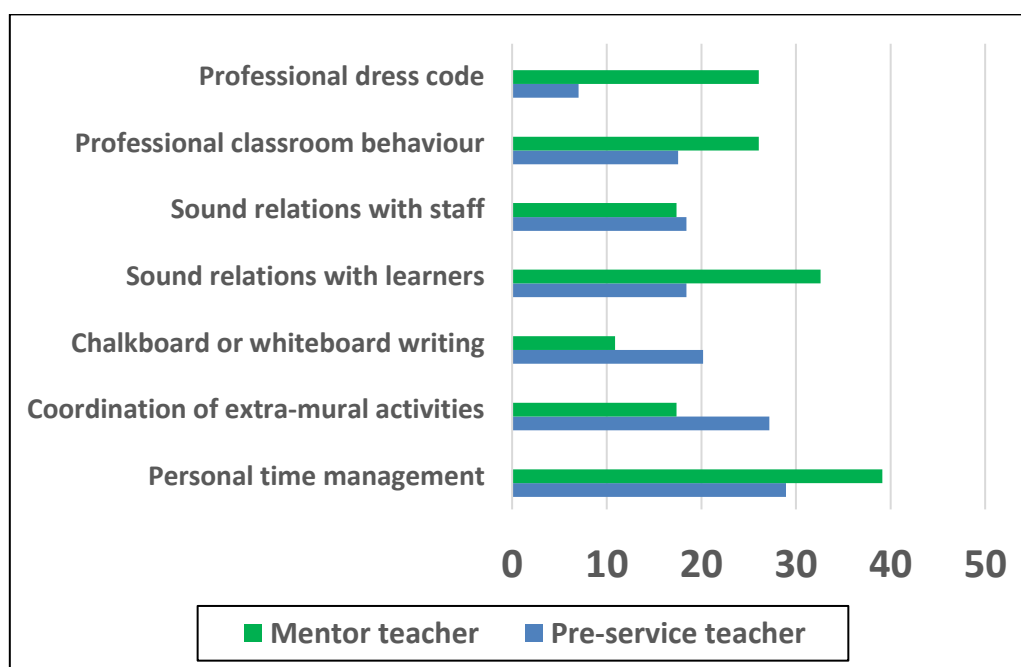


Graph 6: Educator roles in which pre-service teachers need mentoring

The mentor teachers and pre-service teachers indicated that final-year education students need to pay attention to the role of being a classroom manager (31% and 25%). The majority of the pre-service teachers who completed the survey also responded that they experienced classroom management as their greatest challenge during the Work Integrated Learning period. In Graph 6, the mentor teachers (17%) and the pre-service teachers (14%) indicated that the role of subject and phase specialist require more mentoring.

The mentor teachers further stated in Graph 7 below, that more attention should be given to the subject knowledge of pre-service teachers (11%) and their teaching strategies (8%). The pre-service teachers indicated that they needed further assistance with the questioning techniques that can be used during a lesson (9%), teaching strategies (8%) and learner engagement (8%). Furthermore, the mentor

and pre-service teachers respondents want more attention to be given to the general teacher professional aspects indicated in Graph 7.



Graph 7: Aspects of teacher professionalism that should be addressed by pre-service teachers

As shown in Graph 7, the majority of the final-year education students and mentor teachers indicated that the personal time management of pre-service teachers needs attention. The mentor teachers regarded that pre-service teachers should work on building sound relationships with learners (14%), adhere to a professional dress code (11%) and exhibit professional behaviour in the classroom (11%).

The online surveys further showed that pre-service teachers require mentoring assistance with the coordination of extra-mural activities at the school (13%). Mentoring is required with regard to chalkboard or whiteboard writing skills (9%) and the establishment of sound relationships with learners (8,64%). While the mentor teachers ranked the need for a professional dress code high, as few as 3% of the pre-service teachers regarded it as necessary. In the section that follows, I will reflect on the curricula I designed and developed, after which I will discuss the demographic information of the nine mentor teachers and nine pre-service teachers who

participated in this study before sharing the findings of the Whole Brain® Participatory Action Research study.

4.3 CURRICULUM DEVELOPMENT FOR THE WB®PAR PROCESS

As previously mentioned, I developed two short courses, one for mentor teachers and the other for pre-service teachers. In our practice, the participants and I used an asset-based approach to action research (Du Toit, 2012). During this curriculum development process, I was guided by the Wiles and Bondi (2015) framework.

In Table 8, I made a correlation between this Whole Brain® Participatory Action Research process and the abovementioned curriculum development framework. For clarification purposes, the action research process I refer to is, in essence, the action research steps the participants and I followed. The curriculum development framework shows the structure I used when designing the two programmes.

Table 8: A comparison between the curriculum development framework and the steps in action research

Curriculum development framework (Wiles & Bondi, 2015)	An asset-based approach to the steps in the action research in the short courses for mentor and pre-service teachers (Du Toit, 2012)
Evaluate the objectives of the short courses	Identify the context of the course: Socio-constructivism was used after reviewing various learning theories to support the curricula.
	State the vision for the short courses.
The analysis and design phase of the curricula	Plan to transform: During the development of the short courses, various literature sources were analysed an analysis was done of the baseline quantitative research study I conducted. I planned to develop transformative ways of thinking in the participants' and my own practice.
The implementation phase of the curricula	Act to transform: I analysed my thinking preferences to assist me in developing two Whole Brain® Short Courses.

	Observe: We implemented the curricula and the participants provided feedback on the curriculum I designed.
Evaluate the effectiveness of the curricula	Make the necessary adjustments to transform the curricula.

The material and manuals for the short courses that were developed primarily for mentor teachers and pre-service teachers were made available to the participants in hard copy (Table 8) to enable them to interpret the material for themselves. The rationale behind the specific design was to introduce different innovations into our practice and to make sure that the curricula could potentially transform practice.

The blended mentoring approach that was followed included online interaction through apps such as WhatsApp, e-mail and Google Drive. Furthermore, we had face-to-face interactions during the scholarly community of practice sessions. The mentor teachers described the scholarly communities of practices as their *“support group and having an influence on their mentoring”*. One of the mentor teachers, Carol, described the scholarly communities of practice sessions as *“great, because we talk about how we teach and how to do this [mentoring] and that is [sic] helpful, it is not chatting about anything I think the practice is fantastic”*.

4.3.1 Reflections on, and evaluation of the short courses

I reflected on the design and implementation of the curricula I had developed by making use of SWOT analysis, which meant that I looked at the strengths, weaknesses, opportunities and threats of the curricula. I also opted to do a Whole Brain® Scholarly Reflection on what the curricula entailed, the time allowed for the completion of the short courses and how the programme was organised during the three-month duration of the courses. Furthermore, I pondered on the rationale for the development of the curricula and if that was realised. I had to think about who the participants in the short courses were and whom they might impact.

In my opinion the greatest strength of the two short courses was that Whole Brain® Thinking was central. Elize, one of the mentor teachers, stated that *“the great thing was knowing your [Whole] Brain® profile”*. The completion of the HBDI® to identify

our thinking preferences was valuable to our development process, although the high cost of the HBDI®'s was a threat to the programme. Another part of the curricula that I viewed as valuable was the action research process, as we applied and continuously employed the curricula in our specific authentic places of work. Referring to Work Integrated Learning Anneli, one of the pre-service teachers, stated that she wanted "*to face the harsh reality in a safe environment*" referring to Work Integrated Learning. The SACE (South African Council for Educators) accreditation was received for the mentor teacher short course. The mentor teachers viewed this professional learning opportunity as sufficient incentive for the work done by mentor teachers. The accreditation process provided me with valuable feedback on the quality of the short course I had developed.

During the implementation of the curricula, I realised that the time I had planned for sessions insufficient as the semi-structured focus group interviews usually lasted longer than expected. I also found it challenging to find timeslots for the scholarly communities of practice sessions as the participants were busy with school activities. The pre-service teacher, Steve, surprisingly stated that "*more [scholarly] community of practice sessions would be beneficial, ja, for the sharing of ideas*". I organised an extra session with the pre-service teachers to assist them with the analysis of the feedback obtained by means of the questionnaires.

After receiving feedback from the participants and doing self-reflection, I decide to make the following changes to the curricula: In response to the mentor teacher Lindie's comment that "*every time she [Tanya] says SWOT analysis, I go like no*", I decided to include fewer SWOT analyses to be completed by the participants. Elize said that she "*was looking for a different model, but there are not really many, but it is a good model*". I opt to use alternative reflection tools to provide variations. I would also do an initial pre-evaluation of the computer and online skills of the participants in order to plan and possibly facilitate accordingly. A few of the participants found the online completion of the portfolio of evidence daunting.

The following section deals with the demographic information on the participants in the Whole Brain® Participatory Action Research study. My HBDI® profile, the composite and individual HBDI® profiles of the mentor and pre-service teachers, the

two action research cycles of the mentor and pre-service teachers, and finally my four action research cycles are discussed.

4.4 DEMOGRAPHIC INFORMATION OF PARTICIPANTS

The HBDI® was used to identify our thinking preferences and assist in understanding the self as an individual and the we as either part of a mentoring relationship, or in a scholarly community of practice.

4.4.1 Demographic information on the mentor and pre-service teachers

To protect their identities, I use pseudonyms to refer to the participants. For the same reason, the real names of the schools or institutions involved are also not used.

4.4.1.1 Demographic information on the mentor teachers

In Table 9, the demographic and background information provided by the nine participating mentor teachers are discussed. Seven of the nine completed the research study.

Table 9: Demographic information on the mentor teachers

Name	Gender	Age	Years of teaching experience	Home language	Post level and subject	Secondary school type
Susan	Female	50+	30+ years	English	Head of Department: Life Sciences	Public school for boys
Melissa	Female	48	25 years	Afrikaans	Level 1 teacher: English	Public school for girls
Lindie	Female	48	4 years	Afrikaans	Level 1 teacher:	Public mixed-

					Economics and Accounting	gender school
John	Male	54	30 years	English	Head of Department: History	Private mixed-gender school
Mzamo	Male	30+	10+ years	IsiXhosa	Level 1 teacher: Economics and Accounting	Public mixed-gender school
Carel	Male	51	21 years	Afrikaans	Head of Department: Creative Arts	Private mixed-gender school
Carol	Female	35	9 years	English	Level 1 teacher: English and French	Public school for girls
Elize	Female	50	27 years	Afrikaans	Level 1 teacher: English	Public school for boys
Chris	Male	55	21 years	Afrikaans	Deputy Principal: Tourism and Geography	Public mixed-gender school

Two of the mentor teachers, Susan and Mzamo (see Table 9) opted to end their participation before the completion of the Whole Brain® Participatory Action Research study. Susan left first, after completing the HBDI®, and Mzamo left towards the end, before submitting his portfolio of evidence.

4.4.1.2 Demographic information on the pre-service teachers

The demographic information of the nine initial pre-service teachers, two of whom ended their participation before the completion of the study, is given in Table 10.

Table 10: Demographic information on the pre-service teachers

Pre-service teacher	Gender	BEd or Postgraduate Certificate in Education	Home language	Subject: Second Work Integrated Learning	Mentor teacher
Thandi	Female	BEd	Xitsonga	Life Sciences	Susan
Thomas	Male	BEd	English	English	Melissa
Emma	Female	PGCE	Afrikaans	Accounting	Lindie
Steve	Male	BEd	English	History	John
Nandi	Female	BEd	IsiZulu	Economics	Mzamo
Dorothy	Female	BEd	English	Life Orientation	Carel
Zandile	Female	BEd		English	Carol
Anneli	Female	PGCE	Afrikaans	English	Elize
Mia	Female	BEd	Afrikaans	Tourism	Chris

The demographic information on the pre-service teachers is given in Table 10. Thandi and Nandi exited the programme at more or less the same times as their mentor teachers, Susan and Mzamo. In the following section I discuss my thinking style preferences profile.

4.4.2 My thinking preferences

My thinking preferences are indicated in Table 11, with a triple dominant HBDI® profile (Herrmann, 2018). My three most favoured thinking preference quadrants occur in the B quadrant, the C quadrant and in quadrant D.

Table 11: My HBDI® profile summary

Quadrant	A	B	C	D
Preference code	3	1	1	1
Adjective pairs:	0	7	9	8
Profile scores:	20	86	98	90

My thinking preference profile, as shown in Figure 33 (Herrmann, 2018), reveals a reasonable amount of steadiness between the structured modes of the C quadrant, combined with the relational modes of the C, and ultimately the D quadrant featuring holistic and innovative modes. My thinking style preference profile shows an absence of the logical and analytical processes of the A quadrant, reinforcing the other primaries.

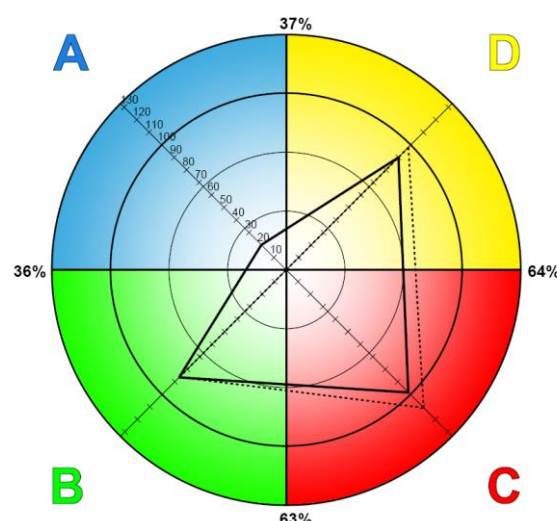


Figure 33: My HBDI® profile

I am most comfortable with communication approaches (Herrmann, 2018) that are well articulated and presented in a consistent format while empathising with the listener and using a step-by-step process when unfolding a topic.

4.4.3 Composite of the thinking preferences of the mentor and pre-service teachers

Figure 34 depicts the composite profile of the mentor and pre-service teachers. The average profile of all the participants indicates domination in all four brain quadrants. The composite thinking preference profile indicates a variety of thinking, learning and mentoring preferences. As the overseeing mentor and facilitator I had to exhibit Whole Brain® Flexibility in the designing of the curricula and during the facilitation of the scholarly communities of practice sessions. During the interviews I endeavoured to adapt to the thinking preferences of the mentor teachers and pre-service teachers.

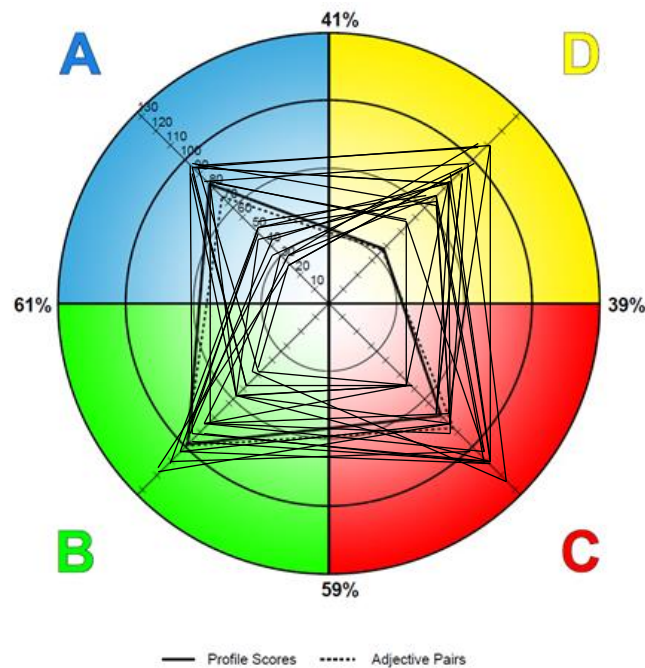


Figure 34: Composite HBDI® profile of the mentor teachers and pre-service teachers

As indicated in Figure 34, the composition of thinking preference profiles points toward a quadruple dominant, or “whole brained” profile (Herrmann, 2018). Relatively equal preferences are displayed in all the brain quadrants.

4.5 WB®PAR CONDUCTED BY MENTOR AND PRE-SERVICE TEACHERS

All the mentor and pre-service teachers, with the exception of Susan, Thandi, Mzamo and Nandi, completed the Whole Brain® Participatory Action Research process and Melissa, Lindie, John, Carel, Carol and Chris progressed through two action research cycles. In Figure 35, the dark green Whole Brain® Participatory Action Research spiral represents the mentor teachers. The pre-service teachers, Thomas, Emma, Steve, Dorothy, Zandile, Anneli and Mia also completed two action research cycles. In Figure 35, the light green spiral represents the pre-service teachers. Elize, one of the mentor teachers, proceeded with her action research spiral by enrolling for a master's degree in the same field. Her action research spiral will be explained later in this chapter.

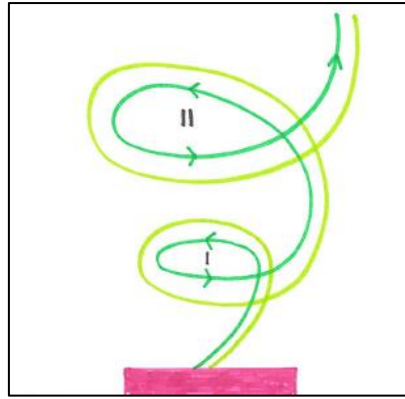


Figure 35: WB®PAR spirals of the mentor and pre-service teachers

The abovementioned mentor and pre-service teachers initially completed the HBDI® as part of their baseline data. This is illustrated by the red area at the base of the spirals in Figure 35. In Cycle I, the pre-service teachers conducted action research in their Work Integrated Learning teaching practice and the mentor teachers conducted action research in their pre-service teacher mentoring practice. In Cycle II, the mentor teachers and pre-service teachers again conducted action research in the same practice. Next, the baseline thinking preference profiles of the mentor and pre-service teachers will be discussed, as well as the WB®PAR formative data analysis findings relating to the pre-service teachers and mentor teachers.

4.5.1 Thinking preference profile of mentor teacher 1, Susan

Susan completed the HBDI®, but did not complete any action research cycles. Her profile, as seen in Table 12, is triple dominant. The three primary brain quadrants are the A quadrant, the B quadrant and the C brain quadrant. Quadrant D is the secondary brain quadrant.

Table 12: HBDI® preference summary of Susan

Quadrant	A	B	C	D
Preference code	1	2	1	1
Adjective pairs:	7	6	4	7
Profile scores:	84	65	69	84

Susan's profile is characterised as logical, rational and quantifiable in the A quadrant, with measured, traditional and organised processing in quadrant B (Herrmann, 2018). As seen in Figure 36, the profile is also joined with the relational, emotive and spiritual features of quadrant C. Distinctly secondary, but usually efficient, are the integrative and creative appearances of the D quadrant.

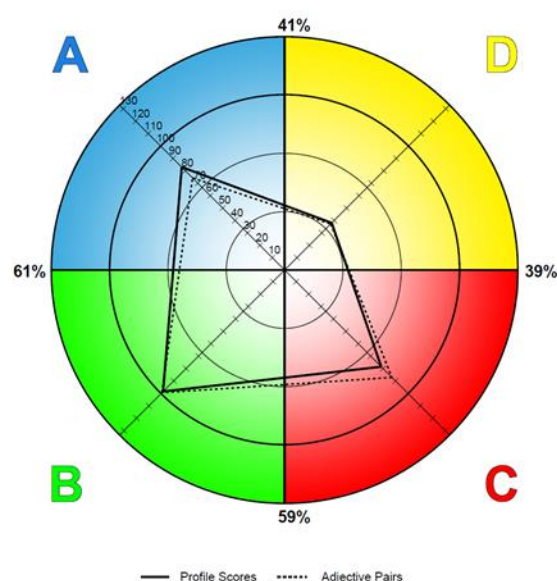


Figure 36: HBDI® profile of Susan

As seen in Figure 36, the descriptors of the D quadrant are secondary (Herrmann, 2018). Susan prefers brief, clear and precise information communicated in a logical, step-by-step manner. She prefers knowing all the facts and wants to be in control of situations and relationships.

4.5.2 Thinking preference profile of pre-service teacher 1, Thandi

Although Thandi completed the HBDI® as a baseline study, she did not complete the action research process. Her thinking preference profile has primaries in the A and B quadrants, as shown in Table 13 (Herrmann, 2018).

Table 13: HBDI® profile summary of Thandi

Quadrant	A	B	C	D
Preference code	1	1	2	2
Adjective pairs:	7	6	6	5
Profile scores:	86	86	63	51

Thandi's thinking preferences are characterised by a logical orientation in the A quadrant, as shown in Figure 37. The B quadrant preferences are in relation to planning and organising. The interpersonal modes of quadrant C and the creative aspects of quadrant D are at a secondary level.

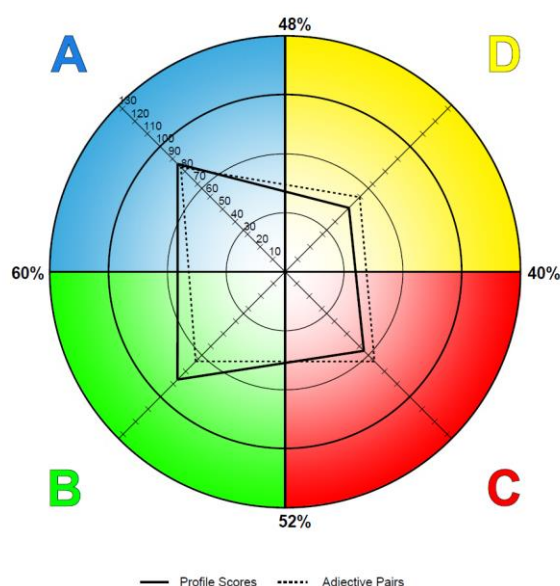


Figure 37: HBDI® profile of Thandi

Thandi prefers brief, clear and precise communication (Herrmann, 2018). She presents ideas logically, in much the same manner as her mentor teacher (Susan) and also wants to solve problems in stages.

4.5.3 Thinking preference profile of mentor teacher 2, Mzamo

Mzamo and his pre-service teacher, Nandi completed the HBDI®, but did not complete any action research cycles. Both participated in two of their four scholarly

community of practice sessions. They did not complete the two action research opportunities, which formed part of the action research Cycles I and II.

Mzamo's profile is triple dominant. In Table 14, Mzamo's preference code indicates his multi-dominant HBDI® profile. The two primary brain quadrants are quadrants C and D. The third primary is quadrant B.

Table 14: HBDI® profile summary of Mzamo

Quadrant	A	B	C	D
Preference code	2	1	1	1
Adjective pairs:	6	7	4	7
Profile scores:	54	105	80	74

Mzamo's profile, depicted in Figure 38 (Herrmann, 2018) indicates an ability to use quadrants B, C and D, his three primary quadrants. He favours the A quadrant the least. Mzamo is still typically handy in the logical aspects of the A quadrant.

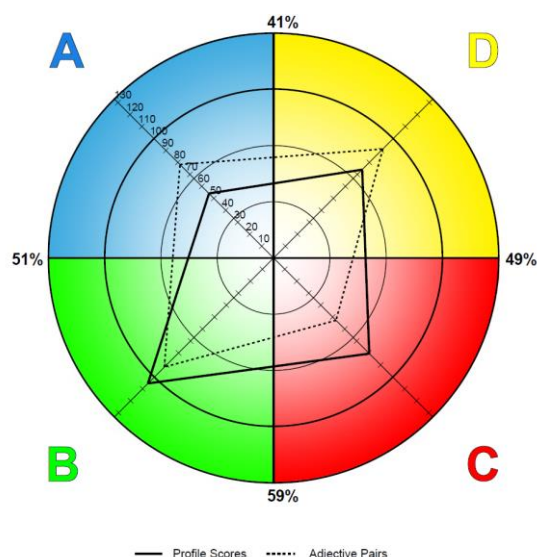


Figure 38: HBDI® profile of Mzamo

Mzamo is most comfortable with written communication and providing an overview while being sensitive to the feelings of others. He considers all the possibilities to form a plan and make something work.

4.5.4 Thinking preference profile of pre-service teacher 2, Nandi

Nandi has a triple dominant brain profile. Her two primaries are quadrants C and D. The third is in the B quadrant. Nandi's profile has the same preference code as that of her mentor, Mzamo, which is quantitatively represented in Table 15.

Table 15: HBDI® profile summary of Nandi

Quadrant	A	B	C	D
Preference code	2	1	1	1
Adjective pairs:	3	8	9	4
Profile scores:	38	87	104	72

The 2-1-1-1 preference code is categorised with a composed amount of ability in the three primary quadrants, as seen in Figure 39 (Herrmann, 2018). This includes creative and holistic preferences in quadrant D, relational preferences in quadrant C and the organised in quadrant B. Quadrant A is the least favoured, but Nandi does show a preference for the rational and analytical aspects of the quadrant. Nandi and her mentor, Mzamo, have the same preference codes.

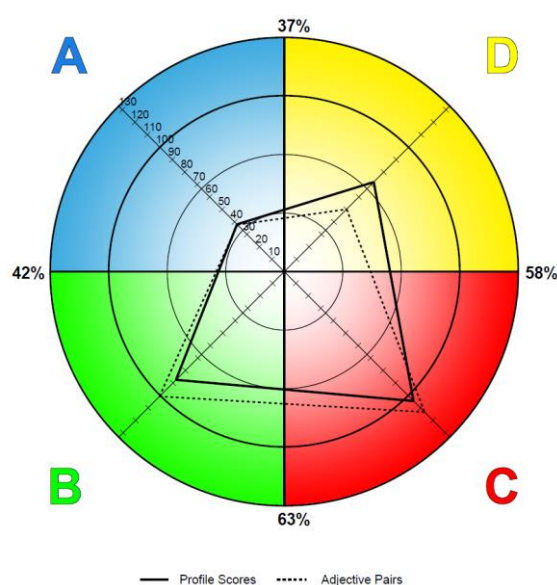


Figure 39: HBDI® profile of Nandi

Nandi's profile shows that she is comfortable with communicating in written form. She prefers providing an overview and is sensitive to other people. She likes to solve problems while brainstorming with others.

4.5.5 Mentor teacher 3, Melissa, and pre-service teacher 3, Thomas

Melissa and Thomas both completed two action research cycles. Their individual and composite thinking preferences are discussed below, as well as the action research they conducted respectively in their mentoring and teaching practice.

4.5.5.1 Thinking preference profile of mentor teacher 3, Melissa

Melissa's profile is double dominant and the two primaries are the B and C quadrants, as can be seen in Table 16.

Table 16: HBDI® preference summary of Melissa

Quadrant	A	B	C	D
Preference code	2	1	2	2
Adjective pairs:	3	11	7	3
Profile scores:	50	113	93	57

Melissa's profile is characterised, as shown in Figure 40 (Herrmann, 2018), by preferences in conventional thinking with a desire to organise, as well as accuracy from the B quadrant. The primary quadrant C shows equal emotional and interpersonal preferences. The two primaries present opposing qualities of structure, and the emotional qualities can cause internal struggles. The secondary preferences are in the A and D quadrants. A logical and analytical secondary preference can be seen in the A quadrant together with creative thinking in the quadrant D.

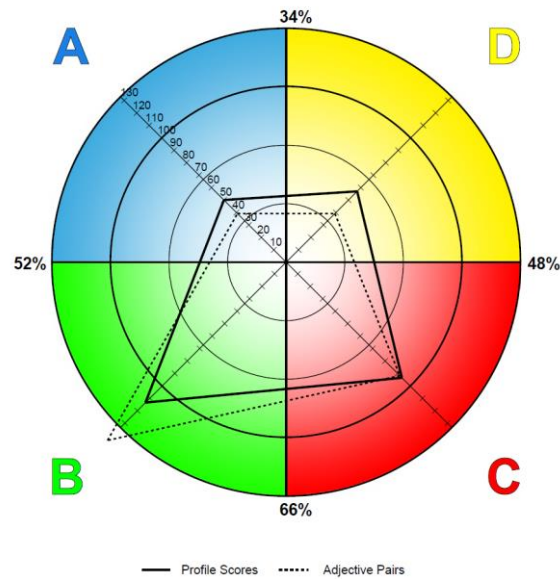


Figure 40: HBID[®] profile of Melissa

Melissa is comfortable with a gradual unfolding of a topic as an approach to communication. She also has the ability to understand how others react in situations due to her preference for quadrant C.

4.5.5.2 Thinking preference profile of pre-service teacher 3, Thomas

Thomas' profile, as represented in Table 17 (Herrmann, 2018), is double dominant with two primaries in quadrants A and D. According to the thinking preference summary, he has strong preferences for logical thinking and a contrasting preference for the integrative and synthesising aspects of the D quadrant.

Table 17: HBID[®] preference summary of Thomas

Quadrant	A	B	C	D
Preference code	1	2	2	1
Adjective pairs:	6	5	7	6
Profile scores:	89	63	62	77

The thinking preference profile of Thomas in Figure 41 (Herrmann, 2018) shows a secondary preference for the interpersonal processing of quadrant C. He also prefers the controlled and conservative modes of the B quadrant.

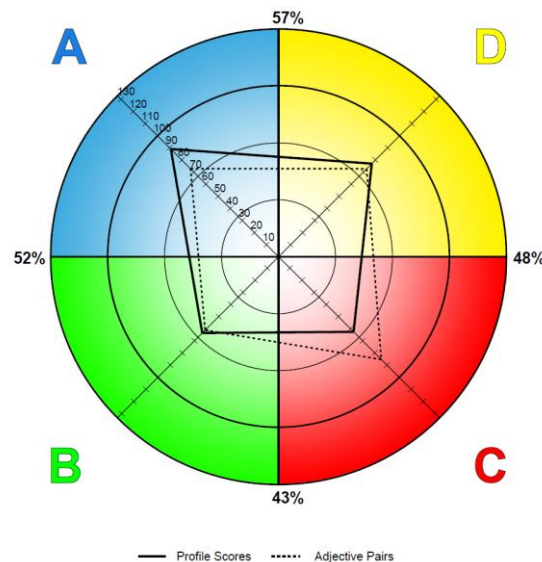


Figure 41: HBDI® profile of Thomas

According to Thomas's profile in Figure 41, he prefers accurate, specific communication. He communicates in a strategic manner and therefore wants to have all the information to find the possibilities.

4.5.5.3 Composite thinking preference profile of Melissa and Thomas

In Figure 42, the two HBDI® profiles of Melissa and Thomas were merged into a composite. The primary quadrants in the HBDI® preference profile of Thomas were in quadrants A and D. Melissa and Thomas therefore differed with regard to how they communicated.

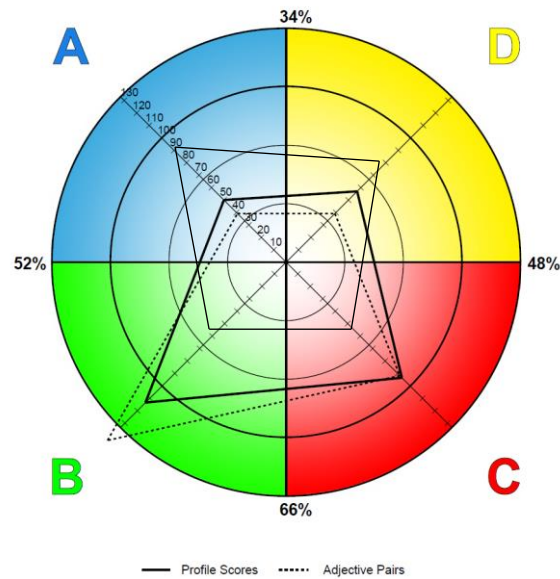


Figure 42: Composite thinking preference profile of Melissa and Thomas

Melissa and Thomas both have double dominant primaries. Melissa's primaries can be seen in Figure 42 in quadrants B and C. Melissa experienced that the thinking preferences of Thomas and herself were opposites. Understanding their own and the other person's thinking preferences helped them to accommodate one another in the mentoring relationship. However, Melissa and Thomas also decided "*that it is going to work*" and each succeeded in recognising the difficulties the other experienced in their practice.

4.5.5.4 Melissa's action research Cycle I

Melissa conducted action research during two of her mentoring opportunities with Thomas in phase 2 (pre-mentoring) of the short course. She also had a third mentoring opportunity with Thomas during phase 3 (mentoring).

Melissa initiated the transformation of her mentoring practice. At first, she *planned to transform* as she encouraged partnership and cooperation with Thomas. They had high expectations for their mentoring relationship and Melissa planned to transform her mentoring practice by introducing innovative types of mentoring to address Thomas's and her own self-regulated professionalism. She planned to make audio

recordings of the first mentoring opportunity with Thomas and also took photographs (see Photo-evidence 1).



Photo-evidence 1: Melissa and Thomas during the first mentoring opportunity

In the above photograph Melissa and Thomas look comfortable with one another. They seem to be enjoying the conversation, which I interpret as a sign of trust in the relationship.

During the second step, *act to transform*, Melissa implemented peer mentoring, blended mentoring and Whole Brain® Mentoring. She used the mentoring opportunity worksheet that I had developed as part of the short course. Melissa and Thomas discussed their mentoring preferences, their expectations and what aspects of mentoring they struggled with. While completing the observation sheets in the short-course manual, Melissa listened to the audio recording she had made of the mentoring opportunity and also studied the photo-evidence.

Thomas and the other pre-service teachers completed the online feedback questionnaire on how they had experienced their relationship with their mentor teacher. The reason for asking the pre-service teachers to complete the online feedback questionnaire as a collective was to protect the anonymity of the final-year education students. Their responses will be discussed in section 4.5.12

During the third step, *observe*, Melissa listened to the audio recording and used the self-reflective feedback form. She observed the mentoring opportunity to see how

she had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism. She also observed her implementation of peer mentoring, blended mentoring and Whole Brain® Mentoring.

In the fourth step, during *reflection*, she reflected on the observation sheets which she had completed together with the self-evaluation form. She also pondered on the quantitative data provided by the pre-service teachers in the online feedback questionnaire, discussed in section 4.5.10. Furthermore, she used the qualitative data from her evaluations to reflect on the action research mentoring opportunity and came to the conclusion that the mentoring model she mostly employed during the first mentoring opportunity was that of friendship and nurturing, and the most used type of mentoring was peer mentoring.

The pre-service teachers were of the opinion that more attention should be given to blended mentoring, which was not being adequately employed. In the feedback following the first mentoring opportunity, four of the eight pre-service teachers indicated that quadrant D was the quadrant mostly addressed. Melissa's self-reflection corresponded with the pre-service teachers' feedback as she also indicated a need to activate quadrant B more in her practice and stated that during the second mentoring opportunity she would ask Thomas four specific questions relating to his vision, projects, goals and tasks as a pre-service teacher. Melissa therefore became aware of factors that influenced her actions and started taking responsibility for transforming her mentoring practice.

In the final step of Melissa's first action research cycle, namely *evaluation*, she re-planned so as to make the necessary adjustments in her practice. She considered her own and Thomas' thinking preferences with a view to activating quadrant B more often during the second mentoring opportunity. She also opted to use self-regulation more frequently while introducing blended mentoring.

4.5.5.5 Melissa's action research Cycle II

After completing action research Cycle I, Melissa progressed to the second action research cycle in her third mentoring opportunity with Thomas. Following the evaluation phase in the first action research cycle, she started re-planning with a

view to transforming her mentoring practice with the focus on cultivating Thomas's self-regulated professionalism by using a Whole Brain® Approach.

During the second step, *act to transform*, she implemented the following types of mentoring: Peer mentoring, blended mentoring and Whole Brain® Mentoring. Melissa and Thomas discussed and reflected on teacher roles; teaching and learning, lesson presentations; teacher professionalism; and the mentoring practice of the mentor teacher. Melissa also reflected on how both of them took responsibility for cultivating their professionalism. She made audio recordings of the session and also took photographs. After the mentoring opportunity, Thomas completed an online feedback questionnaire.

During the third step, *observe*, Melissa listened to the audio recording while using the enclosed self-evaluation feedback form for self-reflection. She paid special attention to how she had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism. Melissa also observed her implementation of peer mentoring, blended mentoring and Whole Brain® Mentoring and specified the brain quadrants she thought she had activated during her second action research mentoring opportunity.

In the fourth step, *reflection*, Melissa reflected on the outcome of the quantitative data provided by the pre-service teacher online feedback questionnaire, which will be dealt with in section 4.5.12. She used the qualitative data from her evaluations to reflect on the mentoring opportunity and concluded that the mentoring model, friendship had been employed most often during the second mentoring opportunity. The type of mentoring was therefore predominantly peer mentoring. Melissa also opted to use self-regulation to a greater extent as she gave Thomas the responsibility to complete administrative work on his own and take responsibility for capturing assessment marks at school.

Melissa reflected on the online feedback questionnaire data received from the pre-service teachers after the second mentoring opportunity. The pre-service teachers indicated that quadrants B and C were the quadrants that had been mostly activated. During Cycle II, Melissa placed more emphasis on self-regulation in her practice and there was an improvement in the pre-service teachers' feedback on how well they consider themselves to be prepared for the profession.

In the *evaluation* step of the second action research cycle, Melissa evaluated the importance of the never-ending action research process. She stated that when she is asked to mentor another pre-service teacher in a Work Integrated Learning period in the future, she will re-plan and progress into the next action research cycle. By the end of this Work Integrated Learning period Melissa was content with her and Thomas's mentoring relationship and they awarded themselves 80% as a peer assessment mark when they reviewed how they took responsibility for nurturing their professionalism, how blended mentoring was introduced into the mentoring relationship, the extent to which they had considered one another's thinking preferences, how peer mentoring was used, and the manner in which action research had been conducted in their practice.

4.5.5.6 Thomas's action research Cycle I

During the Work Integrated Learning period, Thomas conducted action research in his English teaching practice. He did action research twice during the second "process" phase of the pre-service teacher self-regulated professionalism process as part of the pre-service teacher short course I had developed.

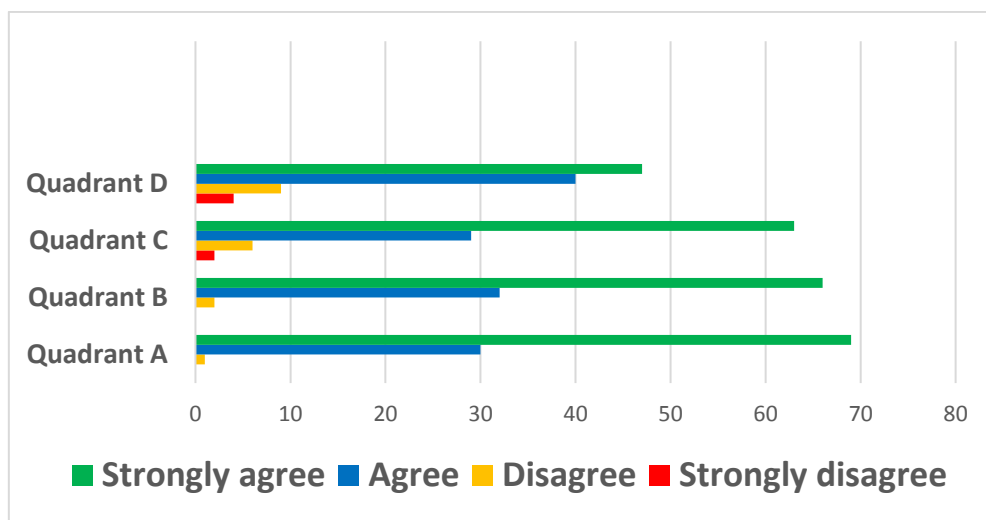
In the initial *planning to transform* step, Thomas started by developing diverse and innovative ways of thinking. He gave opt-out forms to the parents of the learners in his class to obtain consent for their participation in the study. He proceeded to plan the transformation of his practice and started preparing for the first lesson. During the *act to transform* step, Thomas implemented Whole Brain® Learning into his practice, using the Comprehensive Whole Brain® Model (De Boer *et al.*, 2015) while also adhering to Bloom's Revised Taxonomy (Krathwohl, 2002) and reflecting on the levels he incorporated during the lesson.

In the third step of the action research process, *observe*, he made an audio recording and took photographs. Afterwards, he handed out feedback questionnaires to the learners. In Photo-evidence 2, Thomas is standing in front of the class while presenting the lesson to the Grade 8 English class. The learners are seated in rows in the classroom and I interpret that they are not engaged in the content of the work, nor are they learning in pairs or groups.



Photo-evidence 2: Thomas teaching during his first action research cycle

In step 4 of the action research process, Thomas *reflected* on how he had implemented Whole Brain® Learning into his teaching practice. He considered the observation sheets he had completed while listening to the audio recording and the feedback received from the learners. The following is the quantitative feedback Thomas received from the 25 learners about how he had implemented the four brain quadrants in his lesson to achieve Whole Brain® Learning (Graph 8):



Graph 8: Learner feedback on the brain quadrants that were activated during Thomas's lesson 1

All the respondents were female and the majority (88%) were Afrikaans speakers. Most (77%) of the learners indicated that they had an excellent overall experience during the lesson. In the first action research cycle, as seen in Graph 8, quadrants C

and D needed to be activated more. Some learners (13%) were of the opinion that quadrant D needed the most attention. Thomas used the observation sheets and audio recording to reflect on the lesson as part of his qualitative data: In his short course manual he depicted in Figure 43 how he thought he had addressed the four brain quadrants.

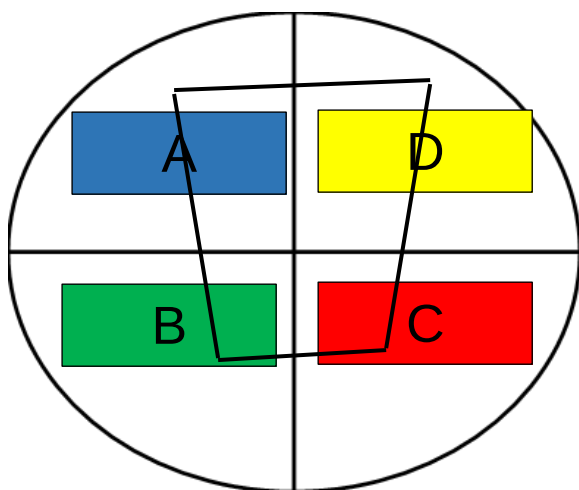
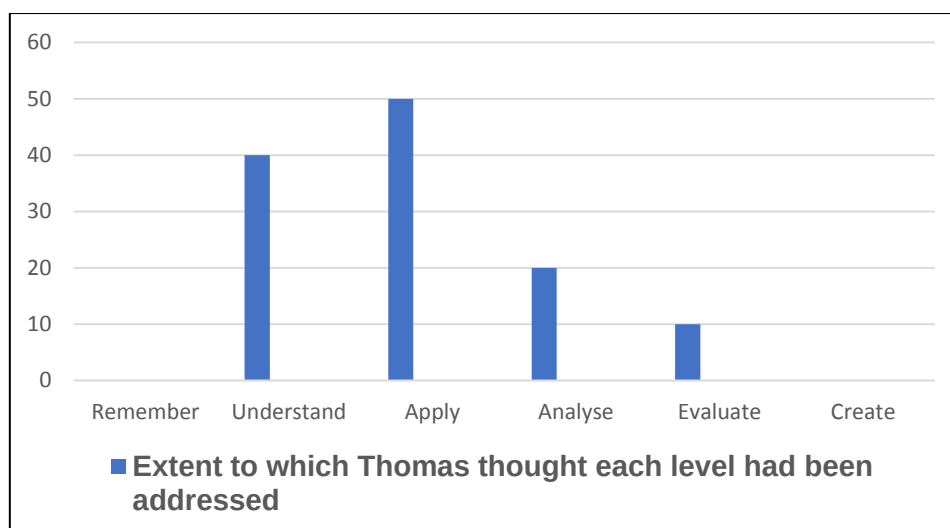


Figure 43: Thomas's depiction of how he thought he had activated Whole Brain[®] Learning during lesson 1

The depiction of the quadrants Thomas made in Figure 43 differed slightly from the learners' reported experience in that he felt that quadrant C needed the most attention. His qualitative observation regarding his activation of all four quadrants of the brain was in line with the feedback received from the learners on quadrants A and B. However, Thomas had to contemplate on how he thought he had activated quadrant D. His observation and reflection on quadrant C corresponded with that of the learners, and he specified that he wanted to interact more with the learners.

Thomas furthermore reflected on the extent to which he addressed the revised levels of Bloom's Taxonomy into his teaching practice, as seen in Graph 9.



Graph 9: Thomas's reflection on how he had incorporated Bloom's Taxonomy in lesson 1

Thomas's reflection on how he had addressed the revised levels of Bloom's Taxonomy during his first lesson shows that he thought that he had mostly addressed Level 3 and needed to pay attention to Level 6. He suggested asking the learners to make their own sentences during a grammar lesson, rather than giving them sentences to work on. In the last step of the action research process, *evaluate*, Thomas re-planned and moved on to the second cycle. Considering the qualitative and quantitative data on which he had reflected in the first lesson, he decided to pay more attention to activating quadrants C and D. He also wanted to address Level 6 of Bloom's Taxonomy in Cycle II, as discussed below.

4.5.5.7 Thomas's action Cycle II

Thomas conducted the second lesson in his English teaching practice. In the initial step of *planning to transform*, he re-planned as he wanted to activate different ways of thinking in the second cycle. He again handed out forms to the learners' parents to obtain permission for them to participate in the study.

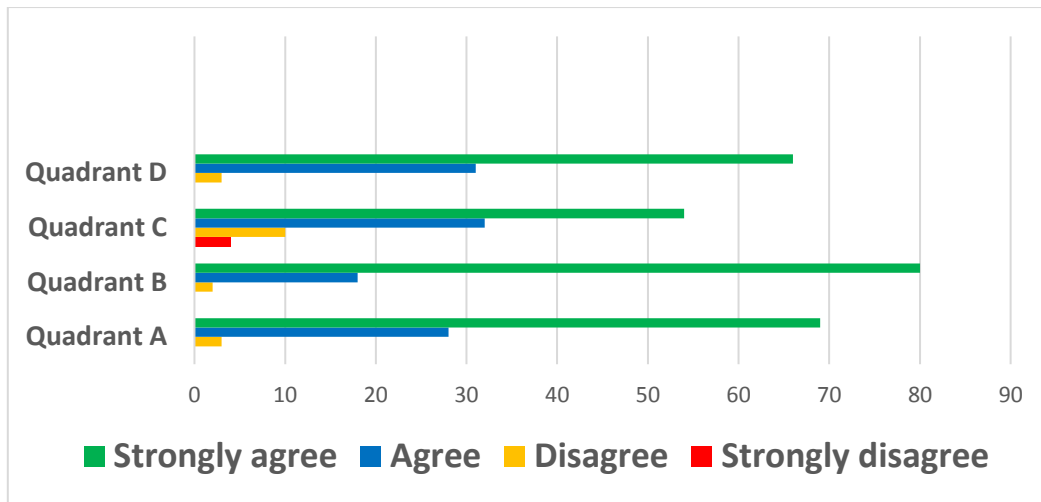
In the second step, *act to transform*, he implemented principles of Whole Brain® Learning by evaluating lesson 1 and re-planning the lesson while also adhering to Bloom's Revised Taxonomy (Krathwohl, 2002).

In the third step of the action research process, *observe*, he made an audio recording and took photographs. Afterwards he handed out feedback questionnaires to the learners. In Photo-evidence 3, Thomas is seen standing in the front of the class while presenting a Grade 8 English lesson.



Photo-evidence 3: Thomas teaching during his second action research cycle

In Photo-evidence 3, Thomas is standing with his hands in his pockets, looking at the screen. As during the first lesson, there was once again not much interaction between him and the learners. In the fourth step of the action research process he *reflected* on the observation sheets he had completed while listening to the audio recordings he had made in lesson 2. The feedback from the learners was also taken into account as he pondered on his implementation of Whole Brain® Learning in his teaching practice. Graph 10 below depicts the quantitative feedback Thomas received from the 25 learners about how he had implemented the four brain quadrants to achieve Whole Brain® Learning.



Graph 10: Learner feedback on the brain quadrants that were activated during Thomas's lesson 2

All the respondents were female and the majority (80%) were Afrikaans speakers. Most of the learners (78%) indicated that they had an outstanding overall experience during the lesson. In his first action research cycle, the feedback from the learners (Graph 8) showed that attention had to be given to addressing quadrants C and D. The feedback from the second action research cycle showed an improvement in how he had activated quadrant D as only 3% of the learners were not satisfied. However, some of the learners (13%) still felt that quadrant C had not been adequately addressed.

Thomas used the observation sheets and the audio recording to reflect on the learning opportunity as part of his qualitative data. His depiction of how he deemed he had addressed the four brain quadrants during the second action research cycle was very similar to that of the learners, as shown in Figure 44:

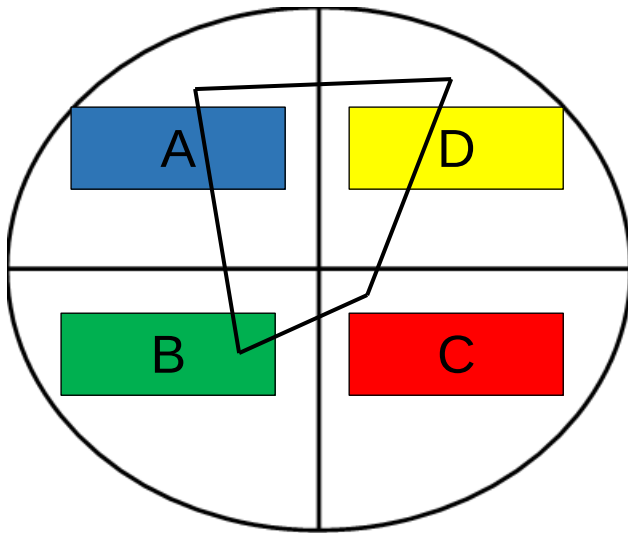
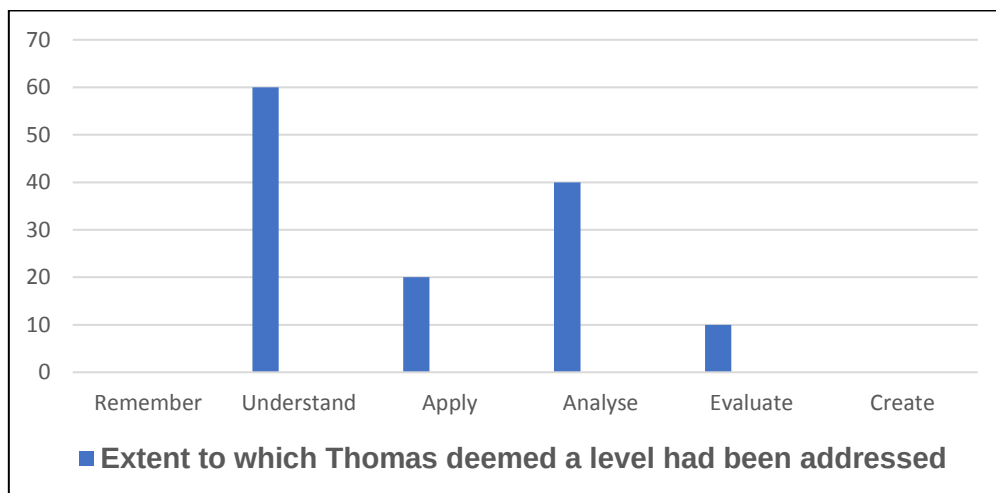


Figure 44: Thomas's depiction of how he deemed he had activated Whole Brain® Learning during lesson 2

During the action research process in Cycle 2, Thomas reflected on the extent to which he had addressed the revised levels of Bloom's Taxonomy in his teaching practice. The results can be seen in Graph 11.



Graph 11: Thomas's reflection on how he had incorporated Bloom's Taxonomy in lesson 2

During his initial planning for his second lesson, Thomas wanted to address Level 6, *create*, but was unfortunately unable to incorporate the highest level of the

taxonomy. As in the first action research lesson, he addressed Level 2, *understanding* well.

In the last step of the second action research cycle, *evaluate*, Thomas re-planned to continue with the action research process during the remainder of the Work Integrated Learning period and later, after qualifying as a teacher. The action research process ended in the short course, but he understood the ongoing nature of action research.

4.5.6 Mentor teacher 4, Lindie, and pre-service teacher 4, Emma

Lindie and Emma both completed two action research cycles. The process outcome will be discussed in the following section. It is important to note that, due to a misunderstanding between the school and the Higher Education Institution regarding the subjects they taught, Lindie and Emma were not in the same classroom for the Work Integrated Learning period. During this time Emma had two mentor teachers, one who worked with her in the classroom and Lindie, with whom she had completed the short course.

4.5.6.1 Thinking preference profile of mentor teacher 4, Lindie

Lindie's profile is double dominant, with the B and the C quadrants as primaries, as shown in Table 18.

Table 18: HBDI® preference summary of Lindie

Quadrant	A	B	C	D
Preference code	2	1	1	2
Adjective pairs:	3	9	9	3
Profile scores:	56	86	111	60

The thinking preference profile of Lindie is characterised by a preference for conservative thinking and a desire for structure, indicated by the B quadrant. She might be concerned about particulars (Herrmann, 2018). The primary in the C

quadrant is equally dominant, with interpersonal preferences. The opposing qualities of control, and the emotional could cause internal tension. The secondary preferences are in the A and D quadrants, as seen in Figure 45.

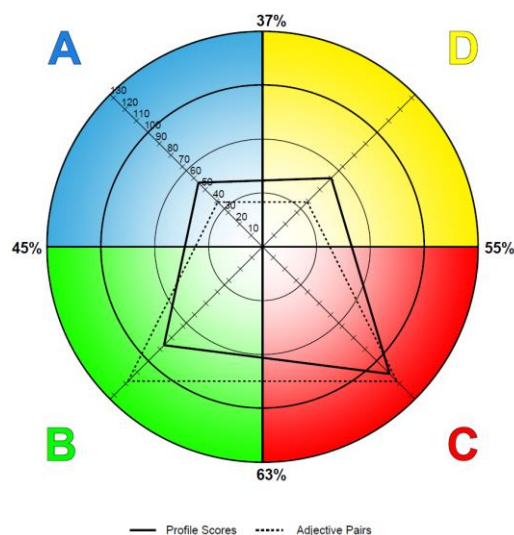


Figure 45: HBDI® profile of Lindie

Lindie comfortably communicates in a step-by-step manner, asking who, what, when, where and how.

4.5.6.2 Thinking preference profile of pre-service teacher 4,: Emma

Emma has a triple dominant profile, as represented in Table 19.

Table 19: HBDI® preference summary of Emma

Quadrant	A	B	C	D
Preference code	2	1	1	1
Adjective pairs:	4	8	6	6
Profile scores:	62	86	72	83

As shown in Figure 46, Emma's profile has two primaries in the C and D quadrants, and the third primary in the B quadrant. The 2-1-1-1 preference code profile is multi-dominant and somewhat balanced between the three primary quadrants. Emma's

preferred modes are the creative in quadrant D, the interpersonal in the C quadrant and that of organising in quadrant B. The A quadrant is least preferred, but Emma is characteristically efficient in her use of logical aspects.

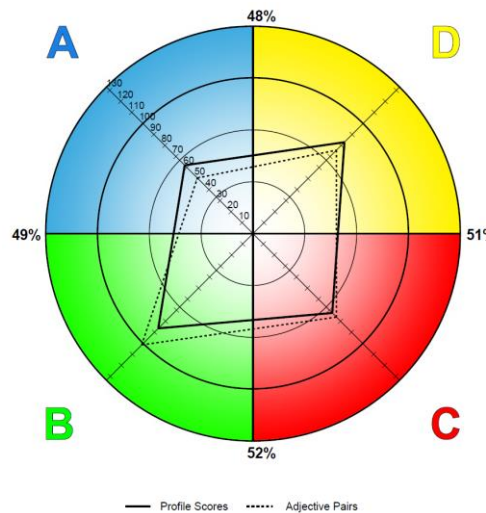


Figure 46: HBDI® profile of Emma

Emma prefers written communication, involving others while providing an overview. She also likes working as part of a team.

4.5.6.3 Composite thinking preference profile of Lindie and Emma

In Figure 47, the HBDI® profiles of Lindie en Emma are combined into a composite thinking preference profile.

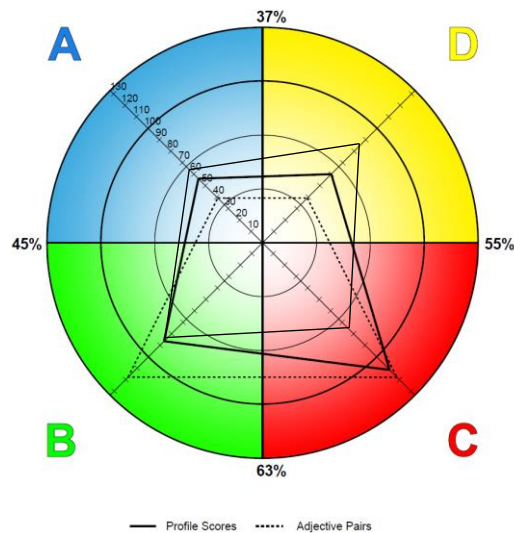


Figure 47: Composite thinking preference profile of Lindie and Emma

Due to her preference for the B quadrant, as shown in Figure 47, Lindie prefers to communicate in a step-by-step manner. This resonates with Emma as they both prefer structure and are team-oriented. Emma furthermore prefers creative, holistic thinking due to her preference for quadrant D.

4.5.6.4 Lindie's action research Cycle I

During two of the mentoring opportunities Lindie conducted action research to some extent. Since Lindie and Emma were not in the same classroom, they could not communicate regularly. They either could not make use of the mentoring opportunities within the requested time frames or could not complete them at all.

Lindie tried to progress through the action research process in her mentoring practice. Due to the circumstance, she chose to reflect on her mentoring experience when she had acted as a mentor to a pre-service teacher during a previous Work Integrated Learning period. Lindie *planned to transform* her practice, but she did not complete the steps *act to transform* and *observe* in her practice. No audio recording was made. Lindie *reflected* on her mentoring practice to some extent, but not on her mentoring relationship with Emma. She did complete the step that required her to *evaluate* her practice, but did not really make the necessary adjustments. In the following paragraphs, I will discuss the action research steps Lindie had completed to some extent.

Lindie initiated the transformation of her mentoring practice by attending the scholarly communities of practice sessions with the other mentor teachers. She worked through the short course material and manual to complete her portfolio of evidence. She was, however, not in a functioning mentoring relationship with Emma. Lindie did opt to *plan to transform* by introducing innovative types of mentoring to address Emma's self-regulated professionalism, but did not progress to implementing it fully. Lindie did not make an audio recording of the first mentoring opportunity. They did take a photograph during the second scholarly community of practice session, as shown in Photo-evidence 4.



Photo-evidence 4: Emma and Lindie during a scholarly community of practice session

As shown in Photo-evidence 4, Lindie and Emma are not sitting close to, or facing one another. They do not make eye contact, which gives the impression that no bond has been formed and they may not be comfortable in this mentoring relationship. Emma and the other pre-service teachers completed the online feedback questionnaire on their mentoring experiences in their mentoring relationship with their mentor teachers on the Qualtrics program. The results are discussed in section 4.5.12. The pre-service teachers stated that blended mentoring needed attention. Lindie deemed that she needed to pay attention to how quadrants B and C were activated. The pre-service teachers indicated that quadrant D should be activated more.

Since Lindie did not have a mentoring opportunity with Emma, she did not use the pre-service teachers' feedback or the observation sheets to consider her practice, and no audio recording was made. The third and second steps were therefore not implemented as part of Cycle I. In step 4, during *reflection*, she did not listen to an audio recording and did not refer to the mentor teacher observation forms. Instead, Lindie reflected on her experience when she mentored a pre-service teacher during a previous Work Integrated Learning period. The mentoring model Lindie regarded she mostly employed in Cycle I was a combination of friendship and nurturing. The type of mentoring was peer mentoring, with some blended mentoring in the form of WhatsApp and e-mail messages.

In the *evaluation* step of her first action research opportunity, Lindie reflected on her mentoring practice, but did not plan to make any adjustments as she had not gone through all the steps in the first cycle. She attended the scholarly community of practice sessions with the other mentor teachers and, during the focus group discussion, she based her evaluation of her practice on the experiences of the other mentor teachers.

4.5.6.5 Lindie's action research Cycle II

As stated in Cycle I, Lindie tried to progress through the action research process in her mentoring practice. Since Emma had not been placed in her classroom, Lindie reflected on the mentoring she had previously done with another pre-service teacher. Lindie completed only the first step of the action research process, *planning to transform*, during Cycle II. Lindie initiated the transformation of her mentoring practice by attending the scholarly communities of practice sessions with the other mentor teachers. She also worked through the short course material and manual to complete her portfolio of evidence. She opted to *plan to transform* by introducing innovative types of mentoring, but did not make an audio recording or take any photographs of the mentoring opportunity.

In the *evaluation* step of her second action research opportunity, Lindie reflected on her mentoring practice. I am not convinced that she actively addressed Emma's self-regulated professionalism as they did not have any mentoring opportunities. Even though Lindie did not go through all the steps in action research Cycle II, she

evaluated her practice during the focus group discussions and in the portfolio of evidence she handed in for assessment. Lindie strove to nurture her own professionalism. Lindie and Emma awarded themselves 55% for their mentoring relationship during the short course. They indicated that since they had not been placed in the same classroom, they had completed the short course mainly on their own. They were of the opinion that they had taken responsibility for the cultivation of their self-regulated professionalism. Lindie and Emma admitted that there had been no mutual influence with regard to their professionalism. Lindie gave herself 0% for how she had conducted action research in her mentoring practice.

4.5.6.6 Emma's action research Cycle I

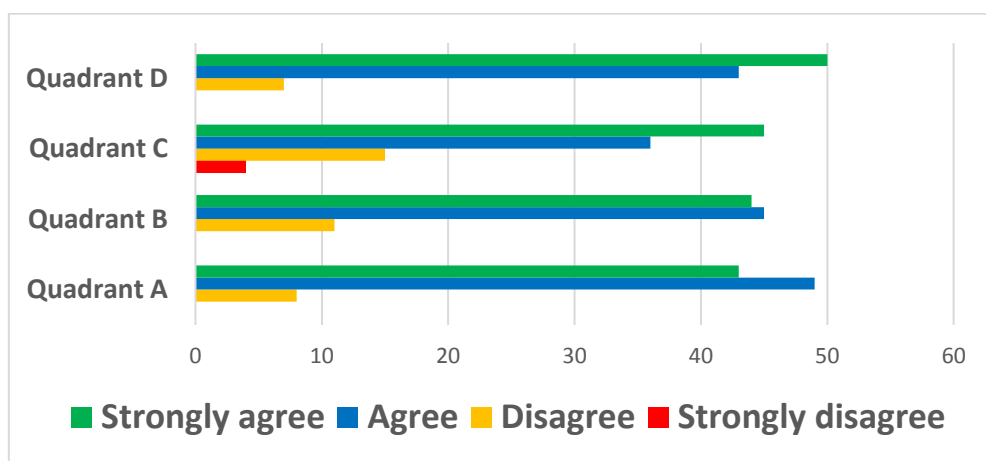
Emma conducted action research twice during her Economics Management and Science teaching practice during the ten weeks of Work Integrated Learning. This was part of the “process” phase of the short course in self-regulated professionalism for pre-service teachers. In the initial *planning to transform* step, Emma developed innovative ways of thinking as she implemented Whole Brain® Learning. She distributed opt-out forms to the parents of the learners in her class to obtain consent for their participation in the study. She planned to transform her practice and prepared for her first action research lesson.

During the *act to transform* step, Emma implemented the innovation Whole Brain® Learning into her practice while also adhering to Bloom's Revised Taxonomy (Krathwohl, 2002). In the third step of the action research process, *observe*, Emma made an audio recording and took photographs. She also handed out a feedback questionnaire for each learner to complete. In Photo-evidence 5, Emma is presenting a Grade 8 Economic Management and Business Sciences lesson.



Photo-evidence 5: Emma during action research Cycle I

In Photo-evidence 5, it is apparent that the learners are not engaged in the learning process. They are seated in rows and Emma is seen standing in the front of the class. The pre-service teacher and the learners are not collaborating during the learning process. Emma made an audio recording and used the five observation sheets in the manual and the feedback from the learners to conduct the fourth step of the action research process, namely *reflect*. She reflected on her implementation of Whole Brain® Learning in her teaching practice. See Graph 12 below for the quantitative feedback received from the 11 learners in the class with regard to how she had implemented the principles of Whole Brain® Learning.



Graph 12: Learner feedback on the brain quadrants that were activated during Emma's lesson 1

The respondents were predominantly female (82%) and they all spoke Afrikaans. Nearly all of the learners (71%) indicated that they had had an outstanding overall experience during the lesson. In Emma's first action research cycle, the feedback from the learners (Graph 12) showed that attention needed to be given to addressing quadrant C, with 19% disagreeing or strongly disagreeing that this quadrant was adequately activated. Emma listened to the audio recording and then used the observation sheets for her qualitative data. She reflected on how she had addressed the four brain quadrants in Figure 48, which differed from the learners' experience as illustrated in Graph 12.

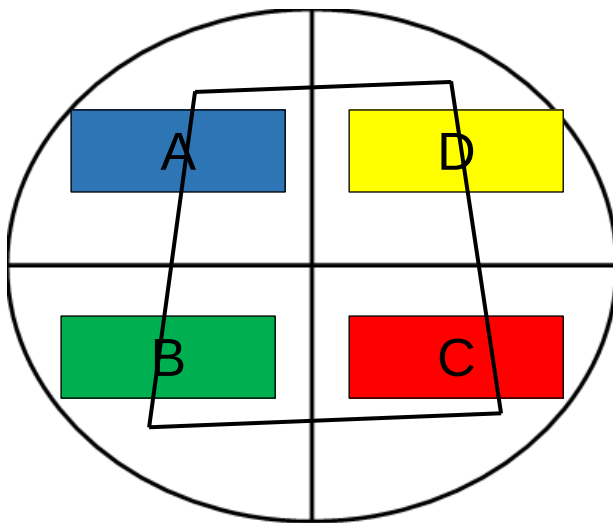
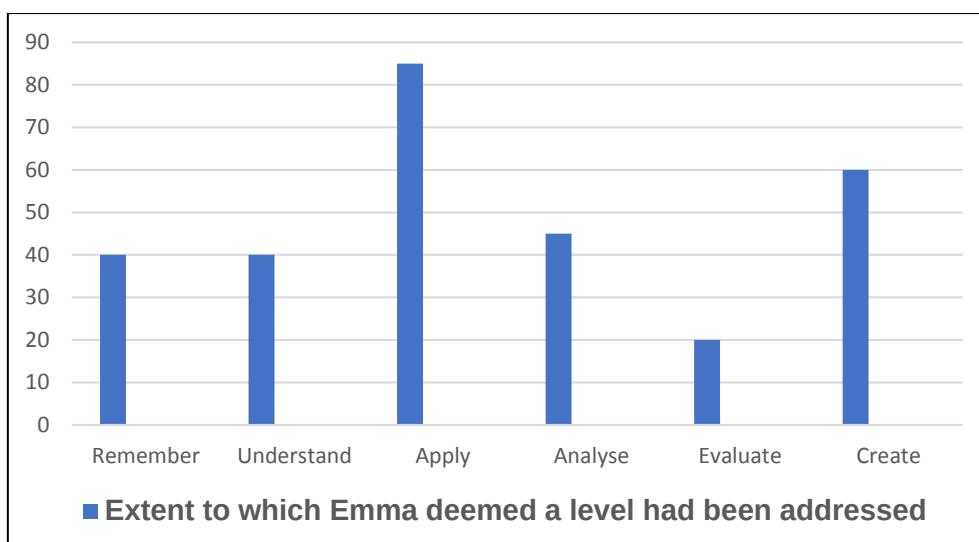


Figure 48: Emma's depiction of how she thought she had activated Whole Brain® Learning during lesson 1

Emma thought she had activated the four quadrants of the brain, as shown in Figure 48. This illustration was in line with the feedback received from the learners on quadrants A and D, but not with the feedback on quadrants B and C. Graph 13 shows the extent to which Emma thought she had incorporated Bloom's Taxonomy in her teaching practice.



Graph 13: Emma's reflection on how she had incorporated Bloom's Taxonomy in lesson 1

In the illustration in Graph 13, Emma indicated that Level 5 *evaluate* needed attention. She deemed that she would address this by asking the learners to judge the value of the information or content she shared with them.

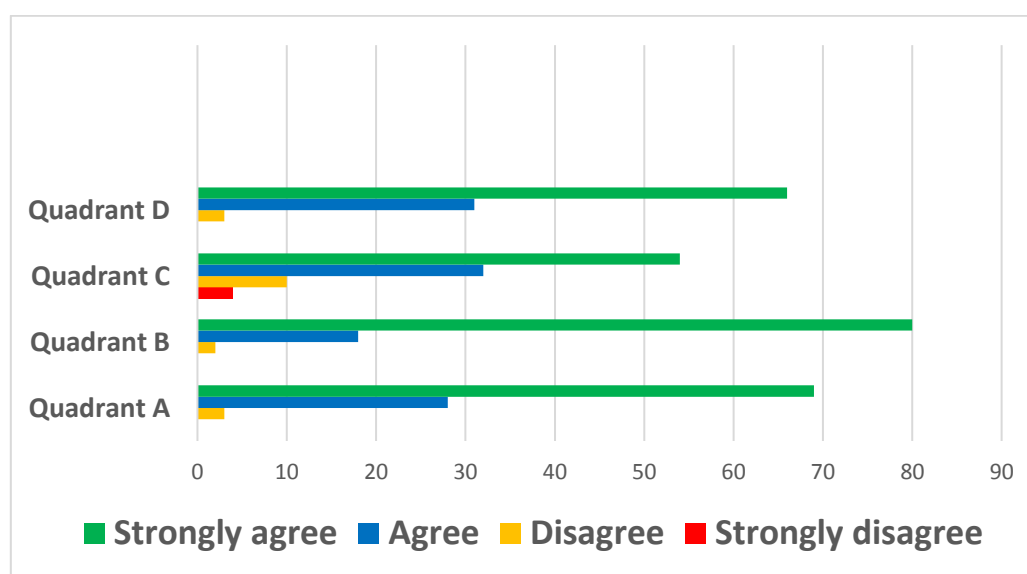
In the last step of Emma's first action research process, *evaluate*, she re-planned and moved on to the second cycle. Reflecting on qualitative and quantitative data from her first lesson, she indicated that during her second action research opportunity she wanted to pay attention to activating quadrant C and address Level 5 of Bloom's Taxonomy. She was satisfied with the extent to which she had addressed the other levels in Bloom's Taxonomy. The second action research cycle will now be discussed.

4.5.6.7 Emma's action research Cycle II

In Emma's second action research cycle in her Grade 8 Economics Management and Sciences teaching practice, Emma presented a lesson with a theme about promotion. In the initial *planning to transform* step, she re-planned the activation of different ways of thinking in the second lesson. She handed opt-out forms to the parents of the children in her class to indicate if their child may not participate in the study.

During the *act to transform* step, Emma implemented the principles of Whole Brain® Learning by evaluating lesson 1 and re-planning the second lesson by using the Comprehensive Whole Brain® Model (De Boer *et al.*, 2015) and adhering to Bloom's Revised Taxonomy (Krathwohl, 2002). In the third step of the action research process *observe*, she listened to the audio recording she had made during the lesson. No photographs had been taken. Afterwards, she requested each learner to complete a feedback questionnaire.

Emma used the audio recording, the five observation sheets for the second lesson and the feedback from the learners to conduct the fourth step of the action research process, namely *reflect*. She reflected on her second implementation of Whole Brain® Learning while considering the first action research cycle and acting on it. The quantitative feedback Emma received from the 24 learners on how she had implemented the four brain quadrants to achieve Whole Brain® Learning in her lesson is presented in Graph 14.



Graph 14: Learner feedback on the brain quadrants that were activated during Emma's lesson 2

The respondents were mostly male (71%) and Afrikaans speaking. The majority of learners (73%) indicated that they had had an excellent overall experience during the lesson. After Emma's second action research opportunity, the feedback from the

learners (Graph 14) still showed, as was the case after the first lesson, that quadrant C required more attention.

Emma listened to the audio recording and reflected on the lesson by completing the observation sheets for her qualitative data: Emma's depiction (Figure 49) of how she thought she had addressed the four brain quadrants during the second lesson corresponded to the feedback from the learners as they also indicated a need for quadrants A and C to be activated more.

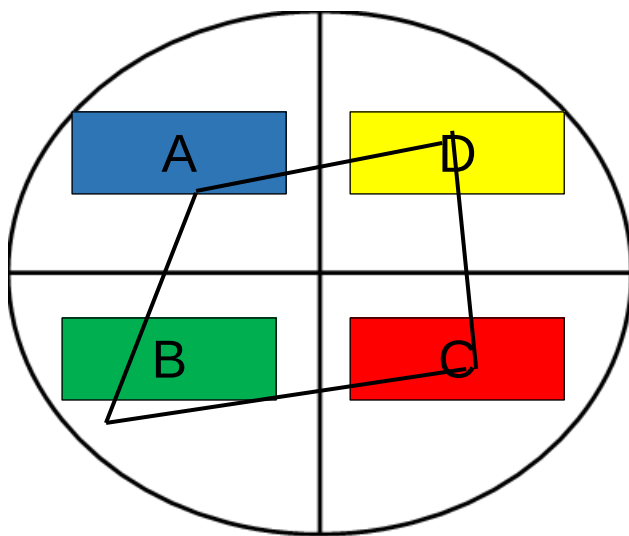
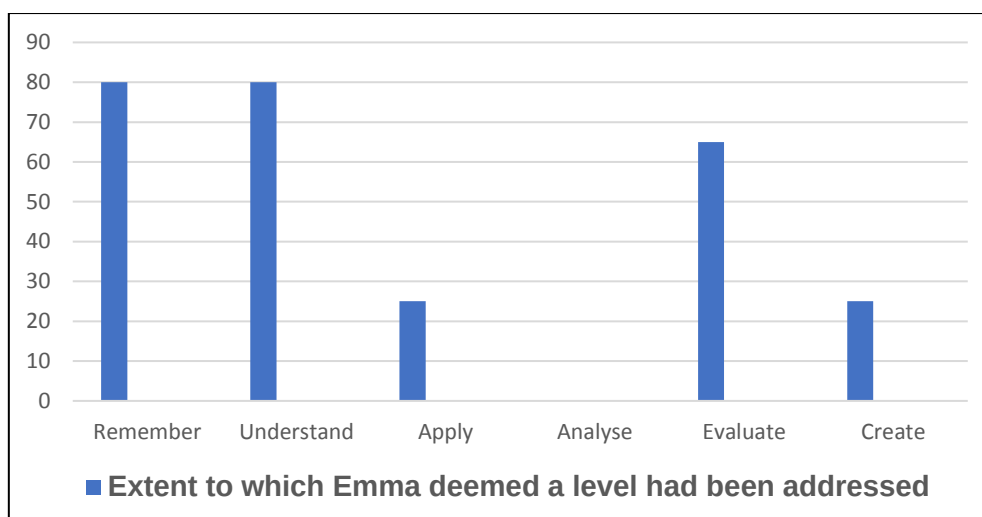


Figure 49: Emma's depiction of how she thought she had activated Whole Brain[®] Learning during lesson 2

As seen in Figure 49, Emma had also decided that quadrant A needed attention. Next, Emma reflected on how she had incorporated Bloom's Taxonomy in her teaching practice during the second cycle. Graph 15 shows how she thought Bloom's Taxonomy had been addressed:



Graph 15: Emma's reflection on how she had incorporated Bloom's Taxonomy in lesson 2

Emma's reflection on how she had incorporated Bloom's Taxonomy in her second lesson differed from the reflection on her first action research lesson. Emma wanted to address Level 4 (*analyse*), as seen in Graph 15. In the first lesson, she wanted to address Level 5 (*evaluate*) and improvement was evident. I think Emma should rather have focused on incorporating Level 6 (*create*).

In the last step of action research Cycle II (*evaluate*), Emma re-planned to continue with the action research process during the remainder of the Work Integrated Learning period and later in her teaching career.

4.5.7 Mentor teacher 5, John, and pre-service teacher 5, Steve

John and Steve completed two action research cycles. Their thinking preference profiles and the action research they conducted in their practice are discussed below.

4.5.7.1 Thinking preference profile of mentor teacher 5, John

John's profile is double dominant (Herrmann, 2018). The two primaries are quadrant A and quadrant C, as shown in Table 20.

Table 20: HBDI® preference summary of John

Quadrant	A	B	C	D
Preference code	1	2	2	1
Adjective pairs:	5	5	5	9
Profile scores:	90	54	62	77

John shows a preference for logical ways of thinking in quadrant A. He also has a preference for the integrative aspects of the D quadrant, as can be seen in Figure 50 (Herrmann, 2018). Furthermore a preference for the interpersonal processing of the C quadrant is visible.

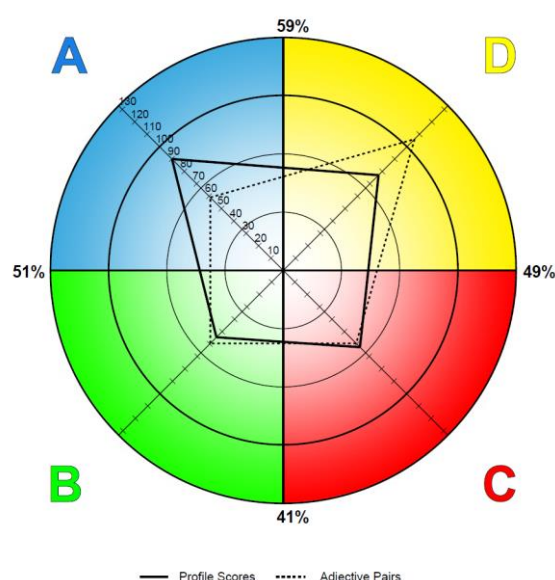


Figure 50: HBDI® profile of John

John enjoys brainstorming, is a strategic thinker and expresses his thoughts specifically and accurately during communication.

4.5.7.2 Thinking preference profile of pre-service teacher 5, Steve

Steve has a triple dominant profile, characteristic of two primaries (Table 21) in quadrants C and D, and the other in the B quadrant.

Table 21: HBDI® preference summary of Steve

Quadrant	A	B	C	D
Preference code	2	1	1	1
Adjective pairs:	4	4	10	6
Profile scores:	38	77	108	86

Steve's 2-1-1-1 preference code (Table 21) is characterised to be relatively stable and balanced between the three primary quadrants: The preferred processing modes, as seen in Figure 51, are the creative and holistic D quadrant, the interpersonal quadrant C, and planning in the B quadrant. Steve shows the least preference for the A quadrant. He can, however still use the logical aspects of this quadrant.

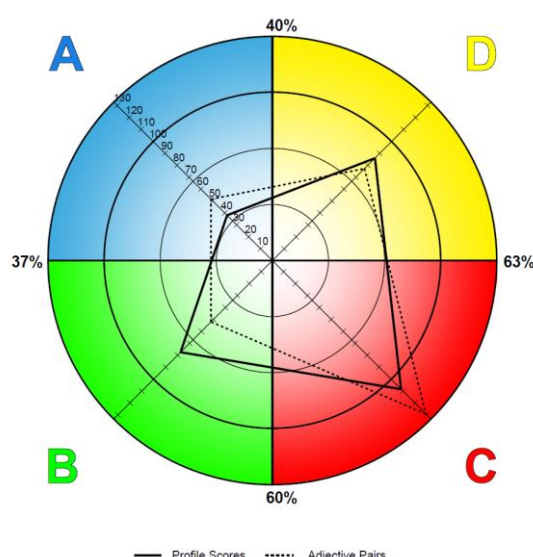


Figure 51: HBDI® profile of Steve

Steve's most comfortable communication styles involve written communication and involving others to formulate ideas.

4.5.7.3 Composite thinking preference profile of John and Steve

John and Steve's composite thinking preference profile is shown in Figure 52. Both have double dominant thinking preference profiles. John's primaries are in quadrants

A and D, and Steve's in quadrants B and C. This means that they communicate and deal with problems differently.

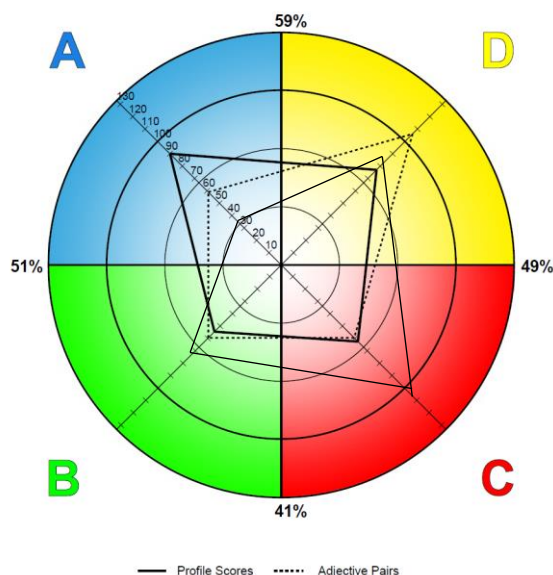


Figure 52: Composite thinking preference profile of John and Steve

Since Steve and John have different thinking preferences, they contribute unique qualities to the mentoring relationship.

4.5.7.4 John's action research Cycle I

John conducted action research during the second, and to some extent also the third phases of the mentor teacher self-regulation process. He conducted action research during the second mentoring opportunity in phase 2 (pre-mentoring) and to some extent during the third mentoring opportunity with Steve during phase 3 (mentoring).

John initiated transformation in his mentoring practice by first *planning to transform* as he encouraged partnership and cooperation with Steve and set high expectations for their mentoring relationship as part of the action research planning step. He chose to develop different ways of thinking in his practice and planned to transform his mentoring practice by introducing innovative types of mentoring to cultivate Steve's and his own self-regulated professionalism. He also planned to make an audio recording of his first mentoring opportunity with Steve.

During the second step, *act to transform*, John implemented the following types of mentoring: Peer mentoring, blended mentoring and Whole Brain® Mentoring in his mentoring practice. He used the mentoring opportunity worksheet, which was part of the mentor teacher short course. John made an audio recording of the session, but no photographs were taken. During the third step (*observe*), John listened to the audio recording while using the self-evaluation feedback form for self-reflection. He observed the mentoring opportunity in relation to how he had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism. John furthermore observed his implementation of peer mentoring, blended mentoring and Whole Brain® Mentoring, specifying the brain quadrants he had activated during their mentoring opportunity.

In step 4, during *reflection*, John listened to the audio recording and used the mentor teacher self-reflection forms. He reflected on the outcome of the quantitative data provided by the pre-service teacher online feedback questionnaire discussed in section 4.5.10. The qualitative data from the observation forms was used to observe the action research mentoring opportunity. He concluded that friendship was the mentoring model that had been mostly employed during the first mentoring session and the type of mentoring was peer mentoring.

The feedback received from the pre-service teachers after the first cycle showed that they regarded that mainly quadrant D had been addressed. The self-reflection John completed did not correspond with their feedback as he had indicated a need to activate quadrant D more in his practice. In the *evaluation* step of John's first cycle, he tried to make the necessary adjustments to his practice. He wanted to activate quadrant D more in the second cycle while focusing on self-regulation and blended-mentoring.

4.5.7.5 John's action research Cycle II

John completed only the following steps of the second cycle: *Plan to transform*, *act to transform* and *observe*. No reasons were given for his failure to complete the last two steps, *reflect* and *evaluate*. John used the mentoring opportunity for the second cycle with Steve, completed the rest of the mentor teacher short course and

submitted his portfolio of evidence. In the second cycle, I will discuss the steps John completed.

John initiated the transformation of his mentoring practice and opted to *plan to transform* and develop innovative ways of thinking. In his evaluation in the first cycle he wanted to address his self-regulated professionalism and quadrant D. He planned to make an audio recording of the second action research mentoring opportunity with Steve.

During the second step, *act to transform*, John implemented peer mentoring, blended mentoring and Whole Brain® Mentoring in his mentoring practice. He worked through the mentoring opportunity worksheet while making an audio recording. Steve and the other pre-service teachers each completed the online feedback questionnaire on how they had experienced their relationships with their mentor teachers.

During the third step, *observe*, John used the self-evaluation feedback form provided for self-reflection. He reflected on his mentoring opportunity with Steve and on how he had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism. He also considered his implementation of peer mentoring, blended mentoring and Whole Brain® Mentoring, specifying the brain quadrants he had activated during his second mentoring opportunity.

In step 4, during *reflection*, John did not reflect on his observations by listening to an audio recording as the mentoring opportunity had not been recorded. He also did not evaluate his mentoring practice in the *evaluation* step. Although John did not complete all the steps in his second cycle, I do interpret that Steve's self-regulated professionalism was addressed during this programme. Valuable feedback in this regard was given in the peer assessment John and Steve completed. They awarded themselves 70% for their mentoring relationship; 66% for how they had conducted action research; and 80% for taking responsibility for nurturing their self-regulated professionalism. I am confident that even though John did not complete all the steps in the second cycle, he still worked informally with Steve. He attended the scholarly communities of practice sessions and evaluated his practice during the focus group discussions. In the portfolio of evidence submitted for assessment he stated: "*I am aware of different approaches taken by my student in the classroom while working*

with Steve to test new ideas.” The two action research cycles Steve completed in his teaching practice are discussed in the following section.

4.5.7.6 Steve’s action research Cycle I

Steve conducted action research in his Grade 9 History teaching practice during the Work Integrated Learning period. Steve did action research twice during the second “process” phase of the pre-service teacher self-regulated professionalism process as part of the pre-service teacher short course.

In the initial *planning to transform* step, Steve planned to implement innovative ways of thinking in his lesson. He distributed opt-out forms to the parents of the learners in his class to get consent for their participation in the study.

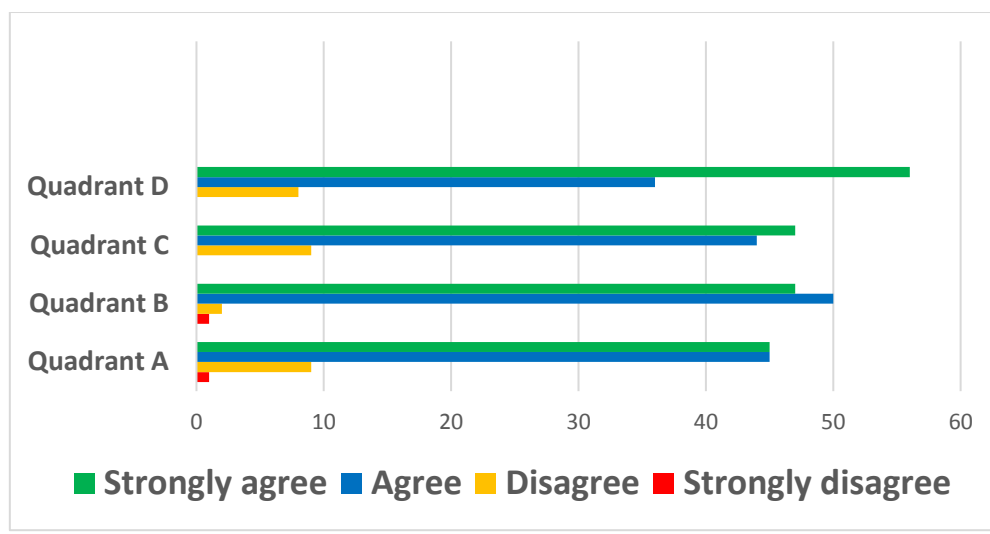
During the *act to transform* step, he implemented Whole Brain® Learning into his practice while also adhering to Bloom’s Taxonomy (Krathwohl, 2002). In step 3 of the first cycle, *observe*, Steve listened to the audio recording of the lesson and took photographs. Later he asked each learner to complete a feedback questionnaire. As seen in Photo-evidence 6, Steve is standing in front of the classroom, explaining work during the lesson.



Photo-evidence 6: Steve teaching during his first action research cycle

In Photo-evidence 6 the learners are seated in rows facing the board and there is no learner interaction. Steve used the five observation sheets and the learners’ feedback to conduct step 4 of the action research process, *reflect*. He reflected on

his implementation of Whole Brain® Learning in his teaching practice. Most of the respondents were male and the majority spoke English (58%) or isiZulu (17%). A total of 63% indicated that they had had a great overall experience during the lesson. The quantitative feedback Steve received from the 24 learners about how he had implemented the four brain quadrants in the Grade 9 lesson to achieve Whole Brain® Learning is shown in Graph 16.



Graph 16: Learner feedback on the brain quadrants that were activated during Steve's lesson 1

The learners' feedback on the first cycle (Graph 16) showed that attention needed to be given to addressing quadrant A. A few of the learners disagreed or strongly disagreed that quadrant A (10%) had been adequately addressed. They also indicated that quadrant B needed attention, with 3% strongly disagreeing that it had been effectively activated.

Steve used the observation sheets and audio recording to reflect on the lesson as part of his qualitative data. His depiction of how he thought he had addressed the four brain quadrants is illustrated in Figure 53.

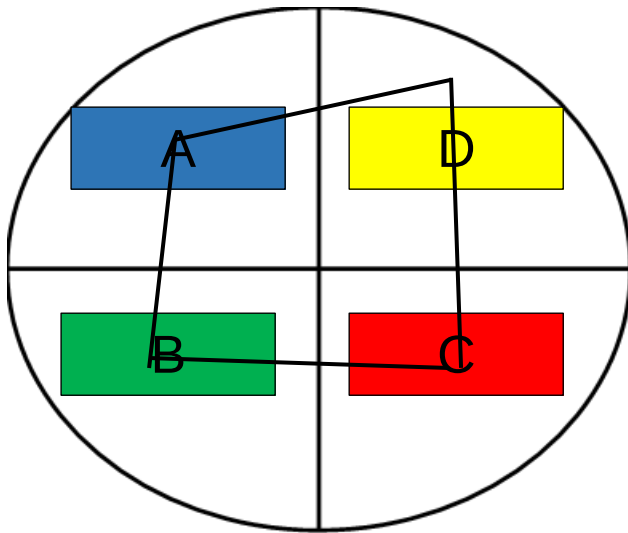
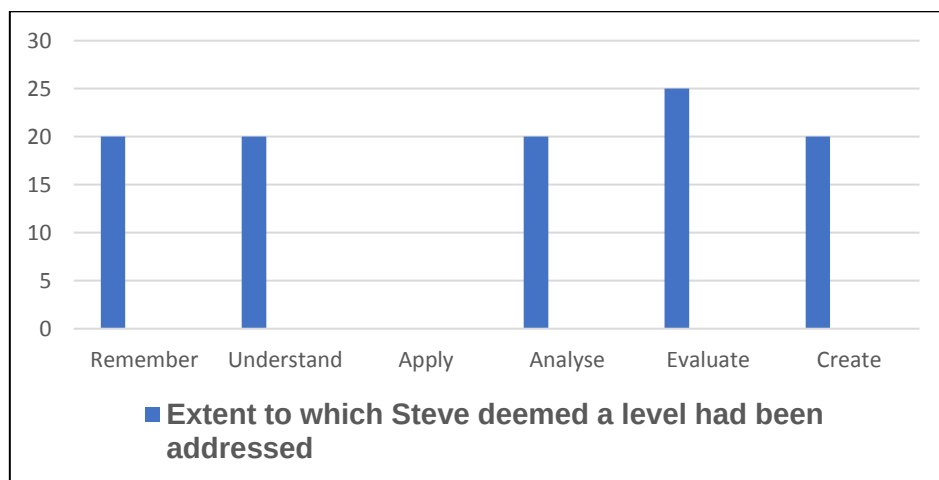


Figure 53: Steve's depiction of how he thought he had activated Whole Brain® Learning during lesson 1

The qualitative observation (Figure 53) Steve did of how he thought he had activated the four quadrants of the brain corresponded with the feedback received from the learners (Graph 16) on quadrants A and D. His self-reflection was slightly different with regard to quadrants B and C. The learners indicated that Steve should pay more attention to quadrant A. He thus thought about providing learners with theory or literature in the form of a handout or worksheet. Graph 17 shows the extent to which Steve regarded, he had addressed Bloom's Taxonomy into his teaching practice.



Graph 17: Steve's reflection on how he had incorporated Bloom's Taxonomy in lesson 1

In his reflection (see Graph 17) Steve indicated that he wanted to address Level 3 (*apply*) more thoroughly. He planned to give the learners an opportunity to apply their knowledge to a real-life example, which he would provide.

In the last step of the first action research process, *evaluate*, Steve re-planned and progressed to start the second cycle. Based on his reflection on the qualitative and quantitative data in his first lesson, he specified that he wanted to pay more attention to activating quadrant A and addressing Level 3 of Bloom's Taxonomy during the second cycle, as discussed below.

4.5.7.7 Steve's action research Cycle II

Steve conducted the second action research cycle in a Grade 9 History lesson. In the initial *planning to transform* step, he re-planned how to address different ways of thinking in the second lesson. He provided the parents who did not want their children to participate in the study with opt-out forms.

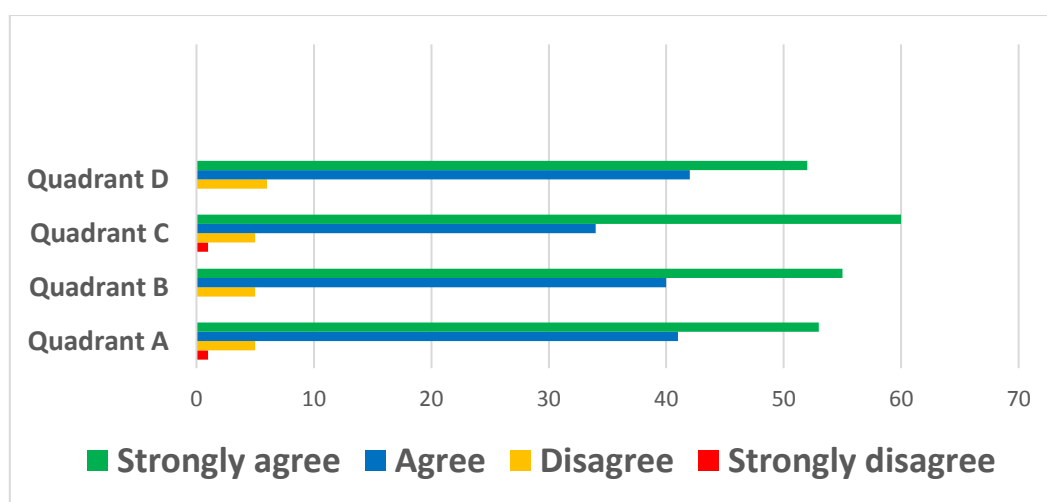
During the *act to transform* step, Steve implemented the principles of Whole Brain® Learning while also adhering to Bloom's Revised Taxonomy (Krathwohl, 2002). In step 3 of the second action research cycle, *observe*, he made an audio recording and took photographs. Lastly, he asked each learner to complete a feedback questionnaire. In Photo-evidence 7, Steve is seen interacting with learners doing a group activity.



Photo-evidence 7: Learners interacting during Steve's second action research cycle

In photo-evidence 7, the learners are collaborating during an activity. Unlike in Photo-evidence 6, Steve is not just standing in front of the learners presenting a lesson, but is facilitating the learning process. All the learners in the photograph

seem to be participating in the activity. Steve used the audio recording, the five observation sheets and the feedback provided by the learners to conduct step 4 of the action research process, *reflect*. He deliberated on his implementation of Whole Brain® Learning in his second lesson while considering the first cycle’s reflections and feedback. The learners were mostly male and the majority (52%) were English speaking. A total of 66% of the learners indicated that they had had a very good overall experience during the lesson. The quantitative feedback Steve received from the 25 learners in the Grade 9 class about how he had implemented the four brain quadrants to achieve Whole Brain® Learning is shown in Graph 18.



Graph 18: Learner feedback on the brain quadrants that were activated during Steve’s lesson 2

In Steve’s first action research cycle, the learners’ feedback (Graph 16) showed that quadrant A should be addressed. The feedback for the second cycle (Graph 18) shows a slight improvement in how Steve had activated quadrant A, with only 6% of the learners not feeling satisfied. Photo-evidence 7 substantiates the feedback as it indicates that Steve was able to achieve a balance between all four the quadrants with the learners deeming that quadrant C had been slightly more activated.

Steve used the observation sheets and the audio recording to reflect on the lesson as part of his qualitative data. His depiction of how he had addressed the four brain quadrants during the second action research cycle can be seen in Figure 54.

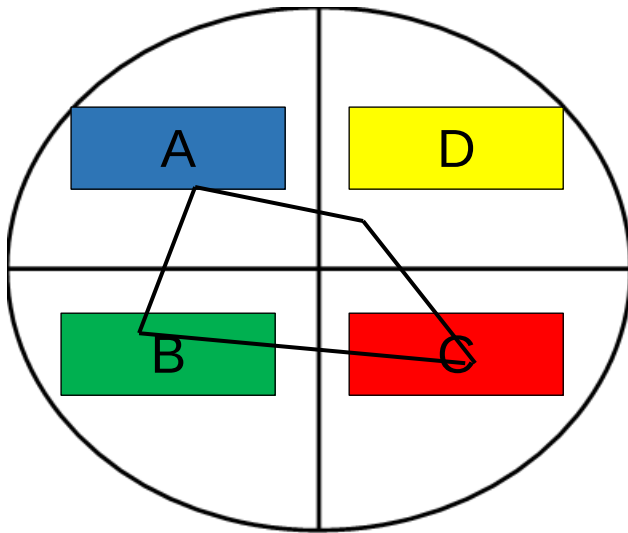
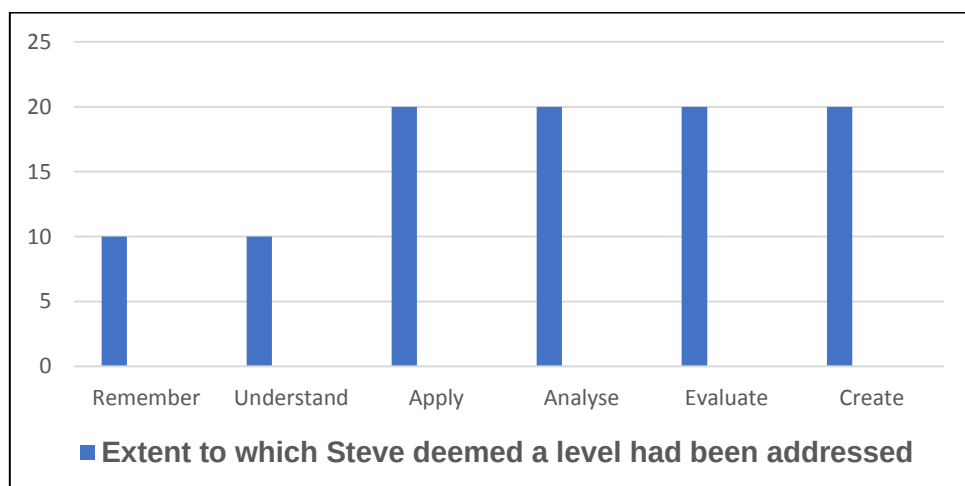


Figure 54: Steve's depiction of how he thought he had activated Whole Brain® Learning during lesson 2

As seen in Graph 18, the learners reflected that quadrants B and D needed attention, and Steve's observation regarding his second lesson was mostly similar. During the second cycle (Graph 19) he also deemed on the extent to which he thought he had incorporated Bloom's Taxonomy.



Graph 19: Steve's reflection on how he had incorporated Bloom's Taxonomy in lesson 2

In Steve's reflection (Graph 19) on how he had incorporated the levels of Bloom's Taxonomy during his second lesson, the first two levels were the least addressed. After the first action research lesson, he decided that he needed to address Level 3, *apply*, more in the second lesson. He was able to do that and reflected that he had adequately addressed the highest levels of Bloom's taxonomy.

In the last step of the second cycle, *evaluate*, Steve re-planned to continue with the action research process during the remainder of the Work Integrated Learning period and later when employed as a teacher. Although the action research process as part of the short course ended, Steve understood the unending nature of action research.

4.5.8 Mentor teacher 6, Carel, and pre-service teacher 6, Dorothy

Carel and Dorothy each completed the two cycles in their Whole Brain® Participatory Action Research study. Like Lindie and Emma, they were not placed in the same classroom and were not teaching the same subject.

4.5.8.1 Thinking preference profile of mentor teacher 6, Carel

The thinking preference profile of Carel is double dominant with the two primaries in the cerebral quadrants A and D (Herrmann, 2018). His 1-2-2-1 preference code profile is quantitatively displayed in Table 22.

Table 22: HBDI® preference summary of Carel

Quadrant	A	B	C	D
Preference code	1	2		1
Adjective pairs:	9	6	1	8
Profile scores:	86	53	54	111

As seen in Table 22, the thinking preferences of Carel shows a fondness for logical modes of thinking in quadrant A. In contrast, he also has a preference for the integrative and creative aspects of the D quadrant (Herrmann, 2018). Figure 55 shows that Carel has a distinct secondary preference for the emotive processing of

the C quadrant. He also has a definite secondary preference for the orderly modes of processing that can be seen in the B quadrant.

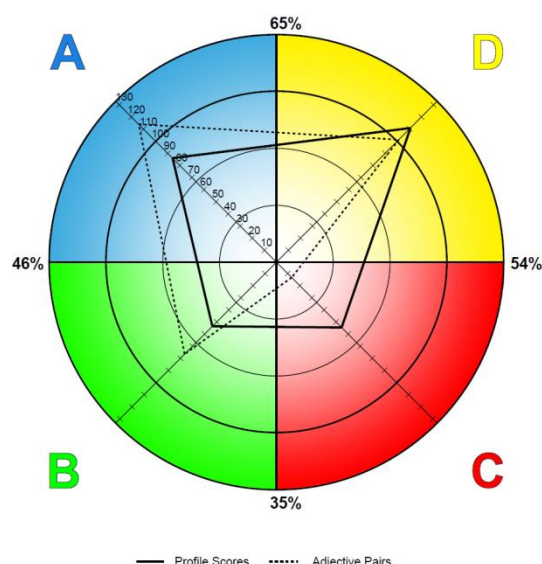


Figure 55: HBID[®] profile of Carel

Carel prefers to think strategically in clusters and to communicate in an exact manner.

4.5.8.2 Thinking preference profile of pre-service teacher 6, Dorothy

Dorothy's triple dominant thinking preference profile indicates the C and D quadrants as the primaries. The third primary is the B quadrant, as shown in Table 23 (Herrmann, 2018).

Table 23: HBID[®] preference summary of Dorothy

Quadrant	A	B	C	D
Preference code	2	1	1	1
Adjective pairs:	4	6	8	6
Profile scores:	50	81	84	78

The 2-1-1-1 preference code in Table 23 is characterised by its multi-dominant nature. The profile shows the capability to use the three primary quadrants. The first

is the creative and holistic features of quadrant D (Figure 56), together with the interpersonal in the C quadrant. The third primary is quadrant B. Quadrant A is least desired, but Dorothy is still usually functional in her use of these rational aspects (Herrmann, 2018).

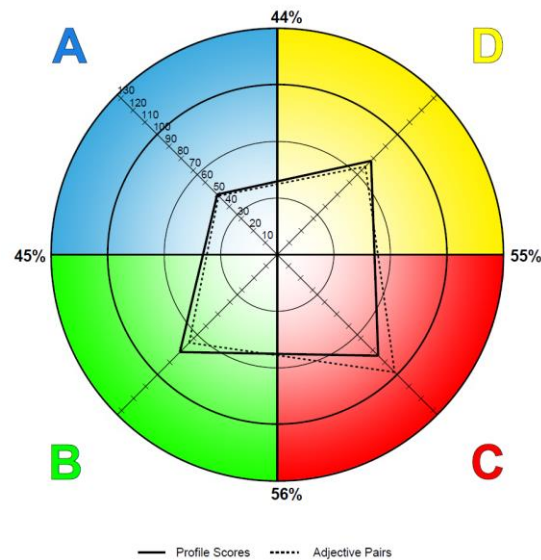


Figure 56: HBDI® profile of Dorothy

Dorothy prefers to receive written communication beforehand to provide an overview. Her preferred strategies for problem-solving include brainstorming with others in a team.

4.5.8.3 Composite thinking preference profile of Carel and Dorothy

Carel and Dorothy's composite thinking preference profile depicted in Figure 57 shows a similarity in their use of quadrant D. They are both holistic, creative thinkers.

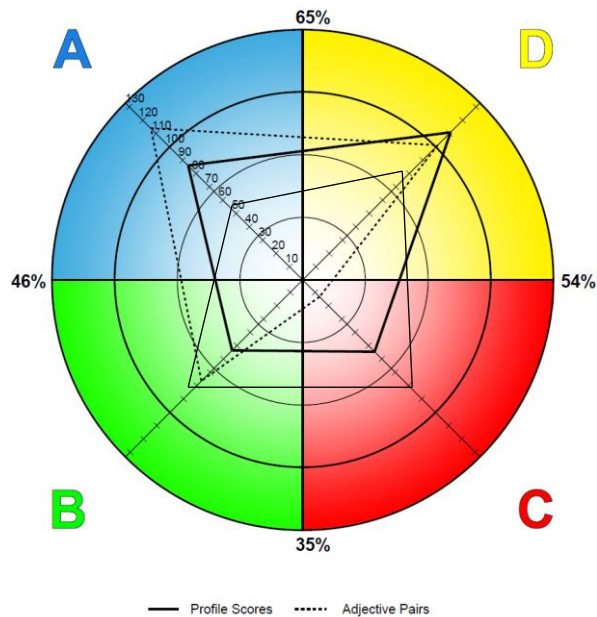


Figure 57: Composite thinking preference profile of Carel and Dorothy

Carel and Dorothy's ways of thinking differ in respect to quadrants A, B and D. Carel shows a preference for the A quadrant, while Dorothy shows a greater preference than Carel for quadrants B and C .

4.5.8.4 Carel's action research Cycle I

Carel conducted action research during two of the mentoring opportunities he had with Dorothy, during the second and third phases of the mentor teacher self-regulated professionalism process that was part of the short course for mentor teachers. Carel introduced innovative ways of thinking in his mentoring practice by first *planning to transform* as he encouraged partnership and cooperation with Dorothy. Carel and Dorothy also had high expectations of their mentoring relationship. Carel introduced innovative types of mentoring to nurture his and Dorothy's self-regulated professionalism. He planned to make an audio recording of the first mentoring opportunity with Dorothy and took photographs (see Photo-evidence 8).



Photo-evidence 8: Carel and Dorothy during their first mentoring opportunity

Photo-evidence 8 is a photograph Carel and Dorothy took of themselves. Dorothy is seen holding the mentor teacher manual. Both are looking at the camera and smiling, which gives the impression that they feel comfortable in one another's company. During the second step, *act to transform*, Carel implemented peer mentoring, blended mentoring and Whole Brain® Mentoring in his mentoring practice. Carel and Dorothy audio recorded the mentoring opportunity and completed the worksheet in the mentor teacher course manual.

During the third step, *observe*, Carel listened to the audio recording and used the self-evaluation feedback form for self-reflection. He reflected on the mentoring opportunity and his use of the mentoring models cloning, nurturing, friendship and self-regulated professionalism. He also considered his implementation of the types of mentoring and specified the brain quadrants he thought he had activated during their mentoring opportunity.

In step 4, *reflection*, Carel reflected on the outcome of the data from the pre-service teacher online feedback questionnaire. He also reflected on the qualitative data from the observation forms, which he used to observe the first cycle. The mentoring model Carel regarded he had employed most during the first mentoring opportunity was friendship, and the types of mentoring were peer mentoring and Whole Brain® Mentoring.

I discuss the pre-service teachers' feedback in section 4.5.12. The pre-service teachers indicated that they regarded that more blended mentoring was needed, and that quadrant D had been effectively addressed by the mentor teachers. Carel's self-

reflection did not match the pre-service teachers' feedback as he deemed that quadrant A had been mostly activated in his mentoring practice and that quadrant C had to be activated more.

In the *evaluation* step of the first cycle, Carel re-planned to make the necessary adjustments in his practice. He wanted to activate quadrant C during the second cycle. He chose to use self-regulation more and also incorporate blended mentoring well in his practice.

4.5.8.5 Carel's action research Cycle II

After completing Cycle I, Carel progressed to the second cycle. He re-planned to *transform his practice* by developing innovative ways of thinking. He planned for Dorothy and himself to cultivate their self-regulated professionalism by using a Whole Brain® Approach. He also made arrangements to audio record the mentoring opportunity with Dorothy.

During the second step, *act to transform*, Carel employed peer mentoring, blended mentoring and Whole Brain® Mentoring. He made an audio recording of the mentoring opportunity and Dorothy completed the second online feedback questionnaire. During the third step, *observe*, Carel listened to the audio recording while using the self-evaluation feedback form for self-reflection. He reflected on the mentoring opportunity he had had with Dorothy and his use of the mentoring models cloning, nurturing, friendship and self-regulated professionalism. He also observed his application of the types of mentoring and specified the brain quadrants he had activated during his second cycle.

In step 4, *reflection*, Carel reflected on the outcome of the quantitative data from the pre-service teacher online feedback questionnaire as discussed in section 4.5.10. After observing the mentoring opportunity, he contemplated on the qualitative data from the evaluation forms, which he used to evaluate his practice. The mentoring models he deemed he had frequently employed during the second mentoring opportunity were friendship and nurturing, and the types of mentoring applied were peer mentoring, Whole Brain® Mentoring and blended mentoring. Carel also chose to

use self-regulation to a greater extent as he gave Dorothy the responsibility to complete administrative work and to take greater responsibility during lessons.

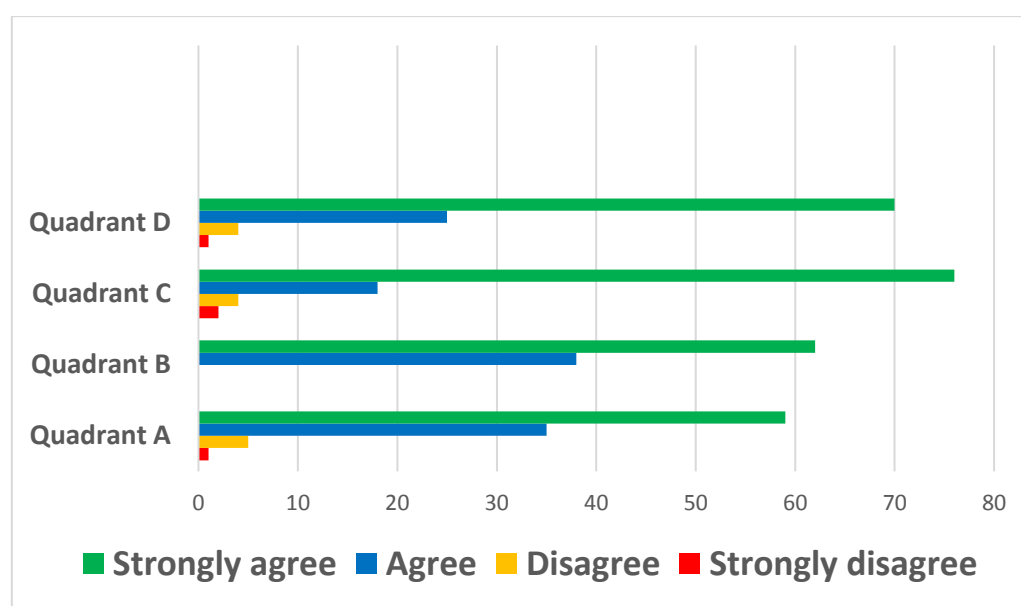
In the *evaluation* step in the second action research cycle, Carel evaluated the importance of the ongoing action research process and stated that, should he be asked to mentor another pre-service teacher in future, he would re-plan and progress with a follow-up cycle. By the end of the Work Integrated Learning period, Carel and Dorothy were moderately content with their mentoring relationship. Carel and Dorothy awarded themselves 70% as a peer assessment mark. They reviewed how they had taken responsibility for cultivating their professionalism. Carel and Dorothy considered how blended mentoring had been introduced into the mentoring relationship, the extent to which they had considered one another's thinking preferences and how peer mentoring had been employed. The mark they gave themselves for the way in which action research had been conducted in their practice was only 33%. The reason for this low mark was not explained, but it could have been influenced by the fact that they were not placed in the same classroom. In my opinion they tried to do the best they could in the circumstance and Carel had worked hard to address Dorothy's self-regulated professionalism and nurture his own. In the following section, Dorothy's action research cycles are discussed.

4.5.8.6 Dorothy's action research Cycle I

During the Work Integrated Learning period, Dorothy conducted action research in her Life Orientation teaching practice. As part of the pre-service teacher short course, she did action research twice during the second "process" phase of the pre-service teacher self-regulated professionalism process. In the initial *planning to transform* step, Dorothy started by developing innovative ways of thinking. She gave opt-out forms to the parents to indicate who did not want their children in her Grade 9 class to participate in the study. She then proceeded to plan the transformation of her practice.

During the *act to transform* step, Dorothy implemented the principles of Whole Brain® Learning into her practice while also adhering to Bloom's Taxonomy (Krathwohl, 2002).

In step 3 of the action research process, *observe*, Dorothy made an audio recording of the lesson. No photographs were taken. Subsequently, she asked each learner to complete a feedback questionnaire. She used an audio recording, the observation sheets and the feedback from the learners to conduct step 4 of the action research process to *reflect* on her implementation of the principles of Whole Brain® Learning. The quantitative feedback received from the 21 learners on how she had implemented the four brain quadrants in her lesson is shown in Graph 20.



Graph 20: Learner feedback on the brain quadrants that were activated during Dorothy's lesson 1

The respondents were mostly female (72%) and their home languages were English (33%), IsiZulu (14%), Tswana and Venda. The learners mostly reported having had a positive overall experience (78%) during the lesson. The feedback received from the learners for the first cycle (Graph 20) show that attention could be given to addressing quadrant A, with 6% disagreeing or strongly disagreeing that this quadrant was activated.

Dorothy used the observation sheets and audio recording to reflect on the learning opportunity as part of her qualitative data and represented the way in which she had thought she addressed the four brain quadrants as follow:

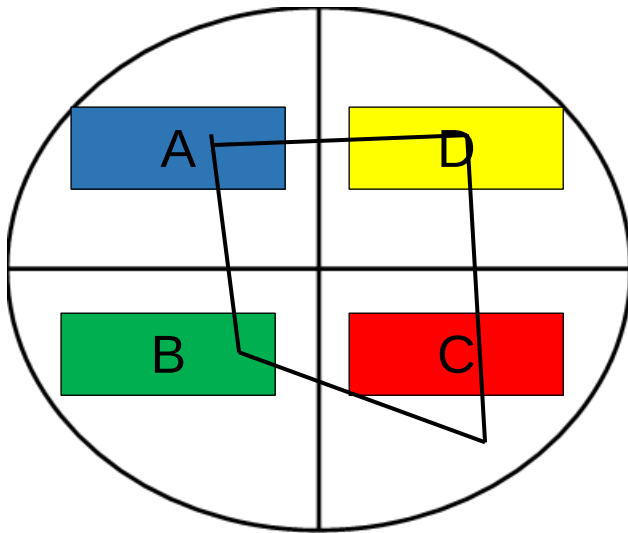
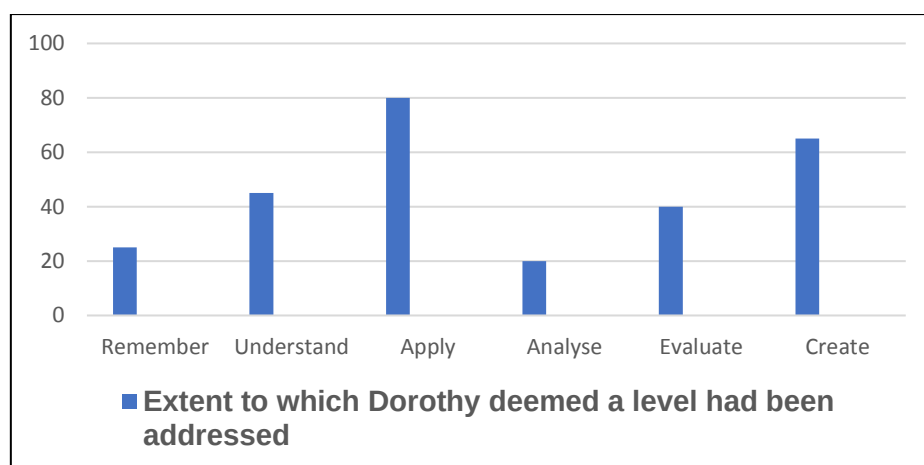


Figure 58: Dorothy's depiction of how she thought she had activated Whole Brain® Learning during lesson 1

Her illustration confirmed the learners' feedback about quadrants A, C and D (Graph 20). However, she did not deem quadrant B had been well activated. To activate quadrant B more, she decided that during the following lesson she would give the learners factual summaries of the work she facilitated with them. She also reflected on the extent to which she had incorporated Bloom's Taxonomy in her teaching practice. Graph 21 shows how she thought she had addressed the different levels:



Graph 21: Dorothy's reflection on how she had incorporated Bloom's Taxonomy in lesson 1

Dorothy's representation in Graph 21 of how she thought she had addressed Bloom's Taxonomy during her first lesson shows that she had hoped to address Level 4 (*analyse*) better. She stated that in the next lesson she would give the learners a related problem to solve.

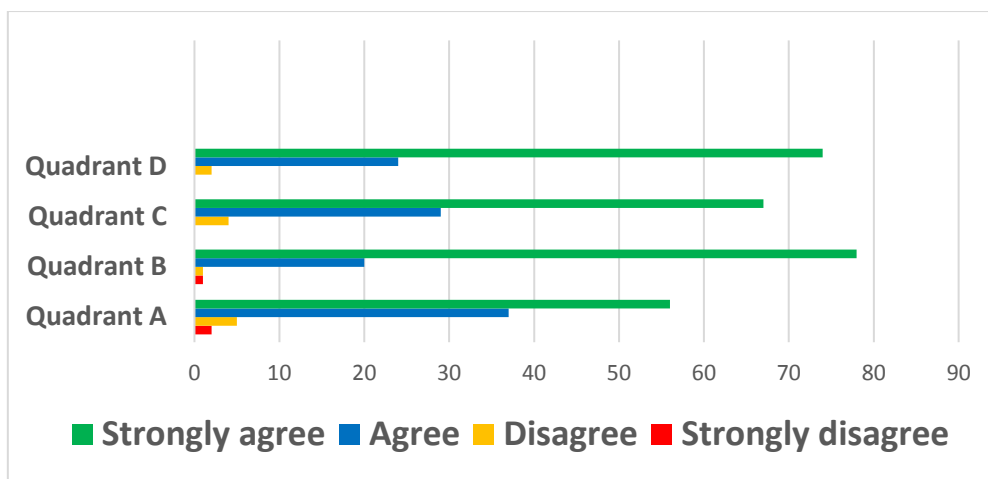
In the last step (*evaluate*) Dorothy re-planned and progressed to start the second cycle. After reflecting on the qualitative and quantitative data, she decided that, during the second action research opportunity, she should pay more attention to activating quadrant B and addressing Level 4 of Bloom's Taxonomy (*analyse*). She had successfully addressed Levels 5 and 6. Dorothy also considered the pace of her teaching and realised that she should not to speak too quickly.

4.5.8.7 Dorothy's action research Cycle II

Dorothy conducted the second action research cycle in her Grade 9 Life Orientation teaching practice. In the initial step, *planning to transform*, she re-planned the way in which she would address different ways of thinking in the second lesson. She gave opt-out forms to the parents who did not want their children in her class to participate in the study. During the *act to transform* step, Dorothy implemented the principles of Whole Brain® Learning. In re-planning the second lesson, she adhered to Bloom's Taxonomy (Krathwohl, 2002).

In step 3 (*observe*), she made an audio recording, but did not take any photographs . Afterwards she asked all the learners to complete a feedback questionnaire. For her qualitative data, Dorothy listened to the audio recording she had made and completed the observation sheets in her study manual.

While *reflecting* on her second lesson, Dorothy thought about how she had implemented the principles of Whole Brain® Learning in her teaching practice. The quantitative feedback she received from the 17 learners in the Grade 9 class on how she had implemented the four brain quadrants to achieve Whole Brain® Learning in her the second lesson is summarised in Graph 22.



Graph 22: Learner feedback on the brain quadrants that were activated during Dorothy's lesson 2

The respondents were mostly female (53%) and the majority were English speaking (46%). Quite a number of learners (70%) indicated that they had had an excellent overall experience during the lesson, with only a few (8%) disagreeing or strongly disagreeing. In the second cycle, the feedback from the learners (Graph 22) showed that quadrant A could have been better activated, as 7% strongly disagreed that this quadrant had been activated. The learners' feedback indicated that they believed that quadrants B and D had been effectively activated. Figure 59 illustrates how Dorothy thought she activated the four brain quadrants during the second action research opportunity.

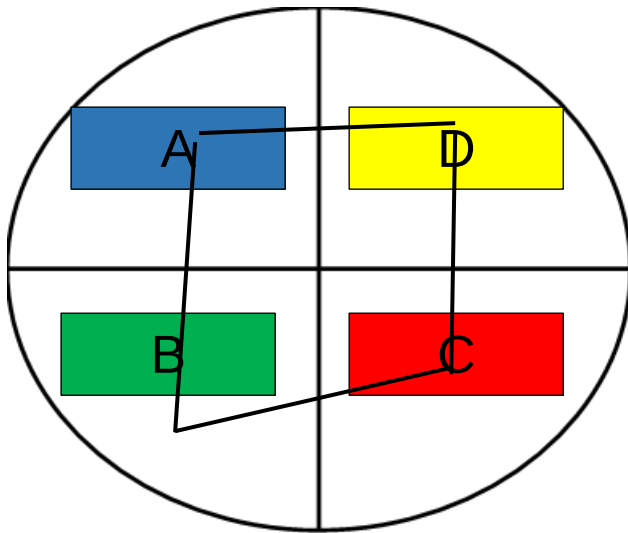
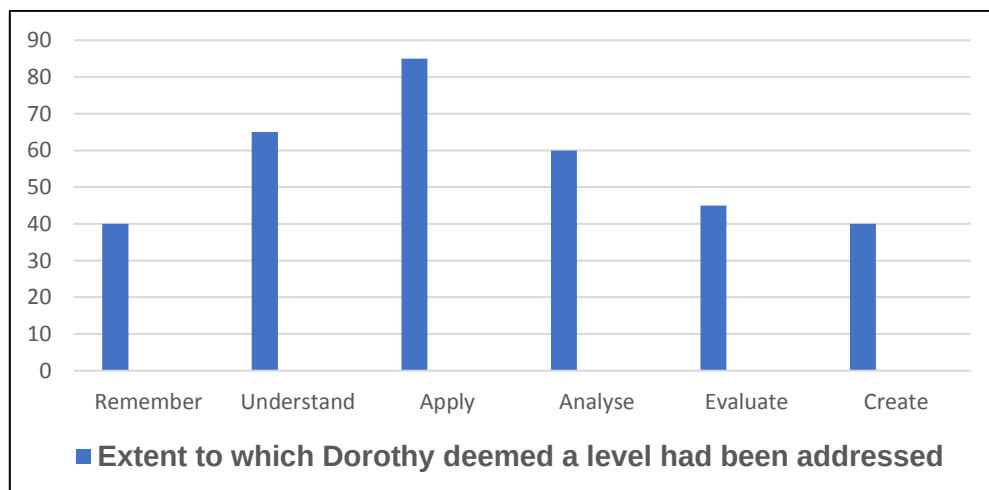


Figure 59: Dorothy's depiction of how she thought she had activated Whole Brain® Learning during lesson 2

Dorothy's illustration of how she thought she had activated the brain quadrants (Figure 59) corresponded with the feedback from the learners. During Cycle II, she also reflected on the extent to which she had addressed Bloom's Taxonomy in her teaching practice. Graph 23 illustrates of how she thought she had addressed the different levels:



Graph 23: Dorothy's reflection on how she had incorporated Bloom's Taxonomy in lesson 2

Dorothy's reflection on her first lesson enabled her to achieve a visible improvement in her effort to address Level 4 (*analyse*) in her second lesson. In my opinion, she should have also have attempted to improve the higher levels (*evaluate* and *create*) in her second lesson, as shown in Graph 23. In the last step in the action research process, *evaluate*, she re-planned to keep on with the action research process during the remainder of the Work Integrated Learning period and later in her career as a teacher. In her reflection Dorothy stated that she wanted to be more aware of how she planned and implemented cooperative learning during a lesson.

4.5.9 Mentor teacher 7, Carol, and pre-service teacher 7, Zandile

Carol and Zandile conducted two action research cycles in their practice and completed the HBDI® as a baseline study. In Cycle I, Zandile completed action research in her Work Integrated Learning teaching practice and Carol did the same in her mentoring practice. In Cycle II, they once again conducted action research in their practice.

4.5.9.1 Thinking preference profile of mentor teacher 7, Carol

The two primaries in Carol's thinking preference profile were quadrants C and D. The two secondaries are in the left mode in quadrants A and B, as seen in Table 24 (Herrmann, 2018).

Table 24: HBDI® preference summary of Carol

Quadrant	A	B	C	D
Preference code	2	2	1	1
Adjective pairs:	4	4	7	9
Profile scores:	36	65	108	116

The thinking preference characteristics of Carol's profile, as illustrated in Figure 60, consist of the skill to be innovative in quadrant D, and relational in quadrant C (Herrmann, 2018). The secondaries include logical thinking and structure preferences from quadrant A and the B quadrant.

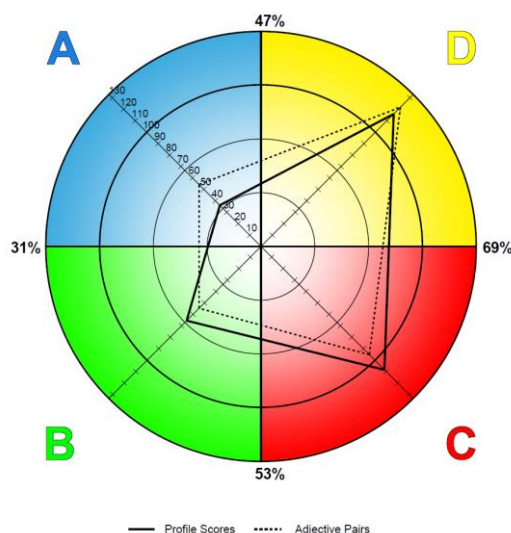


Figure 60: HBDI® profile of Carol

Carol prefers to communicate by providing an overview while involving others in the construction of ideas.

4.5.9.2 Thinking preference profile of pre-service teacher 7, Zandile

Zandile has a triple dominant profile with quadrants B, C and D being the three primaries, as seen in Table 25 (Herrmann, 2018).

Table 25: HBDI® preference summary of Zandile

Quadrant	A	B	C	D
Preference code	2	1	1	1
Adjective pairs:	7	8	5	4
Profile scores:	60	72	75	96

Zandile's 2-1-1-1 preference code in Figure 61 is characterised by its multi-dominant nature (Herrmann, 2018). She has a fairly equal amount of understanding and ability to use the three primary quadrants. Her preferred processing modes are the creative and holistic styles in quadrant D and a preference for the interpersonal in quadrant C. Zandile also favours quadrant B thinking (Herrmann, 2018). Zandile shows the least preference for quadrant A, but is nevertheless quite functional in using these logical and analytical aspects.

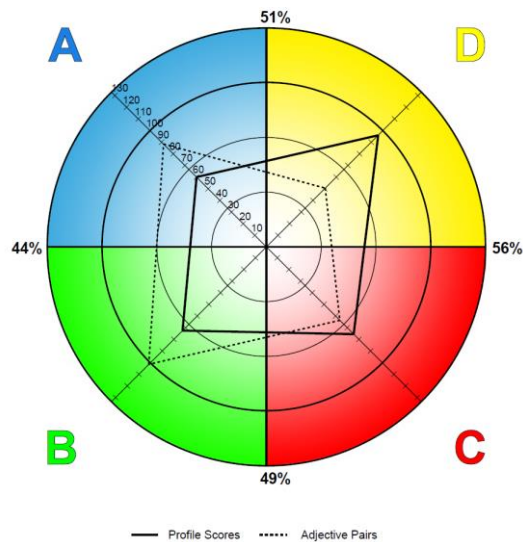


Figure 61: HBDI® profile of Zandile

Zandile favours receiving written communication beforehand and is sensitive to other people's feelings.

4.5.9.3 Composite thinking preference profile of Carol and Zandile

In Figure 62, the composite thinking preference profile of Carol and Zandile is shown. The primaries of both are in the right mode of the brain in quadrants C and D.

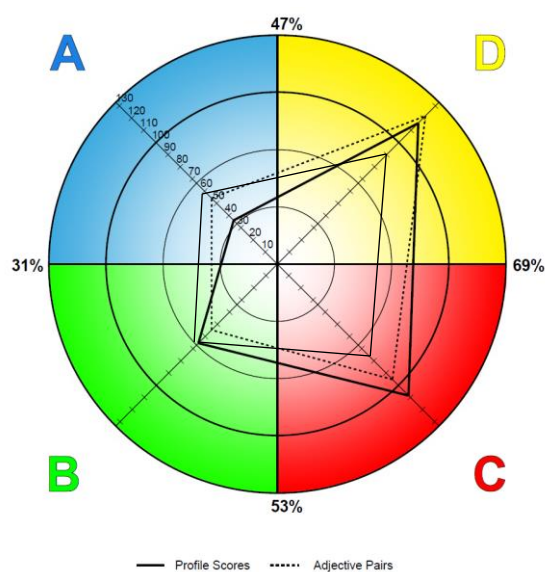


Figure 62: Composite thinking preference profile of Carol and Zandile

Zandile has a primary thinking preference for quadrant B, which is in Carol's profile secondary. They are quite similar in terms of their thinking preferences, which should assist communication. However, this can also be a barrier when they work together in the same classroom. During the group interviews Carol said that initially she had thought that this similarity was "*great*", but then added that "*you are exactly the same, and we are also exactly weak in exactly the same things*".

4.5.9.4 Carol's action research Cycle I

Carol conducted action research during two of the mentoring opportunities she had with Zandile. This happened during the second and third phases of the mentor teacher self-regulated professionalism process during the mentor teacher short course.

Carol first *planned to transform* as she encouraged partnership and cooperation with Zandile. They had high expectations for their development in their mentoring relationship. Carol chose to develop innovative ways of thinking in her practice and introduced types of mentoring that might cultivate Zandile's and her own self-regulated professionalism. Carol planned to make audio recordings of her first mentoring opportunity with Zandile and also took photographs (see Photo-evidence 9).



Photo-evidence 9: Zandile and Carol during their first mentoring opportunity

In Photo-evidence 9, Zandile and Carol are seen taking a photograph of themselves during the mentoring opportunity. They appear to be comfortable in one another's company. They have the short course manuals open in front of them, which I interpret as showing commitment to the mentoring relationship and the programme. During the second step, *act to transform*, Carol implemented peer mentoring, blended mentoring and Whole Brain® Mentoring and made an audio recording.

During the third step, *observe*, Carol listened to the audio recording and used the self-evaluation feedback form in the short course manual to assist her observation of the mentoring opportunity. She observed how she had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism and noted her implementation of the various types of mentoring. She also specified the brain quadrants she had activated during their mentoring opportunity.

In step 4, *reflection*, Carol reflected on the outcome of the quantitative data provided by the pre-service teachers. The feedback from the online questionnaire is discussed in section 4.5.12. She also used the qualitative data from the evaluation forms she had completed while observing the mentoring opportunity. The mentoring models she deemed she had mostly employed during the first mentoring opportunity were friendship and self-regulation. The mentoring type was peer mentoring.

The pre-service teachers' online feedback indicated that they regarded that blended mentoring should be implemented more. The feedback from the pre-service teachers corresponded to Carol's self-reflection. She was of the opinion that quadrants C and D had been activated most and wanted to increase the activation of quadrants A and B in Cycle II. She explained that, in order to do that, she would have to be more organised, have clear objectives in her mentoring practice and communicate her expectations to Zandile.

In the *evaluation* step of the first cycle, Carol re-planned to make the required adjustments in her practice in order to activate quadrants A and B in the second cycle. She indicated that she wanted to use self-regulation and also more effectively implement blended mentoring.

4.5.9.5 Carol's action research Cycle II

After completing Cycle I, Carol progressed to the second action research cycle in the following mentoring opportunity with Zandile. Carol re-planned *to transform* while introducing innovative ways of thinking. She planned to transform her mentoring practice with the focus on nurturing Zandile's and her own self-regulated professionalism by following a Whole Brain® Approach. She made an audio recording of the second cycle with Zandile, but did not take photographs.

During the second step, *act to transform*, Carol implemented peer mentoring, blended mentoring and Whole Brain® mentoring. She made an audio recording of the mentoring opportunity, and Zandile afterwards completed the second online feedback questionnaire.

During the third step, *observe*, Carol listened to the audio recording while using the self-evaluation feedback form provided for self-reflection. She wanted to consider how she had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism. She also reflected on her implementation of the types of mentoring, and how she had stimulated the four brain quadrants.

In step 4, during *reflection*, Carol reflected on the outcome of the quantitative data obtained from the pre-service teacher online feedback questionnaire, which is discussed in section 4.5.12. She also gathered qualitative data after she had completed the evaluation forms she had used to observe the mentoring opportunity. She decided that self-regulated professionalism was the mentoring model she had employed most often during the second cycle. The types of mentoring used were predominantly peer mentoring, while blended mentoring was used between their formal mentoring opportunities. Carol opted to encourage self-regulation to a greater extent and encouraged Zandile to pay attention to time management and reflect on her practice. In her feedback, Zandile indicated that Carol encouraged her to become "*more resilient and independent*".

In the online feedback questionnaires completed after the second cycle, the pre-service teachers generally indicated that quadrant C had been most effectively activated and that quadrant A needed attention. In her reflection, Carol thought that all the brain quadrants had been triggered in her mentoring opportunity with Zandile

and that after the second cycle she had introduced Whole Brain® Mentoring in a more balanced manner.

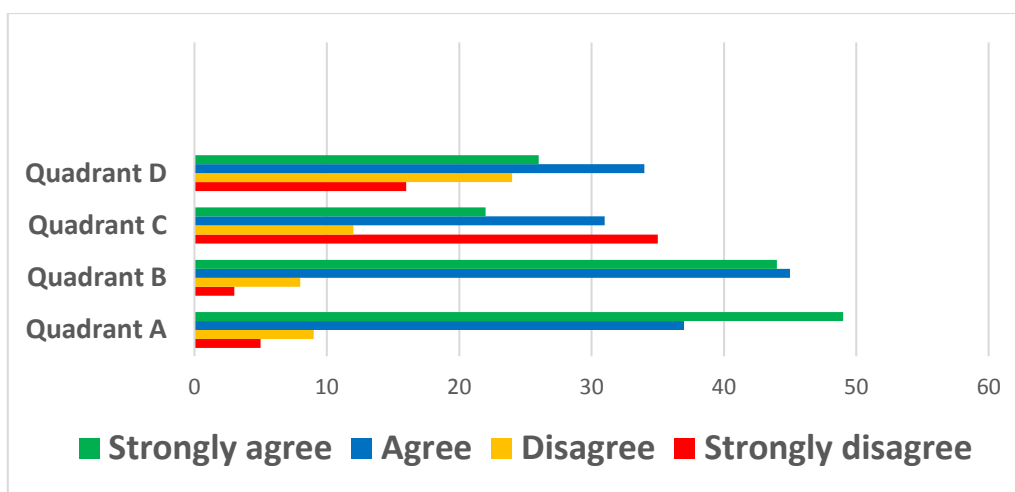
In the *evaluation* step of the second cycle, Carol evaluated the ongoing action research process. She wanted to re-plan to prepare herself for mentoring another pre-service teacher in the future. At the end of this Work Integrated Learning period, Carol and Zandile awarded themselves 85% as a peer assessment mark. They deemed that they had taken responsibility for their professionalism, that blended mentoring had been introduced, and that they had considered one another's thinking preferences. The two action research cycles Zandile conducted will be discussed in the following section.

4.5.9.6 Zandile's action research Cycle I

During the Work Integrated Learning period, Zandile conducted action research in her English subject teaching practice. This was done during the "process" phase of the pre-service teacher self-regulated professionalism process as part of the pre-service teacher short course.

In the initial *planning to transform* step, Zandile planned to implement innovative ways of thinking in her practice. She gave opt-out forms to the parents of the children in her Grade 8 class who did not want their children to participate in the study. Zandile proceeded to plan the transformation of her practice and started preparing for the first action research cycle. During the *act to transform* step, she implemented the innovative principles of Whole Brain® Learning in her practice while also adhering to Bloom's Taxonomy (Krathwohl, 2002).

In step 3 of the action research process, *observe*, Zandile made an audio recording of the lesson. No photographs were taken. Afterwards, she asked each learner to complete a feedback questionnaire. She listened to the audio recording to *reflect* on her practice and also considered the feedback from the learners. She pondered on her implementation of the principles of Whole Brain® Learning in her teaching practice. The feedback Zandile received from the 29 learners regarding the activation of the four brain quadrants in her lesson is presented in Graph 24:



Graph 24: Learner feedback on the brain quadrants that were activated during Zandile's lesson 1

The respondents were all female, and 41% were English speaking. Although 42% of the learners indicated that they had had an outstanding overall experience during the lesson, 17% strongly disagreed. Quite a number of the learners (49%) agreed that quadrant A had been adequately activated. However, 35% indicated that quadrant C had not been adequately addressed. Zandile's depiction of how well she thought she had activated the four brain quadrants is shown in Figure 63.

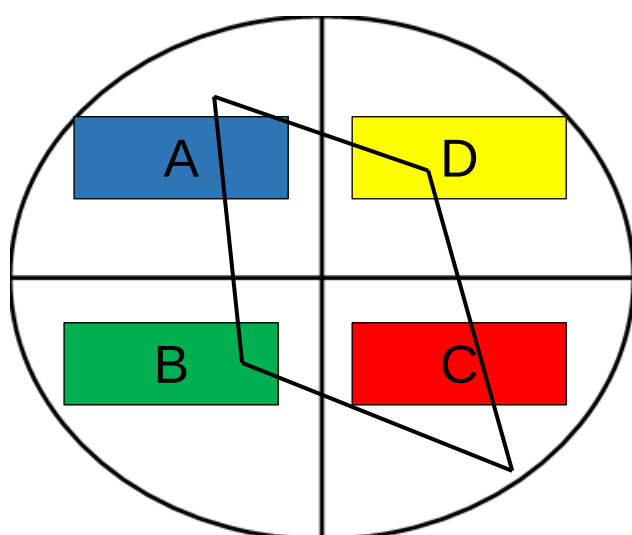
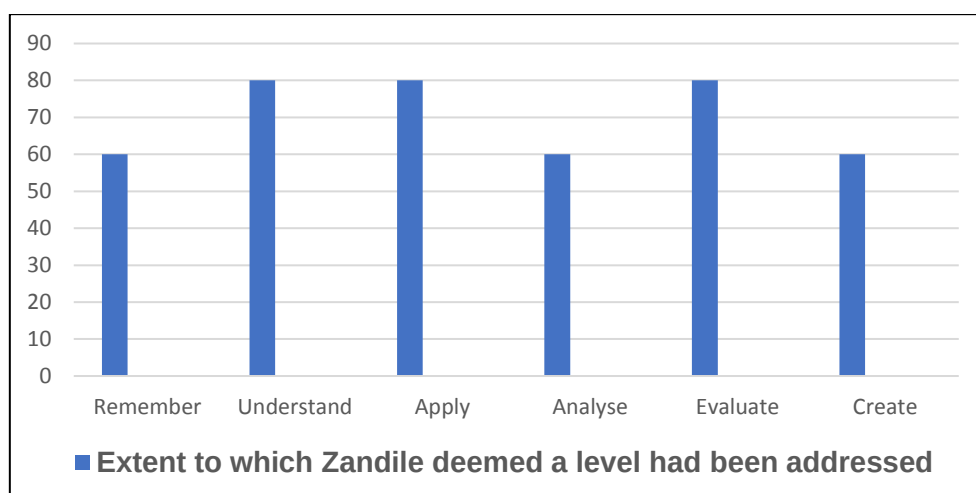


Figure 63: Zandile's depiction of how she thought she had activated Whole Brain® Learning during lesson 1

Zandile contemplated in Figure 63 that she had activated quadrant C very effectively. The learners, however, were of a different opinion. As illustrated in Graph 25, Zandile also reflected on the degree to which she thought she had incorporated Bloom's Taxonomy in her teaching practice.



Graph 25: Zandile's reflection on how she had incorporated Bloom's Taxonomy in lesson 1

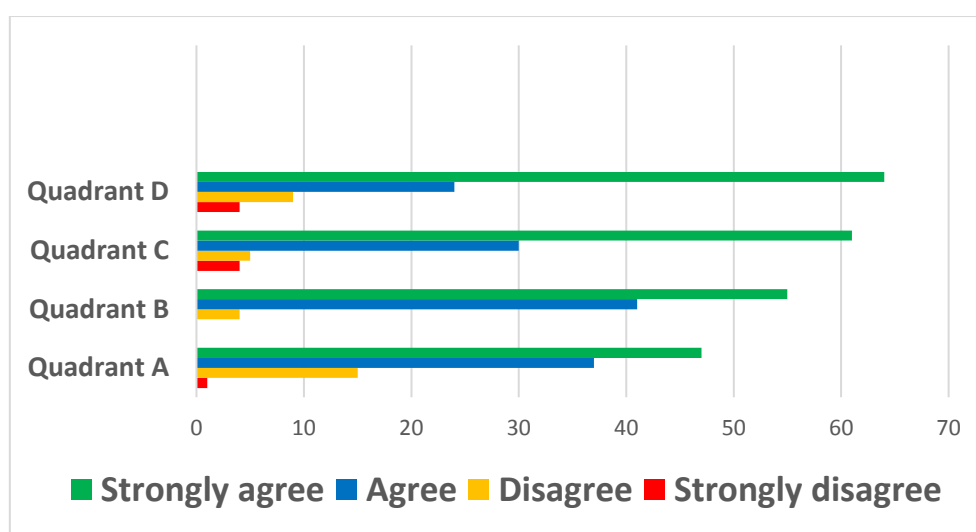
In the above (Graph 25) Zandile indicated that she wanted to address Level 1 (*remember*) and Level 4 (*analyse*). She explained that she would try to address Levels 1 and 4 in the next cycle by focusing on helping the learners to remember facts or information by explaining small parts of the work at a time. In my opinion she should also have addressed Level 6 (*create*) as that is favourable in terms of this taxonomy.

In the last step of Zandile's first cycle, *evaluate*, she re-planned and progressed to the second cycle. Reflecting on the qualitative and quantitative data gathered during her first lesson, she decided to focus more on activating quadrants C and D. She also wanted to address Levels 1 and 4 of Bloom's Taxonomy.

4.5.9.7 Zandile's action research Cycle II

Zandile conducted the second action research cycle in her English Grade 8 teaching practice. In the initial *planning to transform* step, she re-planned how to develop different ways of thinking in this lesson. She handed opt-out forms to the parents to obtain permission for their children's participation in the study. During the *act to transform* step, Zandile implemented the principles of Whole Brain® Learning while also adhering to Bloom's Taxonomy (Krathwohl, 2002).

In step 3 of the second cycle, *observe*, she made an audio recording, but did not take any photographs. After the lesson, she asked the learners to complete feedback questionnaires. She listened to the audio recording and considered the feedback received from the learners to *reflect* on the lesson. She thought about her implementation of the principles of Whole Brain® Learning in her teaching practice. Graph 26 below illustrates the quantitative feedback received from the 22 learners in her Grade 8 class on how she had implemented Whole Brain® Learning:



Graph 26: Learner feedback on the brain quadrants that were activated during Zandile's lesson 2

All the learners were female and 54% were English speaking. The majority of the learners (55%) had a good overall experience during the lesson. In her first action research cycle, the feedback from the learners (Graph 24) indicated that more attention needed to be given to addressing quadrant C. The feedback from the

learners in the second action research cycle showed a greater balance between the four brain quadrants, although quadrants C and D still needed attention. Figure 64 illustrates Zandile's opinion regarding how well she deemed she had addressed the four brain quadrants during the second action research cycle.

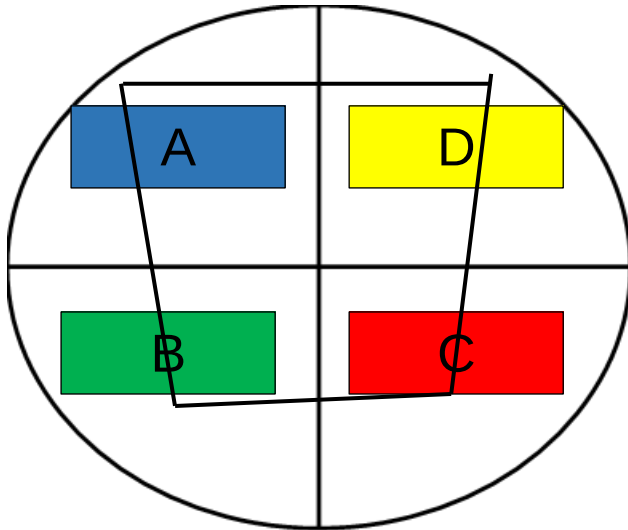
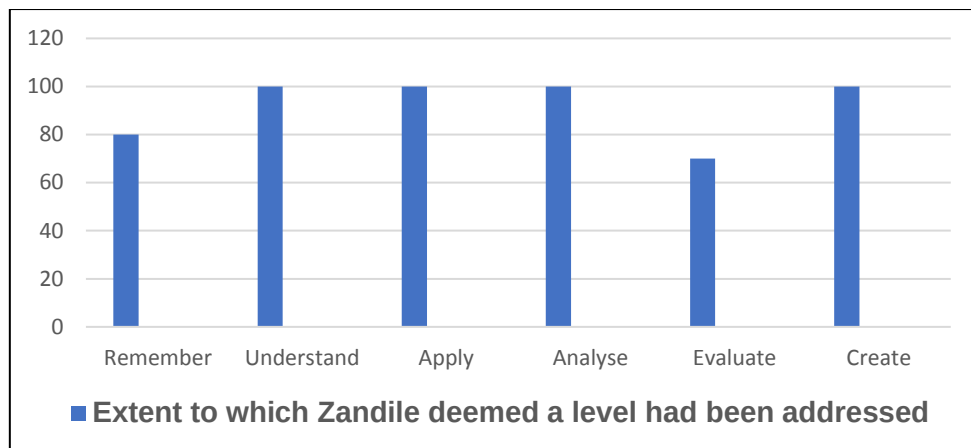


Figure 64: Zandile's depiction of how she thought she had activated Whole Brain® Learning during lesson 2

Zandile opinion regarding her activation of the brain quadrants (Figure 66) corresponded to the feedback received from the learners (Graph 26). Zandile still reflected that quadrant C needed to be better activated. Zandile's reflection on how she had merged the levels of Bloom's Taxonomy into her teaching practice is illustrated in Graph 27.



Graph 27: Zandile's reflection on how she had incorporated Bloom's Taxonomy in lesson 2

Zandile reflected on how she had incorporated the levels of Bloom's Taxonomy during her first lesson (Graph 27). She wanted to improve the way she addressed Levels 1 (*remember*) and 4 (*analyse*). Level 6 (*create*) had been adequately addressed.

In the last step in Zandile's action research process, *evaluate*, she re-planned to proceed with the action research process during the remainder of the Work Integrated Learning period and later when she started to work as a teacher. Although the action research process ended in the short course, Zandile understood action research as an ongoing process.

4.5.10 Mentor teacher 8, Elize, and pre-service teacher 8, Anneli

Elize and Anneli completed two action research cycles in the Whole Brain® Participatory Action Research study (Figure 65).

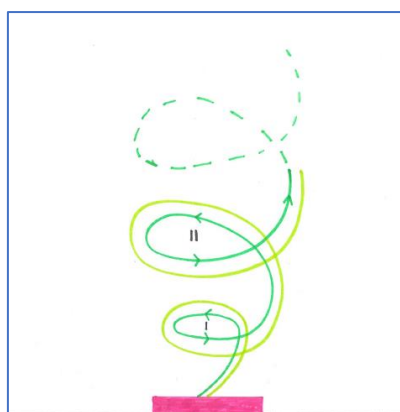


Figure 65: The action research spirals of Elize and Anneli

Elize and Anneli started by completing the HBDI® as a baseline study. During the first cycle, both did action research, Elize in her mentoring practice and Anneli in her teaching practice. In Cycle II (Figure 65), they again did action research in their respective practice. Elize and Anneli each had four sessions in their scholarly communities of practice, and Elize submitted her portfolio of evidence. The dotted extension of the dark green spiral represents Elize and illustrates the third cycle with which she had continued once the short course had ended when she enrolled for master's studies in the mentoring field.

4.5.10.1 Thinking preference profile of mentor teacher 8, Elize

Elize's profile includes double dominant profiles (Table 26) with the C and D quadrants being the most preferred (Herrmann, 2018).

Table 26: HBDI® preference summary of Elize

Quadrant	A	B	C	D
Preference code	3	2	1	1
Adjective pairs:	3	2	12	7
Profile scores:	23	53	131	102

Her secondary preference was quadrant B, and quadrant A was the least preferred. The primary quadrant D indicates a creative and artistic mode of thinking. The other

primary in quadrant C is characterised by interactive and emotive aspects, as seen in Figure 66 (Herrmann, 2018). The secondary in the B-quadrant is typically functional in terms of organisational responsibilities. The tertiary is the A-quadrant, which is characteristic of avoidance, and of logical and analytical modes of thinking.

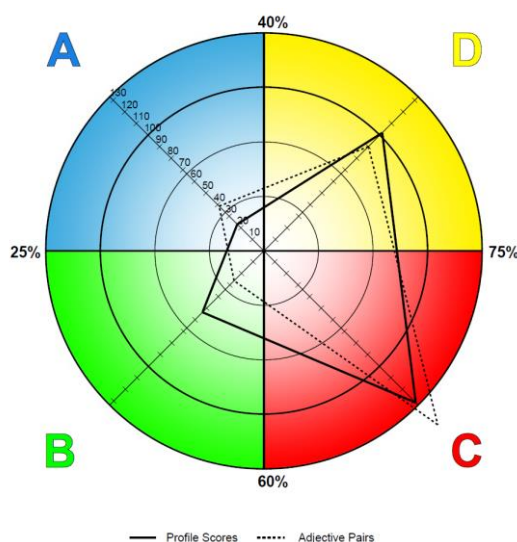


Figure 66: HBDI® profile of Elize

Elize like to involve others and provides a conceptual framework. She might overlook doing step-by-step approach and critical analysis.

4.5.10.2 Thinking preference profile of pre-service teacher 8, Anneli

The thinking preference profile of Anneli features a double dominant profile (Table 27), with her primary quadrants being quadrant C and quadrant D (Herrmann, 2018).

Table 27: HBDI® preference summary of Anneli

Quadrant	A	B	C	D
Preference code	3	2	1	1
Adjective pairs:	3	4	12	5
Profile scores:	33	65	117	80

Anneli's secondary thinking preference is in the B quadrant. Her least ideal quadrant is the A quadrant. The primary D quadrant is expressed in creative and synthesising modes of thinking. The C quadrant primary is characterised by interpersonal

aspects, as seen in Figure 67. The secondary in the B quadrant is typically functional in terms of organisation aspects (Herrmann, 2018). Lastly, the tertiary in the A quadrant is characterised by a lack of coherent modes of thinking.

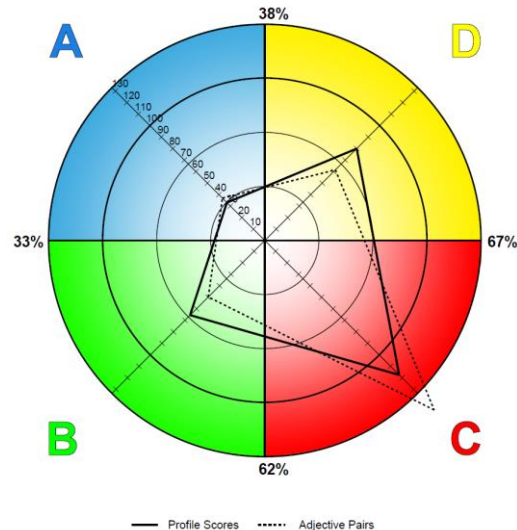


Figure 67: HBDI® profile of Anneli

Anneli's profile is quite similar to that of her mentor teacher, Elize, as she also prefers using a conceptual framework and involving others. She might lack problem identification, the evaluation of ideas and critical analysis.

4.5.10.3 Composite thinking preference profile of Elize and Anneli

Figure 68 is a composite of Elize and Anneli's thinking preferences, which are basically the same. In a mentoring relationship, they would have found it easy to communicate and easy to understand one another's thinking preferences.

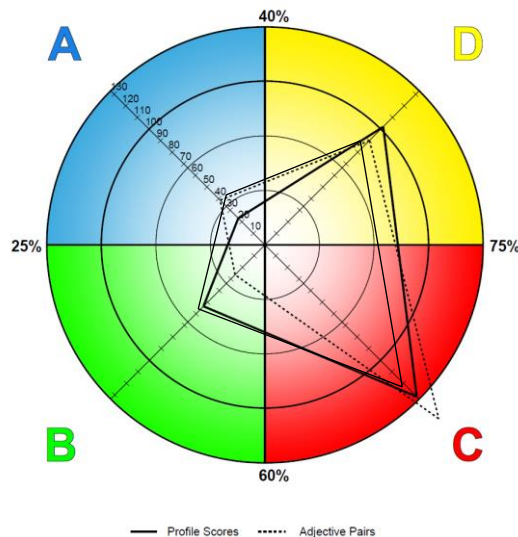


Figure 68: Composite thinking preference profile of Elize and Anneli

Elize mentioned during the scholarly community of practice interviews that in a mentoring relationship, while Anneli and herself were working together in the same teaching practice, they might have tended to “*get on each other’s nerves*” as they tended to think the same way.

4.5.10.4 Elize’s action research Cycle I

During the second and third phases of the mentor teacher self-regulated professionalism process in the mentor teacher short course Elize conducted action research during two of her mentoring opportunities with Anneli.

Elize introduced transformation in her mentoring practice by first *planning to transform* as she stimulated partnership and cooperation with Anneli. They also set high expectations in their mentoring relationship in order to transform practice. Elize opted to develop innovative ways of thinking in her practice and introduced different types of mentoring to nurture Anneli’s and her own self-regulated professionalism. Elize made arrangements to make an audio recording of the mentoring opportunity.

During the second step, *act to transform*, Elize implemented peer mentoring, blended mentoring and Whole Brain® Mentoring in her mentoring practice. She completed the mentoring opportunity worksheet in the mentor teacher short course with Anneli and made an audio recording of the mentoring opportunity.

During the third step, *observe*, Elize listened attentively to the audio recording by using the self-evaluation feedback form for self-reflection. She considered how she had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism. She also noted her implementation of the types of mentoring while specifying the brain quadrants she had activated during the mentoring opportunity.

In step 4, *reflection*, Elize reflected on the outcome of the quantitative data obtained from the pre-service teacher online feedback questionnaire. This is discussed in section 4.5.12. The qualitative data obtained from the evaluation forms, which she used to reflect on the mentoring opportunity, was also considered. The mentoring model she regarded she had mostly employed during the first cycle was friendship and the mentoring type was peer mentoring. Elize and Anneli discussed their experiences, shared ideas and worked together to plan new lessons.

Elize's self-reflection corresponded with the pre-service teachers' feedback. She indicated that she thought she had activated all the brain quadrants and that she wanted to focus more on quadrant A during the second cycle. She reflected that Anneli had taken responsibility for her learning as she employed what she had learned during previous Work Integrated Learning periods at other schools in her practice.

In the *evaluation* step of the first cycle, Elize re-planned to make the required adjustments in her mentoring practice. She wanted to increase her activation of quadrant B in the second action research cycle. She also indicated that she wanted to use self-regulation to a greater extent and introduce blended mentoring more effectively.

4.5.10.5 Elize's action research Cycle II

Elize progressed to the second cycle and re-planned *to transform* as she chose to develop innovative ways of thinking after the evaluation phase in the first action research cycle. She planned to focus on cultivating Anneli's and her own self-regulated professionalism by using a Whole Brain® Approach. Elize made arrangements to make an audio recording of the second cycle. No photographs were taken. During the second step, *act to transform*, Elize implemented peer mentoring,

blended mentoring and Whole Brain® Mentoring in her mentoring practice. She made an audio recording of the mentoring opportunity and Anneli completed a second online feedback questionnaire.

During the third step, *observe*, she observed her mentoring opportunity with Anneli, keeping in mind how she had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism. She observed her implementation of the types of mentoring and noted the brain quadrants she thought she had activated during her second cycle.

In step 4, during *reflection*, Elize listened to the audio recording and used the evaluation forms to reflect on what she had done. She also reflected on the outcome of the quantitative data obtained from the pre-service teacher online feedback questionnaire, which is discussed in section 4.5.12. The qualitative data obtained from the evaluation forms she had completed while reflecting on the mentoring opportunity was also used. In her opinion, the mentoring models she had mostly employed during the second cycle were friendship and nurturing. Elize and Anneli shared ideas, offered advice to, and encouraged one another. The types of mentoring that she thought were implemented were predominantly peer mentoring and Whole Brain® Mentoring.

Elize reflected on the collective online feedback received from the pre-service teachers during the second cycle, according to which mainly quadrants C and D had been activated. Elize reflected that the questions in the worksheet she and Anneli had completed gave structure (quadrant B) to their discussion. Elize and Anneli planned future innovations for their practice (quadrant D).

In the *evaluation* step of the second cycle, Elize evaluated the ongoing action research process. She re-planned and progressed to the next action research cycle when she registered for a master's degree. At the end of the Work Integrated Learning period, Elize reflected that she was moderately content with their mentoring relationship and they awarded themselves 85% as a peer assessment mark. Elize and Anneli reviewed how they had taken responsibility for their professionalism and how blended mentoring was introduced into the mentoring relationship. They also evaluated the extent to which they had considered one another's thinking

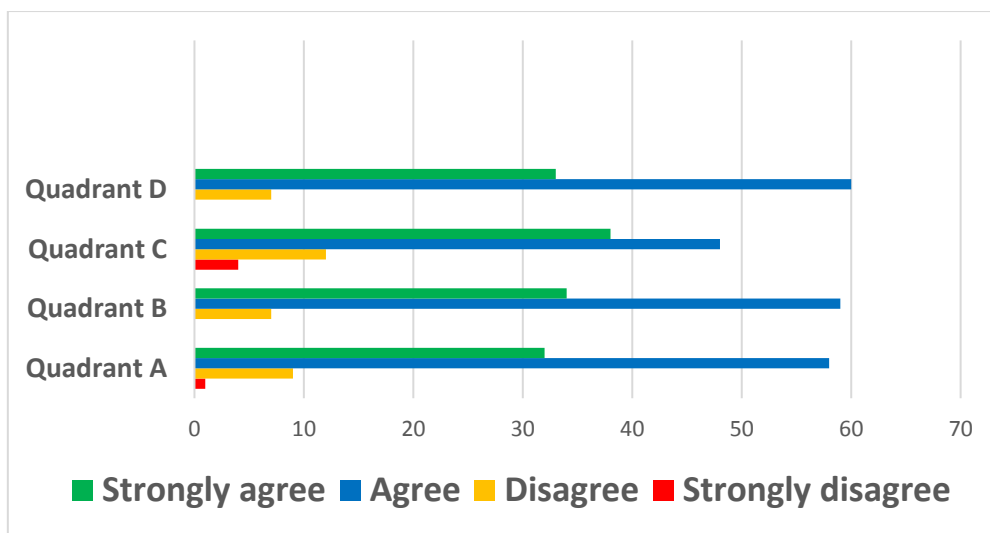
preferences, did action research, and how peer mentoring had been used. In the following section, Anneli's action research cycles are discussed.

4.5.10.6 Anneli's action research Cycle I

During the Work Integrated Learning period, Anneli did action research in her Grade 10 English teaching practice. This happened during the "process" phase of the pre-service teacher self-regulated professionalism process, which is part of the short course.

In the initial *planning to transform* step, Anneli established innovative ways of thinking. She gave opt-out forms to the parents of the children in her Grade 10 class to obtain consent for the learners' participation in the study. Anneli planned to implement innovations as she commenced with the first lesson. During the *act to transform* step, Anneli implemented Whole Brain® Learning in her practice while also adhering to Bloom's Taxonomy (Krathwohl, 2002). In step 3, *observe*, she made an audio recording so that she could review the lesson. No photographs were taken. Afterwards she handed out feedback questionnaires, which she asked the learners to complete.

Anneli listened to the audio recording and studied the learners' feedback to *reflect* on the lesson. She thought about how she had implemented Whole Brain® Learning in her teaching practice. The respondents were all male and Afrikaans speaking. Quite a number of the learners agreed or strongly agreed that they had had a good overall experience during the lesson. Graph 28 below shows the quantitative feedback Anneli received from the 21 learners about how effectively she had implemented the four brain quadrants:



Graph 28: Learner feedback on the brain quadrants that were activated during Anneli's lesson 1

In Anneli's first cycle, the feedback from the learners (Graph 28) revealed that attention needed to be given to addressing quadrant C. Some of the learners (16%) strongly disagreed that quadrant C had been adequately activated. According to the learners, quadrants A, B and D were well activated. Anneli's illustration of how she thought she had addressed the four brain quadrants can be seen in Figure 69.

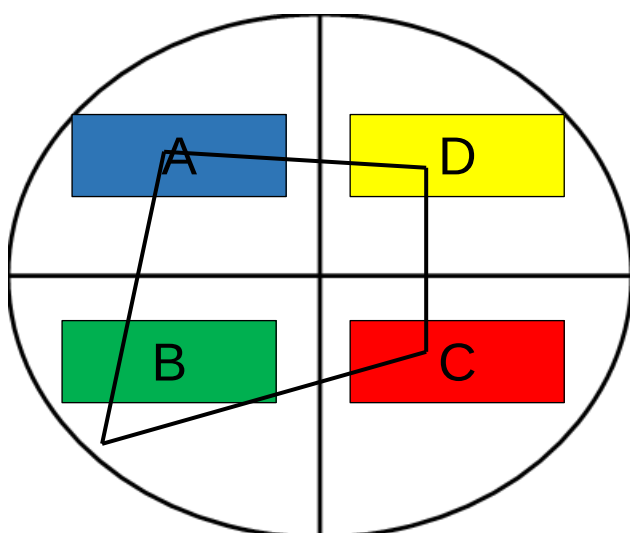
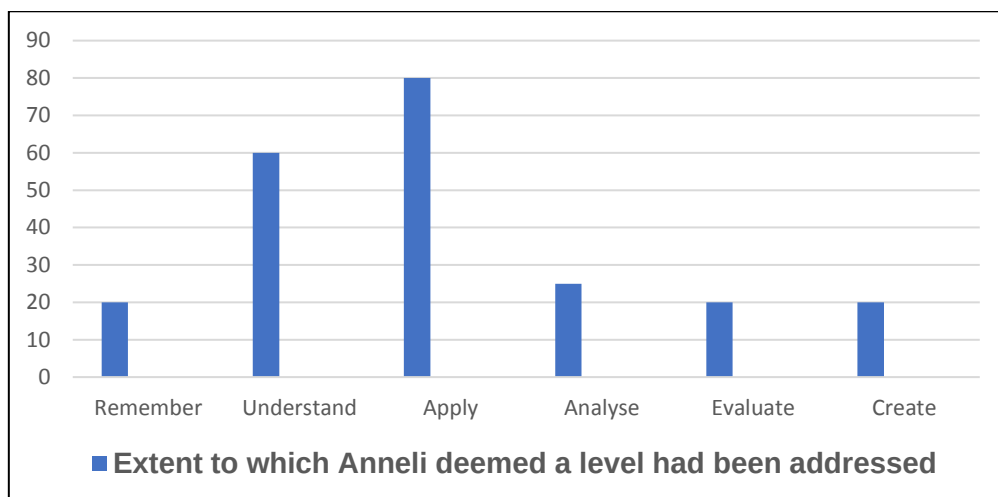


Figure 69: Anneli's depiction of how she thought she had activated Whole Brain® Learning during lesson 1

Anneli's reflection and the experiences of the learners were similar (Figure 69). She thought that quadrant B had been effectively activated while quadrant C needed to be stimulated. However, she underestimated her success as the learners thought that her activation of quadrant D was much better than indicated in her illustration. Anneli also reflected on the degree to which she had incorporated the levels of Bloom's Taxonomy in her teaching practice (see Graph 29).



Graph 29: Anneli's reflection on how she had incorporated Bloom's Taxonomy in lesson 1

When she reflected on how she had incorporated the levels of Bloom's Taxonomy during her first lesson (Graph 29), Anneli thought that she needed to address Levels 1 (*remember*), 5 (*evaluate*) and 6 (*create*). She provided the following example of how she would try to incorporate Levels 1, 5 and 6 in her next lesson: She would let the learners focus on their emotions and evaluate their feelings to create a written piece, or dialogue to be performed in English.

In the last step of Anneli's action research process, *evaluate*, she re-planned and progressed to the second cycle. She used the qualitative and quantitative data to reflect on her first cycle and wanted to pay attention to activating quadrant C and address Levels 1, 5 and 6 of Bloom's Taxonomy during the second action research cycle.

4.5.10.7 Anneli's action research Cycle II

Anneli conducted the second action research cycle in her English Grade 10 teaching practice. In the initial *planning to transform* step, Anneli tried to re-plan how to address different ways of thinking in the second lesson. Anneli gave opt-out forms to the parents of the children in her class to obtain permission for the learners' participation in the study.

During the *act to transform* step, Anneli implemented Whole Brain® Learning while also adhering to Bloom's Taxonomy (Krathwohl, 2002). In step 3 of the action research process, *observe*, Anneli made an audio recording and took photographs (See Photo-evidence 10 and 11).



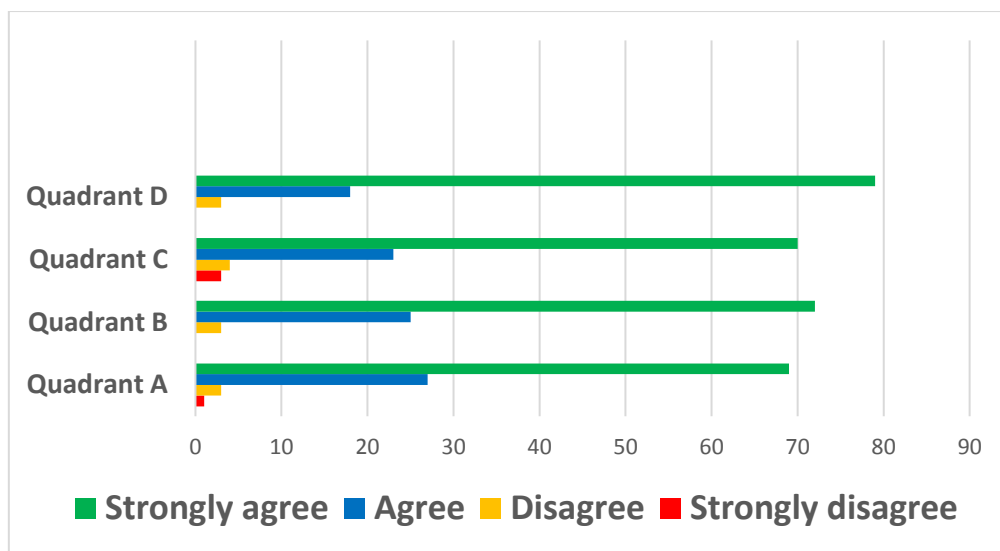
Photo-evidence 10: The corridor decoration during Anneli's second cycle

In Photo-evidence 10, Anneli had decorated the passage outside her mentor teacher's classroom. She had introduced the Crime Scene Investigation (CSI) reporting theme for her lesson in the second cycle. In the next photograph (Photo-evidence 11) the learners are busy with group work.



Photo-evidence 11: Group work during Anneli's second cycle

The above photograph provides evidence of the collaborative learning that took place during the second cycle. The tables and chairs were moved to the side so that the boys could move around in the classroom. They are seen gathering clues for the task they were presented with and appear to be excited about the task. Anneli asked the learners to complete feedback questionnaires and used the audio recording she had made to listen to and reflect on her lesson by using the evaluation forms in the study manual. The feedback from the learners was useful. She considered how she had implemented Whole Brain® Learning in her teaching practice. The quantitative feedback Anneli received from the 25 learners in the Grade 10 class during the second lesson (Graph 30) indicates how well she had implemented the four brain quadrants.



Graph 30: Learner feedback on the brain quadrants that were activated during Anneli's lesson 2

All the respondents were male and Afrikaans. Almost all the learners (96%) indicated that they had had a good overall experience during the lesson. In her first lesson, the feedback from the learners (Graph 30) showed that attention should have been given to quadrant C, but the feedback received after the second cycle (Graph 30) showed a better balance between the four brain quadrants. According to the learners, quadrants B and D had been activated most effectively. Anneli's depiction of how she addressed the four brain quadrants (Figure 70) corresponded to the learners' feedback after the second cycle.

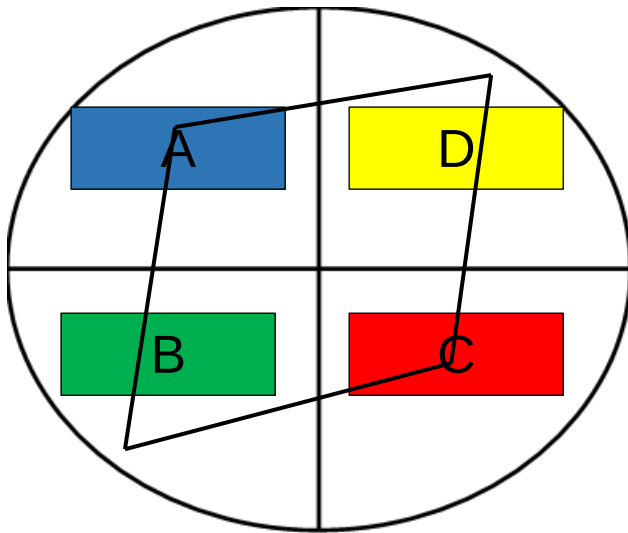
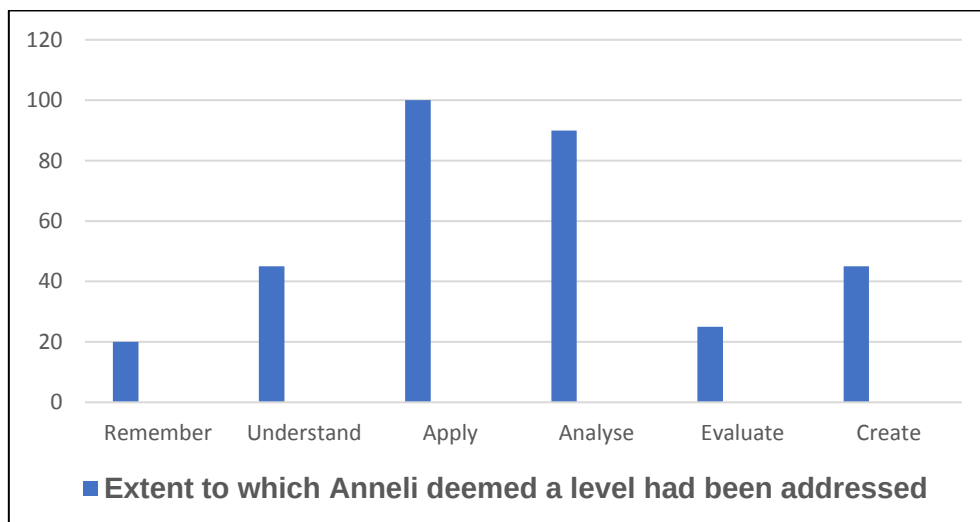


Figure 70: Anneli's depiction of how she thought she had activated Whole Brain® Learning during lesson 2

In Figure 70, Anneli indicated that although quadrant C still needed attention, quadrants B and D had been well activated. Graph 31 shows how she thought she had incorporated the levels of Bloom's Taxonomy.



Graph 31: Anneli's reflection on how she had incorporated Bloom's Taxonomy in lesson 2

Anneli reflected on how she had incorporated the different levels of Bloom's Taxonomy during her first lesson (Graph 31). Her efforts to incorporate Levels 1, 5 and 6 showed improvement. In my opinion, she could have paid more attention to the incorporation of Levels 5 and 6, the highest levels of Bloom's Taxonomy.

In the last step of Anneli's action research process (*evaluate*) she re-planned to continue with the action research process during the remainder of the Work Integrated Learning period and later in her teaching career. The action research ended in the short course, but Anneli understood that action research was a never-ending process.

4.5.11 Mentor teacher 9, Chris, and pre-service teacher 9, Mia

Chris and Mia both completed two action research cycles. In the following sections, I discuss their thinking preferences and the action research they conducted in their practice.

4.5.11.1 Thinking preference profile of mentor teacher 9, Chris

The profile is double dominant. The two primaries are the A and D quadrants, as can be seen in Table 28.

Table 28: HBDI® preference summary of Chris

Quadrant	A	B	C	D
Preference code	1	2	2	1
Adjective pairs:	7	6	4	7
Profile scores:	90	62	54	80

Chris showed a strong preference for logical and quantitative ways of thinking in quadrant A, and a contrasting inclination for the integrative facets that are characteristic of quadrant D (Herrmann, 2018). The thinking preference profile of Chris indicates a secondary preference for the interpersonal from quadrant C, and for the conservative and organised processing modes of quadrant B (Figure 71).

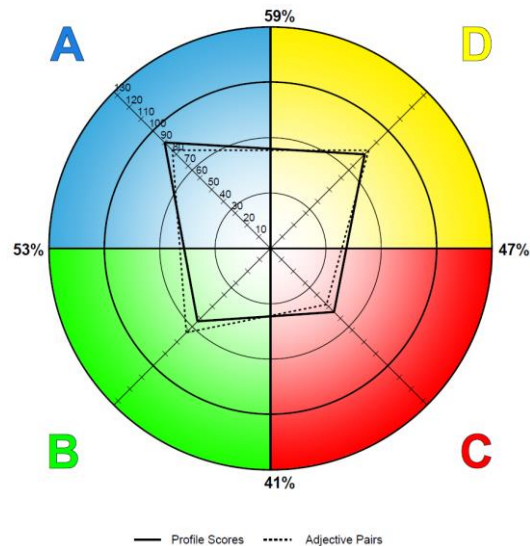


Figure 71: HBDI® profile of Chris

Chris prefers thinking holistically about a problem and is therefore accurate and specific during communication.

4.5.11.2 Thinking preference profile of pre-service teacher 9, Mia

Mia's thinking preferences are triple dominant (Table 29). The three most preferred quadrants are B, C and D.

Table 29: The HBDI® preference summary of Mia

Quadrant	A	B	C	D
Preference code	3	1	1	1
Adjective pairs:	3	9	9	3
Profile scores:	26	125	69	84

Mia shows equilibrium between the organised processing and interpersonal modes of quadrant C. Quadrant D is the third primary and is characteristic of holistic and creative modes of processing (Figure 72) (Herrmann, 2018). She displays a lack of preference for the logical, rational and analytical means of quadrant A. This tertiary quadrant tends to strengthen the three primaries and make them more visible.

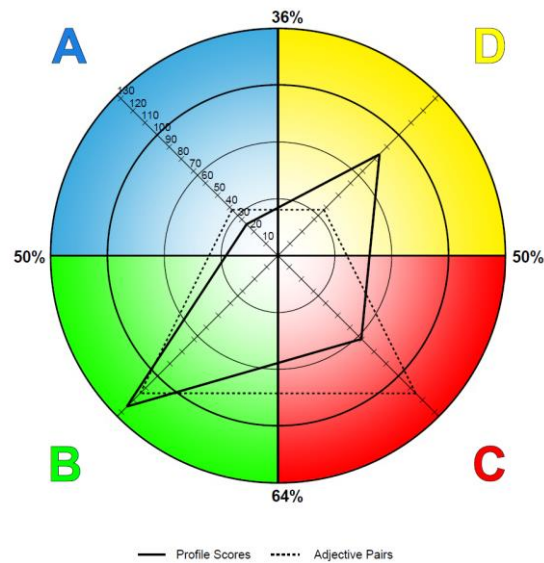


Figure 72: HBDI® profile of Mia

Mia prefers receiving written communication beforehand. She is sensitive to the feelings of others and may overlook data and facts.

4.5.11.3 Composite thinking preference profile of Chris and Mia

A composite of Chris and Mia's thinking preferences is shown in Figure 73. They both have a primary preference for quadrant D and prefer creative and holistic ways of thinking.

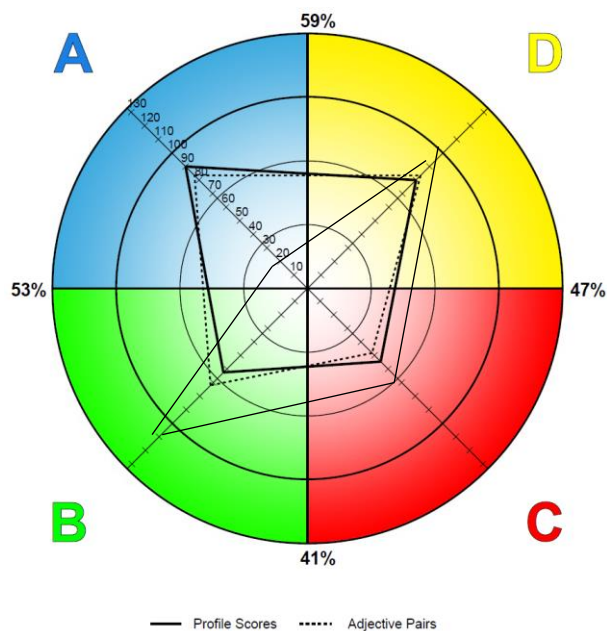


Figure 73: Composite thinking preference profile of Chris and Mia

As shown in Figure 73, Mia has a strong preference for quadrant B and favours a more structured approach to mentoring, whereas Chris would want to mentor more logically due to his preference for quadrant A. During Whole Brain® Mentoring they had to accommodate and adapt to one another's preferences.

4.5.11.4 Chris's action research Cycle I

During the second and third phases of the mentor teacher self-regulated professionalism process in the short course, Chris conducted action research during his two mentoring opportunities with Mia.

Chris first *planned to transform* as he encouraged partnership and cooperation with Mia. They had high expectations to develop in their mentoring relationship. As part of the *planning* action research step, Chris chose to develop different ways of thinking in his practice. He introduced different types of mentoring to cultivate Mia's and his own self-regulated professionalism. Chris made an audio recording of the first action research cycle with Mia, but no photographs were taken.

During the second step, *act to transform*, Chris implemented peer mentoring, blended mentoring and Whole Brain® Mentoring and made an audio recording of the mentoring opportunity. During the third step, *observe*, he listened to the audio recording and reflected on how he had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism. He also considered his implementation of the types of mentoring and specified the brain quadrants he had activated.

In step 4, *reflection*, Chris reflected on the outcome of the quantitative data provided by the pre-service teacher online feedback questionnaire. This is discussed in section 4.5.12. He used the qualitative data from the evaluation forms to reflect on the action research mentoring opportunity. Chris made use of peer mentoring and regarded that the mentoring models he had mostly employed during the first cycle were friendship and self-regulation.

The reflections Chris did, matched the online feedback received from the pre-service teachers. He was of the opinion that mainly quadrants A and C had been activated in his mentoring practice. Chris identified a need to increase the activation of quadrant

B by planning more adequately and developing organisational skills. In the *evaluation* step of the first cycle, Chris re-planned to make the necessary adjustments in his practice as he wanted to activate quadrant B more in the second cycle. Chris also introduced blended mentoring.

4.5.11.5 Chris's action research Cycle II

After completing the first action research cycle, Chris progressed to the second cycle. Chris re-planned *to transform his practice*, choosing to develop innovative ways of thinking. He planned to transform his mentoring practice with the focus on nurturing Mia's and his own self-regulated professionalism by using a Whole Brain® Approach. He decided to make an audio recording of the second action research cycle.

In Step 2, *act to transform*, Chris employed peer mentoring, blended mentoring and Whole Brain® Mentoring. Together with Mia, he worked through the mentoring opportunity worksheet in the mentor teacher short course. Chris audio-recorded the mentoring opportunity. Mia completed a second online feedback questionnaire.

During the third step, *observe*, Chris listened to the audio recording of the mentoring opportunity to reflect on how he had used the mentoring models cloning, nurturing, friendship and self-regulated professionalism. He also noted his application of the types of mentoring and identified the brain quadrants he had activated during the second cycle.

In step 4, during *reflection*, Chris reflected on the quantitative data obtained from the online feedback questionnaire. This pre-service teacher feedback is discussed in section 4.5.10. The qualitative data from the evaluation forms he used to observe in the second cycle was also used during reflection. The mentoring model Chris frequently employed during the mentoring opportunity was self-regulation. The types of mentoring were predominantly peer mentoring and Whole Brain® Mentoring. Chris gave Mia the opportunity to take more responsibility for her professionalism by encouraging her to use self-reflection in her practice.

In the *evaluation* step of the second cycle, Chris evaluated the importance of the ongoing action research process. He decided that he wanted to re-plan and progress

to a following action research cycle with another pre-service teacher during a Work Integrated Learning period. Chris and Mia were content with their mentoring relationship and awarded themselves 80% as a peer assessment mark for the short course. They reflected that they could have improved with regard to how they considered their own and the other person's thinking preferences and how they conducted action research in their practice.

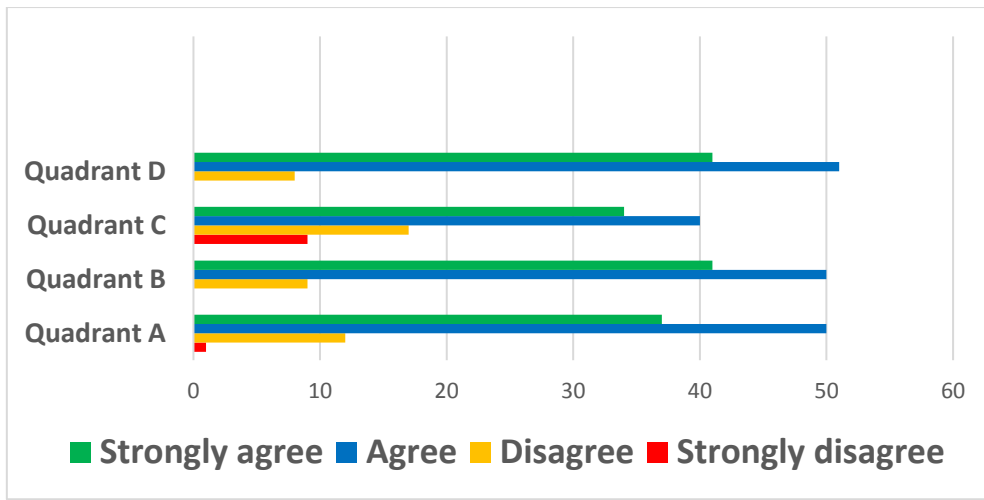
4.5.11.6 Mia's action research Cycle I

Mia used action research in her Grade 10 Tourism teaching practice during the Work Integrated Learning period. She did action research twice during the "process" phase of the pre-service teacher self-regulated professionalism process as part of the pre-service teacher short course.

In the initial *planning to transform* step, Mia handed opt-out forms to the parents of the learners in her Grade 10 Tourism class to obtain permission for their participation in the study. She planned to transform her practice and prepared for the first action research cycle. During the *act to transform* step, Mia implemented Whole Brain® Learning into her practice while adhering to Bloom's Taxonomy (Krathwohl, 2002).

In step 3 of the action research process, *observe*, Mia made an audio recording of the lesson. No photographs were taken. At the end of the lesson, she asked the learners to each complete feedback questionnaires.

Mia listened to the audio recording to reflect on the lesson and complete the observation forms. She also used the learners' feedback to conduct step 4, *reflect*. She considered her implementation of Whole Brain® Learning in her teaching practice. Graph 32 below shows the quantitative feedback Mia received from the 29 learners regarding her implementation of the four brain quadrants.



Graph 32: Learner feedback on the brain quadrants that were activated during Mia's lesson 1

The respondents were mostly female (72%), and all the learners were Afrikaans speaking. Approximately half of the learners (48%) strongly agreed that they had had a good overall experience during the lesson. The learners' feedback in her first cycle (Graph 32) showed that attention should have been given to quadrants C and A. The learners strongly agreed that quadrants B (41%) and D (41%) had been well activated. Figure 74 illustrates how Mia thought she had addressed the four brain quadrants.

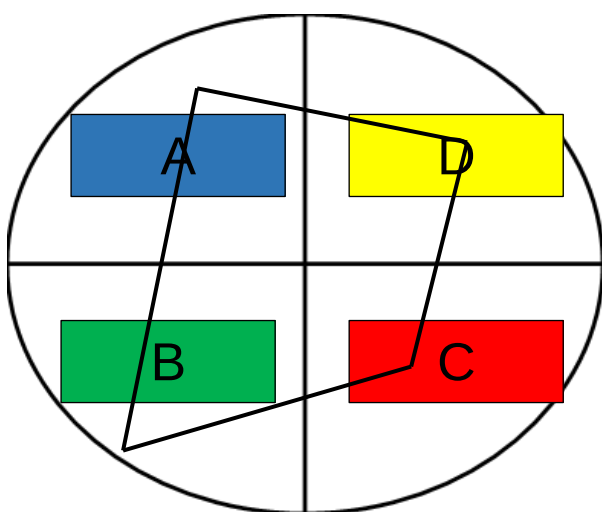
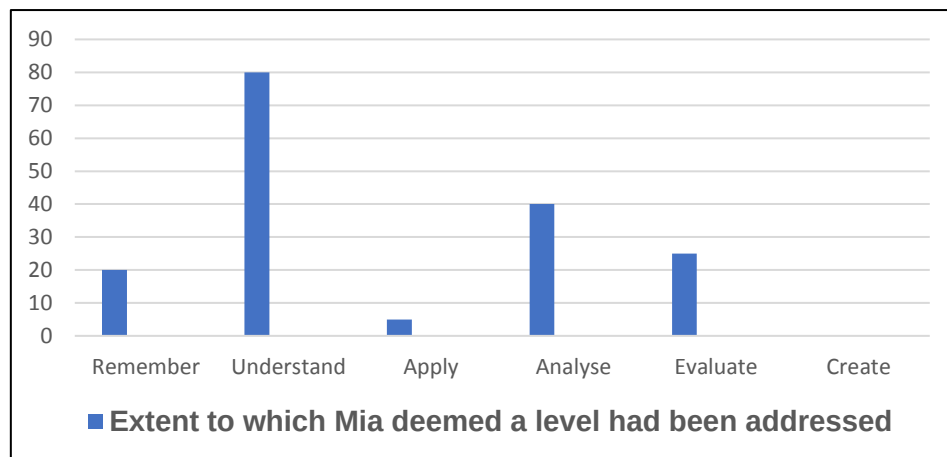


Figure 74: Mia's depiction of how she thought she had activated Whole Brain® Learning during lesson 1

Figure 74 shows that Mia deemed that she had activated quadrants A and B. The learners, however, indicated that quadrant D had been well activated (see Graph 32). In order to activate quadrant C, Mia decided to give the learners fewer facts and to have more group discussions. In Graph 33, Mia reflected on how she had incorporated the levels of Bloom's Taxonomy in her lesson.



Graph 33: Mia's reflection on how she had incorporated Bloom's Taxonomy in lesson 1

Graph 33 indicates that Mia wanted to improve her incorporation of Levels 3 (*apply*), 5 (*evaluate*) and 6 (*create*). In order to achieve this, Mia decided to have more class discussions with her learners to give them an opportunity to apply the content to the tourism sector and solve problems.

In the last step of Mia's first cycle, *evaluate*, she started progressing towards the second action research cycle. She wanted to focus on activating quadrants A and C while incorporating Levels 3, 5 and 6 of Bloom's Taxonomy during the second action research cycle.

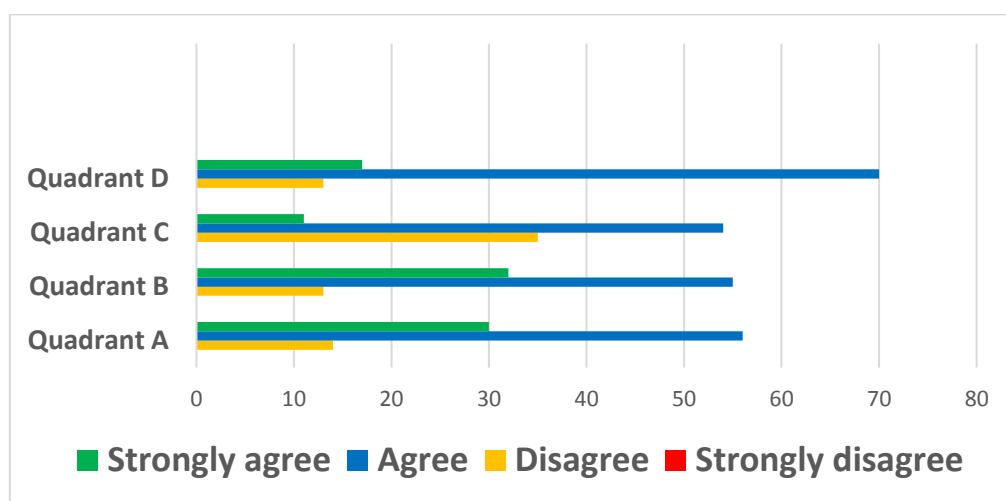
4.5.11.7 Mia's action research Cycle II

Mia conducted the second action research cycle in her Grade 10 Tourism teaching practice. In the first step, *planning to transform*, she wanted to address different ways of thinking. She handed opt-out letters to the parents of the learners in her

class to obtain permission for their children's participation in the study. During the *act to transform* step, Mia implemented Whole Brain® Learning while also adhering to Bloom's Taxonomy (Krathwohl, 2002).

In step 3 of the action research cycle, *observe*, she made an audio recording of the lesson, but did not take any photographs. She asked the learners to each complete a feedback questionnaire. While she listened to the audio recording, she reflected on how she had facilitated the lesson and completed the five observation sheets in her study manual.

Mia also considered the learners' feedback in order to conduct step 4 of the action research process, *reflect*. She thought about how she had implemented Whole Brain® Learning in her teaching practice. The 31 learners in the Grade 10 class during the second cycle were asked to provide feedback on how she had implemented the four brain quadrants in her lesson. Their responses are depicted in Graph 34.



Graph 34: Learner feedback on the brain quadrants that were activated during Mia's lesson 2

The respondents were mostly male (61%) and all were Afrikaans speaking. Almost all the learners (99%) indicated that they had had an excellent overall experience during the lesson. In Mia's first action research cycle, the feedback from the learners (Graph 32) showed that attention needed to be given to addressing quadrant C. The

feedback in the second cycle indicated an improvement in how she had activated the four brain quadrants. The brain quadrants C (65%) and A (86%) had been well stimulated. Figure 75 shows how Mia thought she had addressed the four brain quadrants during the second cycle.

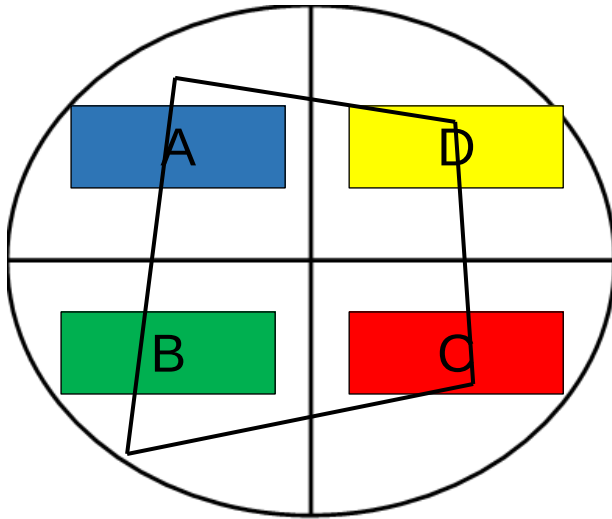
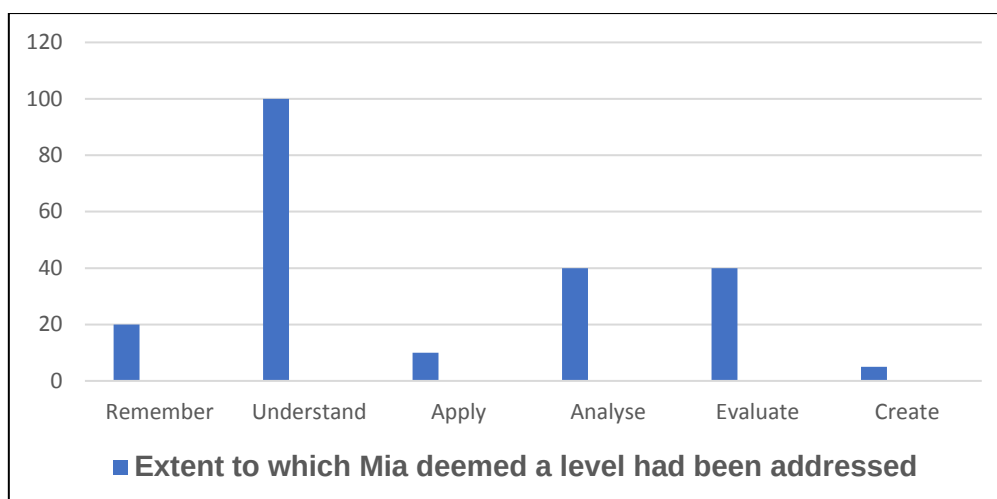


Figure 75: Mia's depiction of how she thought she had activated Whole Brain® Learning during lesson 2

Figure 75 correlates with the learners' feedback depicted in Graph 34. During the action research process in Cycle II Mia also reflected on the extent to which she had addressed the levels of Bloom's Taxonomy into her teaching practice. In Graph 35, Mia depicted how she thought she had addressed the levels:



Graph 35: Mia's reflection on how she had incorporated Bloom's Taxonomy in lesson 2

While reflecting on her first lesson, Mia decided that she wanted to incorporate Level 6 (*create*) of Bloom's Taxonomy to a greater extent. In lesson 2, as seen in Graph 35, she was still not able to adequately improve Levels 1, 3 and 6. In order to improve her incorporation of those levels, Mia decided that she would ask learners additional questions, involve them more in the lesson and encourage them to reflect on their learning.

In the last step of the second cycle, *evaluate*, Mia decided to continue with the action research process during the remainder of the Work Integrated Learning period and later when employed as a teacher. Although the action research process ended in the short course, Mia realised that action research is an ongoing process.

4.5.12 Quantitative online feedback received from the pre-service teachers

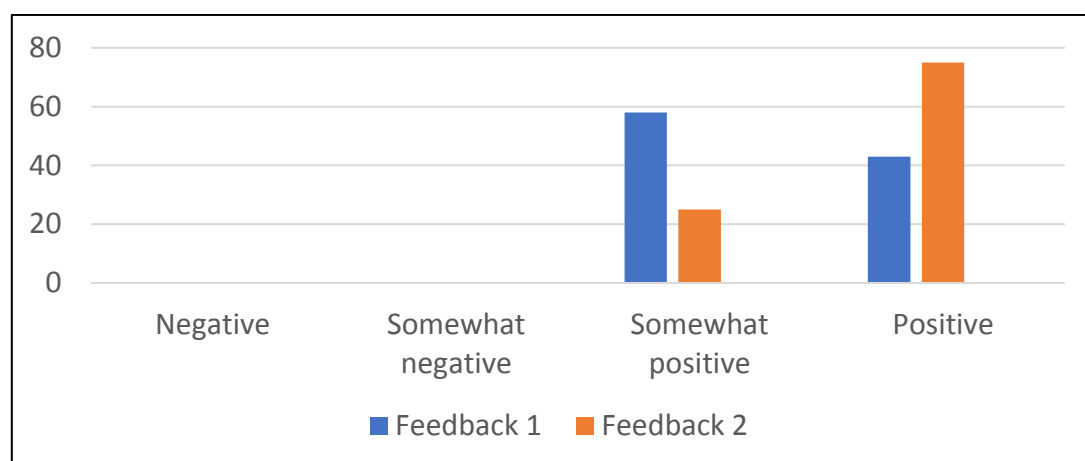
The pre-service teachers completed online feedback questionnaires twice during the Work Integrated learning period. The final-year education students completed the questionnaires anonymously and jointly using Qualtrics software. My justification for protecting their anonymity was that, since the pre-service teachers were in a mentoring relationship with a mentor teacher, they should not complete the questionnaire individually. I wanted them to feel free to give their honest opinions

when providing feedback. The data from the two online feedback questionnaires will now be discussed.

I showed the feedback to the mentor teachers during two scholarly community of practice sessions so that they could reflect on it in order to transform their practice. The eight pre-service teachers completed each of the two online feedback questionnaires. In the following section, I will discuss the feedback received from the pre-service teachers by comparing the feedback on the first and second action research cycles.

4.5.12.1 Pre-service teachers' feedback on their mentoring experiences

Graph 36 below depicts the pre-service teachers' reflections on their experiences in their mentoring relationships with their mentor teachers.

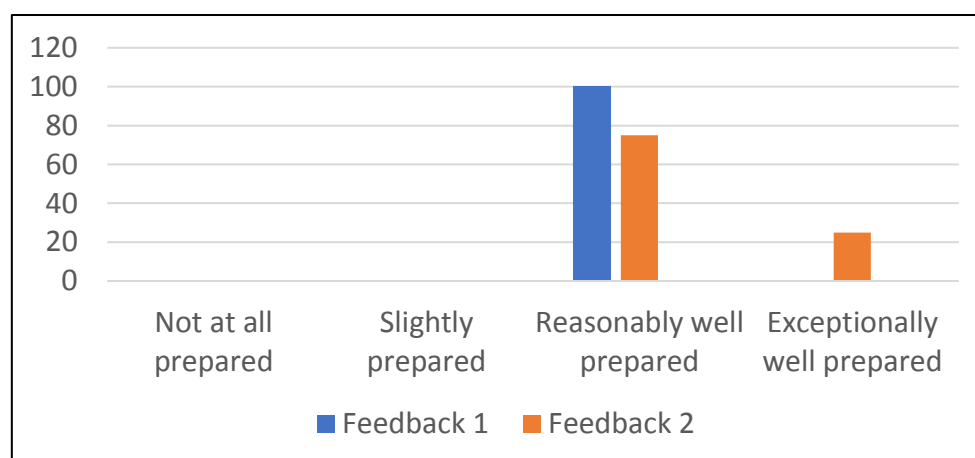


Graph 36: Pre-service teachers' feedback on their experiences during mentoring

As seen in Graph 36, there was a definite progression from the first action research cycle to the second. In the first cycle, four of the eight pre-service teachers, and in the second cycle six of the eight reported positive mentoring experiences.

In the following graph (Graph 37), the pre-service teachers depicted how prepared they thought they were for their future profession. In the first feedback questionnaire all the pre-service teachers indicated that they were reasonably well prepared. In the second feedback questionnaire, six of the eight stated that they were reasonably well

prepared. The other two pre-service teachers considered themselves to be exceptionally well prepared.



Graph 37: Pre-service teachers' feedback on how well they thought they were prepared for the profession

4.5.12.2 Pre-service teachers' feedback on the implemented mentoring models and types of mentoring

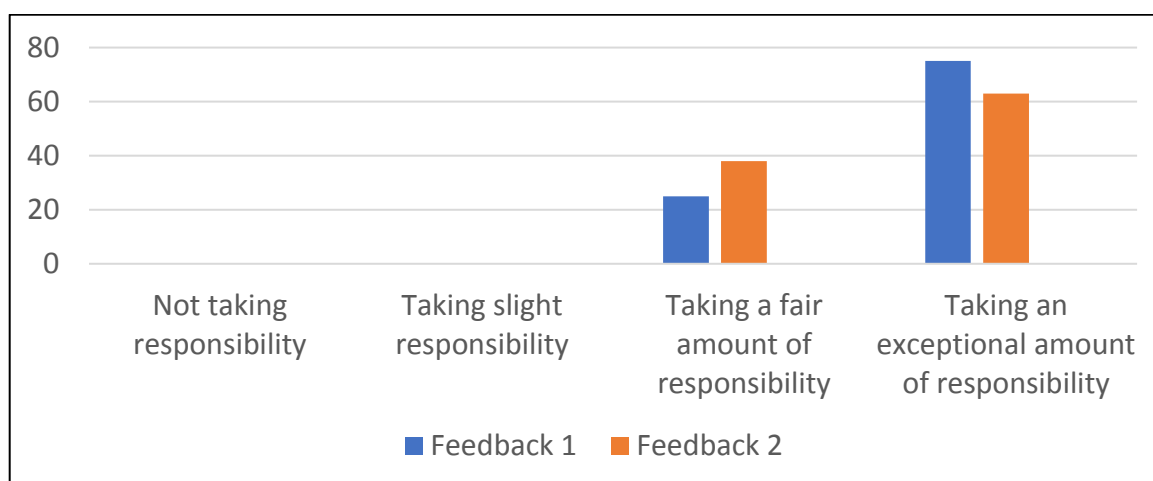
In the two feedback questionnaires, the pre-service teachers gave their opinion regarding the mentoring models they thought the mentor teachers had implemented. The pre-service teachers did not evidently notice cloning in any of the mentoring practices. After the first cycle, one respondent thought that nurturing had been utilised. The mentoring models that were identified as the most evident in the second cycle were friendship and self-regulation. Four of the eight pre-service teachers agreed that self-regulation had been implemented in the first action research cycle, and five stated that they had experienced this type of mentoring in the second cycle.

The pre-service teachers stated that in terms of Whole Brain® Mentoring, quadrant C had been most activated in the first and second cycles, while quadrant B had not been activated effectively. I found it interesting to note that the pre-service teachers experienced that peer mentoring was better implemented during the first action research cycle than during the second. With regard to how blended mentoring was applied, a slight improvement was noted in Cycle II. None of the pre-service teachers

strongly agreed that blended mentoring had been employed in Cycle I, and two of the eight agreed that it had been implemented in Cycle II.

4.5.12.3 Feedback from the pre-service teachers on their cultivation of self-regulated professionalism

After the first action research cycle, six of the eight final-year education students thought that they were taking an exceptional amount of responsibility for their self-regulated professionalism (Graph 38).



Graph 38: Pre-service teachers' feedback on their self-regulated professionalism

After the second cycle, five of the eight pre-service teachers strongly agreed that they were taking responsibility for cultivating their self-regulated professionalism, while three were taking only some responsibility. I consulted the pre-service teachers during the final scholarly community of practice interview and asked them why fewer pre-service teachers thought that they were taking responsibility for nurturing their self-regulated professionalism at the end than at the beginning? The pre-service teachers indicated that the reason for this was the realisation of the importance of life-long learning. They realised that their professional development had only just begun.

4.6 WHOLE BRAIN® PARTICIPATORY ACTION RESEARCH: OVERSEEING MENTOR AND PRINCIPAL RESEARCHER

In this part of the chapter, I share the Whole Brain® Participatory Action Research I conducted in my practice as a facilitator, curriculum developer, overseeing mentor and principal researcher. I will now discuss the four action research cycles I completed.

4.6.1 My action research spiral

The four action research cycles I completed during the Whole Brain® Participatory Action Research study are illustrated below.

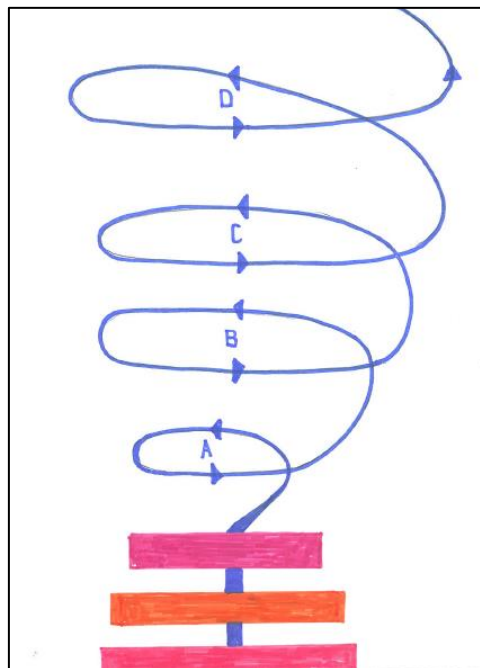


Figure 76: My action research spiral

As I explained in Chapter 3 (Figure 26), I initially did the following as part of my action research baseline ventures: I undertook a baseline study ten months prior to the commencement of the Whole Brain® Participatory Action Research study; developed the curriculum for the two short courses; and completed the HBDI®. In my action research spiral (Figure 76), the four cycles in the blue spiral represent my four

scholarly community of practice sessions with the mentor and the pre-service teachers.

4.6.1.1 My action research Cycle A

I performed action research Cycle A during the first mentor teacher and pre-service teacher scholarly communities of practice sessions. The first pre-service teacher session took place during the “preparation for self-regulated professionalism” phase. In this scholarly community of practice session I outlined my expectations for the programme, the scholarly community of practice was established and the action research process discussed. A focus group interview was held.

The first scholarly community of practice session with the mentor teachers took place in the “preparation for mentoring” phase. I planned how I would facilitate the establishment of the mentor scholarly community of practice. I explained my expectations for the programme, we did an ice-breaker activity, and a focus group interview was conducted. The sessions with the mentor teachers and pre-service teachers, which had somewhat different content took place on the same day, but at different times.

In the initial *planning to transform* step, I started by developing innovative ways of thinking with the focus on addressing the participants’ and my own self-regulated professionalism. I proceeded to plan the transformation of my practice, and preparations were made for the first action research scholarly communities of practice sessions.

During the *act to transform* step, I implemented self-regulation, Whole Brain® Mentoring, peer mentoring and blended mentoring in my practice while also adhering to Bloom’s Taxonomy (Krathwohl, 2002). In Photo-evidence 12, I was facilitating the pre-service teacher session. The final-year education students and the mentor teachers were encouraged to take photographs during our scholarly community of practice sessions. Emma took this photograph while I was facilitating the first session.



Photo-evidence 12: The first pre-service teacher session I facilitated

Photo-evidence 12 shows the pre-service teachers seated together in a group, facing one another. In photo-evidence 13, some of the mentor teachers are engaged in a group activity during their first session.



Photo-evidence 13: Mentor teachers taking part in an activity during Cycle A

In the above photo, the mentor teachers are standing in a group while participating and communicating during the first scholarly community of practice. The activity seen on the photograph was introduced during the session for the mentor teachers to get to know one another and to start thinking innovatively about dealing with problems.

In step 3 of the action research process, *observe*, I looked at the video recordings I had made and the photographs that were taken. I completed the observation forms

while watching the videos. Subsequently, I requested the mentor teachers and pre-service teachers to complete a feedback questionnaire.

Their responses made it possible for me to conduct step 4 of the action research process, *reflect*. Six of the total of 17 mentor teachers and pre-service teachers felt that friendship had been mostly used. Five participants indicated that self-regulation had been effectively implemented, and a few identified the mentoring models nurturing and cloning in the sessions. I shared a large amount of introductory information about the short course during the first sessions. I evaluated my practice on the basis of the observations I had made and concluded that cloning was the mentoring model I had used most in the scholarly communities of practice.

In the feedback questionnaires, 11 of the mentor and pre-service teachers stated they had had an excellent experience during the first session, and 11 of the 17 mentor and pre-service teachers strongly agreed that their self-regulated professionalism had been cultivated. Only one person stated that the course material, manual and use of technology had not been empowering.

I thought about how I had implemented Whole Brain® Mentoring in my practice. In Cycle A, the feedback received indicated that 11 of the 17 participants agreed that quadrant C had been activated the most. One person strongly disagreed that quadrant B had been activated. I therefore opted to pay more attention to providing clear step-by-step instructions to the participants during Cycle B. My depiction of how I thought I had addressed the four brain quadrants did not correspond to what the participants had experienced, as illustrated in Figure 77.

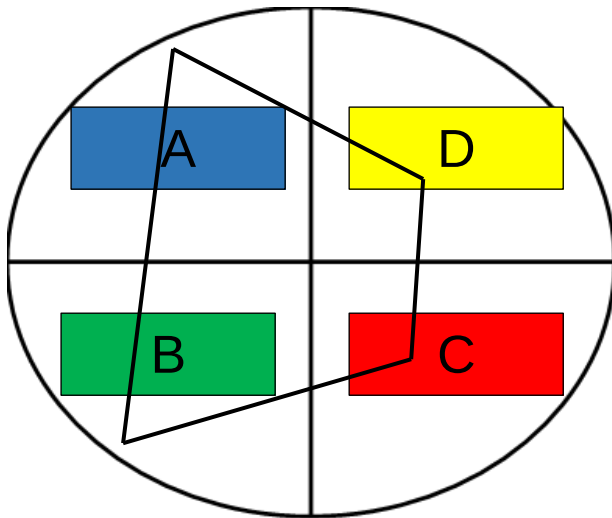
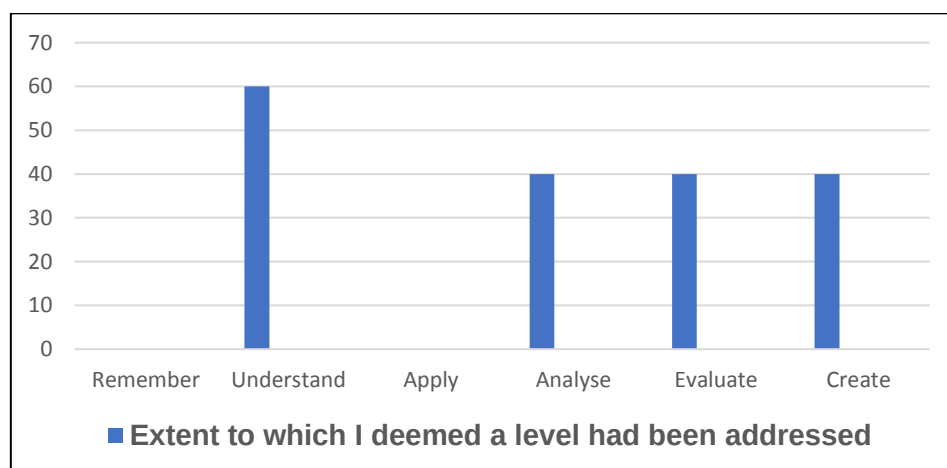


Figure 77: My depiction of how I thought I had activated Whole Brain® Mentoring during Cycle A

As seen in Figure 77, I was of the opinion that quadrants A and B had been activated during the first sessions. In the opinion of the participants, however, quadrant C was the one that had been mostly activated. I reflected on how I had incorporated the levels of Bloom's Taxonomy into my practice and came to a conclusion depicted in Graph 39.



Graph 39: My reflection on how I had incorporated Bloom's Taxonomy in Cycle A

In my reflection on how I deemed I had incorporated the levels of Bloom's Taxonomy (Graph 39) during Cycle A, I concluded that Levels 1 and 3 (*remember* and

understand) had not been addressed at all. I was not overly concerned about this as I planned to pay more attention to them in the next cycle in which I would also incorporating Levels 5 and 6 (*evaluate* and *create*).

In the last step of Cycle A, *evaluate*, I wanted to progress towards the beginning of the Cycle B. I referred to the qualitative and quantitative data to reflected on Cycle A. I decided I would pay more attention to activating quadrants B and D while addressing Levels 5 and 6 of Bloom's taxonomy during Cycle B. I also decided to more adequately introduce self-regulation as a type of mentoring.

4.6.1.2 My action research Cycle B

After action research Cycle A, I progressed to Cycle B. The second pre-service teacher scholarly community of practice session took place during the process phase of the short course. Since this session was presented by another a Whole Brain® Thinking Practitioner, I did not conduct action research in this pre-service teacher session.

The mentor teachers' scholarly community of practice session was held during the "pre-mentoring" phase of the short course. The first part of the session was also facilitated by a Whole Brain® Thinking practitioner. I did, however, conduct action research during the second part of the scholarly community of practice session I had with the mentor teachers.

In the initial step, *planning to transform*, I started implementing innovative ways of thinking with the focus of cultivating mentor teachers' self-regulated professionalism. I proceeded to plan to transform my practice and preparations were made for the second mentor teacher scholarly community of practice session.

During the *act to transform* step, I implemented self-regulation, Whole Brain® Mentoring, peer mentoring and blended mentoring in my practice. I also adhered to Bloom's Taxonomy. In Photo-evidence 14, the thinking preference profile of one of the participants can be seen.

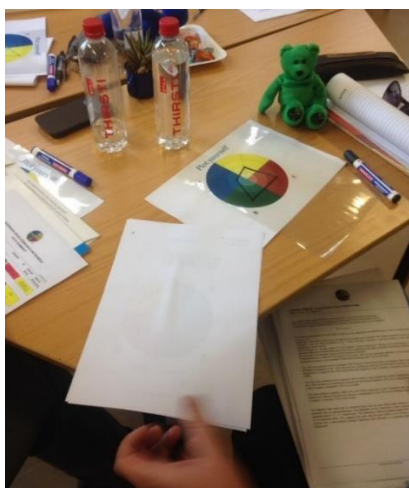


Photo-evidence 14: Thinking preference profile of a participant during Cycle B

The photograph in Photo-evidence 14 shows a participant discussing his or her thinking preference profile with the rest of a scholarly community of practice. In Photo-evidence 15, the mentor teachers and pre-service teachers are seen sitting together in groups making sense of their thinking preference profiles.



Photo-evidence 15: Mentor and pre-service teachers analysing their HBDI® profiles

In step 3 of the action research process, *observe*, I watched the scholarly community of practice session with the mentor teachers on the video recording I had made. Photographs were taken during the session, as seen in Photo-evidence 16, where groups of mentor teachers are seen in conversation with one another.



Photo-evidence 16: Mentor teachers engaged in a group work activity during Cycle B

In Photo-evidence 16, the mentor teacher logo can be seen on the PowerPoint slide and I am in conversation with a group. After the session, I requested the mentor teachers to complete a questionnaire designed to provide feedback. I observed the video recordings of the session with the mentor teachers and completed the observation sheets. I also considered the feedback provided by the participants to conduct step 4 of the action research process, *reflect*. Four of the seven mentor teachers thought that the mentoring model friendship had been the most visible in my practice. Six of the seven participants strongly agreed that self-regulation had been employed in Cycle B. In my observation of, and reflection on the implementation of the mentoring models, I decided that cloning and self-regulation were the most evident. All the mentor teachers agreed or strongly agreed that they had had an excellent experience during the second session. Furthermore, six of the seven mentor teachers were convinced that they had taken responsibility for their development.

I reflected on how I had implemented Whole Brain® Mentoring in my practice. In Cycle A, the participants' feedback showed that quadrant C was the most activated. In Cycle B, five of the seven mentor teachers strongly agreed that quadrants A and C had been the most effectively activated. According to them, quadrant B had been the least activated. Figure 78 below shows how I thought I had activated the four brain quadrants in Cycle B.

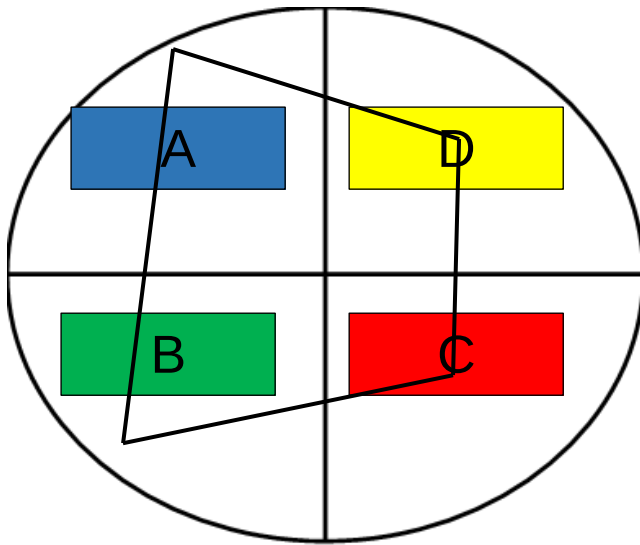
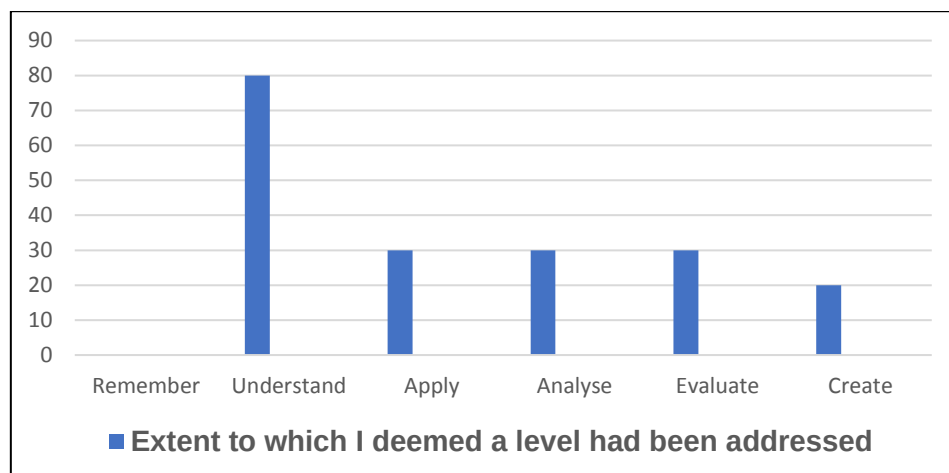


Figure 78: My depiction of how I thought I had activated Whole Brain® Mentoring during Cycle B

Figure 78 does not precisely mirror the feedback received from the mentor teachers. In my opinion, I had activated quadrant B more, but the mentor teachers did not agree. I furthermore reflected on the extent to which I had incorporated the levels of Bloom's Taxonomy in my practice. Graph 40 depicts how I thought I had addressed the levels:



Graph 40: My reflection on how I had incorporated Bloom's Taxonomy in Cycle B

I contemplated on how I had addressed Bloom's Taxonomy during the second scholarly community of practice session and was of the opinion that Level 2 (*understanding*) had been well addressed. The highest level (*create*) needed to be better incorporated. I wanted the participants to evaluate their practice and create meaning throughout the action research process. In the last step of Cycle B, *evaluate*, I planned to start with Cycle C, in which I wanted to pay attention to activating quadrant B and incorporate Level 6 of Bloom's Taxonomy.

4.6.1.3 My action research Cycle C

I continued with my action research in Cycle C. The third pre-service teacher community of practice session took place during the "process" phase of the short course and focused on the analysis of the learner feedback questionnaires.

The third scholarly community of practice session with the mentor teachers took place during the "mentoring" phase of the short course and focused on innovations in practice that related to types of mentoring. A focus group interview was also conducted. The sessions with the mentor and pre-service teachers did not take place on the same day.

In the initial *planning to transform* step, I focused on innovative ways of thinking to address the participants' self-regulated professionalism and did the necessary preparation for the two scholarly communities of practice sessions.

During the *act to transform* step, I implemented self-regulation, Whole Brain® Mentoring, peer mentoring and blended mentoring in my practice. I also adhered to Bloom's Taxonomy, reflecting on the levels I had addressed during the sessions. In Photo-evidence 17, the pre-service teachers are shown analysing feedback questionnaires while having discussions.



Photo-evidence 17: Pre-service teachers discussing the analysis of their feedback questionnaires during Cycle C

In Photo-evidence 18 below, the mentor teachers were having a conversation during the focus group interview. They were facing one another and I was taking notes of their feedback. In the photograph, the mentor teachers can be seen listening attentively while Melissa shared her view.



Photo-evidence 18: Mentor teachers during a focus group interview in Cycle 3

In step 3 of the action research process, *observe*, I watched the video recordings I had made of the two sessions while completing the observation evaluation forms. After the sessions, I asked the mentor teacher and pre-service teachers to complete feedback questionnaires.

I used my observations, the photographs and the feedback from the participants to conduct step 4 of my action research spiral, *reflect*. I received the following feedback from the 11 mentor teachers and pre-service teachers who had completed the feedback questionnaires: Six of the 11 participants thought that self-regulation had been used most, and none had found evidence of the inclusion of the mentoring model cloning during cycle C. In my opinion, I had mostly used the mentoring model self-regulation in the session with the pre-service teachers. I did not show the final-year education students how to analyse the feedback questionnaires but helped them to take responsibility for their learning. During the third session with the mentor teachers, I focused on the need for them to innovate their practice. Seven of the 11 mentor and pre-service teachers reported that they had a good experience during the two sessions in Cycle C. Ten of the 11 mentor teachers and pre-service teachers strongly agreed they nurtured their self-regulated professionalism. This shows an improvement in this regard from Cycle A to Cycle C.

I reflected on how I had implemented Whole Brain® Mentoring in my practice. In my action research in Cycles A and B, the feedback from the participants showed that C was the quadrant that had been most activated. In action research Cycle C, eight of the 11 mentor teachers and pre-service teachers strongly agreed that quadrant D had been activated the most. Quadrant C was the least activated.

I used the observation sheets, video recordings, photographs and feedback to *reflect* on the sessions and depicted how I thought I had addressed the four brain quadrants as follow:

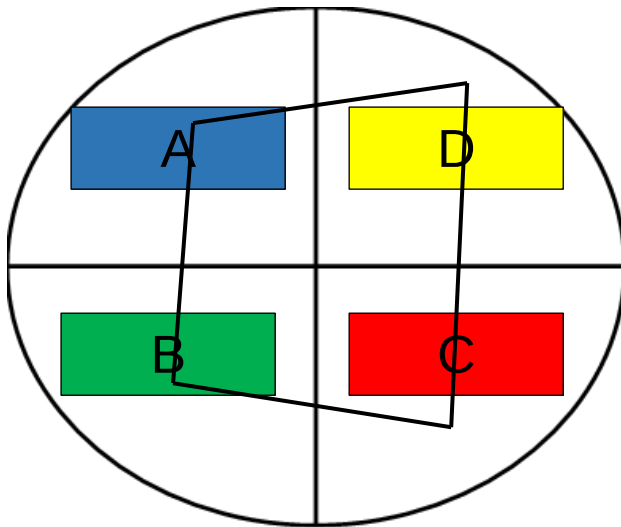
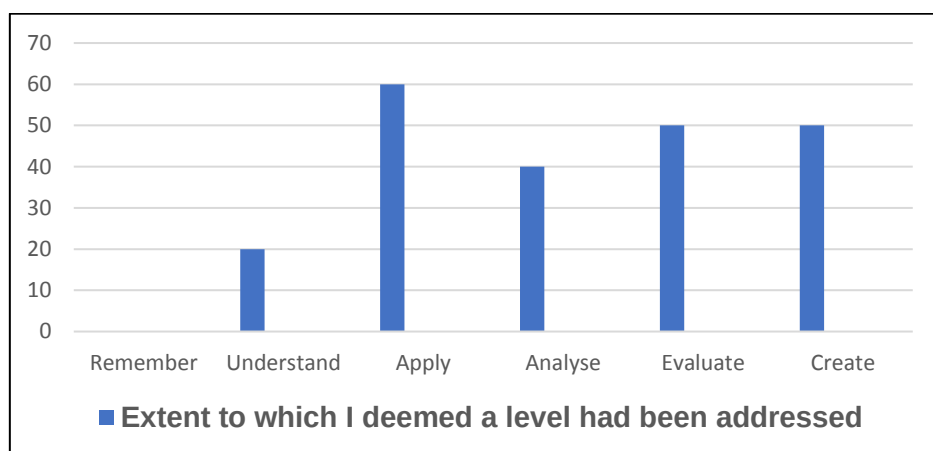


Figure 79: My depiction of how I thought I had activated Whole Brain® Mentoring during Cycle C

My depiction of how I thought I had activated the four quadrants of the brain (Figure 79) corresponds fairly well with the feedback received from the participants. In Cycle C, I did not assist the mentor or pre-service teachers by offering solutions or ideas. The participants had to take responsibility for their professional learning. I therefore thought that had I activated quadrant D well. With regard to my activation of quadrant C, I thought that I had activated it rather well, but the participants disagreed. I also reflected on the extent to which I thought I had addressed Bloom's Taxonomy in my practice, as shown in Graph 41.



Graph 41: My reflection on how I had incorporated Bloom's Taxonomy in Cycle C

In my opinion Level 3 (*apply*) was incorporated well in Cycle C. The participants had to apply previous knowledge while simultaneously questioning their current thinking and applying innovations in their practice. I was not satisfied with how I had incorporated Levels 5 and 6 (*evaluating* and *creating*). In the last step of action research Cycle C, *evaluate*, I had planned to progress to Cycle D. I reflected on wanting to pay attention to activating all four the quadrants. I also wanted to address Levels 5 and 6 of Bloom's Taxonomy during Cycle D.

4.6.1.4 My action research Cycle D

The fourth pre-service teacher session took place during the "product" phase of the short course. The fourth scholarly community of practice session with the mentor teachers took place during the "post-mentoring" phase of their short course. The sessions with the mentor and pre-service teachers did not take place on the same day. We did scholarly reflections and evaluations of our practice. I also conducted the final focus group interviews.

In the initial *planning to transform* step, I planned to implement innovative ways of thinking, focusing on addressing the participants' self-regulated professionalism. During the *act to transform* step, I implemented self-regulation, Whole Brain® Mentoring, peer mentoring and blended mentoring. I also adhered to incorporate Bloom's Taxonomy. In Photo-evidence 19, two groups of the mentor teachers are seen participating in the "marshmallow challenge", a problem-solving and innovative thinking activity (Wujec, 2010).



Photo-evidence 19: Mentor teachers completing the marshmallow challenge during Cycle D

Photo-evidence 19 shows the mentor teachers working together to complete the scholarly community of practice session activity. They are smiling and seem to be enjoying one another's company. The pre-service teachers did the same activity and in Photo-evidence 20 one group can be seen standing behind the spaghetti tower they had built.



Photo-evidence 20: Pre-service teachers after completing the marshmallow challenge during Cycle D

In Photo-evidence 20, the pre-service teachers look comfortable with one another. In step 3 of the action research process, *observe*, I watched the video recordings I had made of the two sessions in Cycle D. I also studied the photographs I had taken. After the two sessions I asked the mentor teachers and the pre-service teachers to complete a questionnaire. I watched the video recordings of the mentor teacher and pre-service teacher sessions, reflected on my practice and completed the

observation self-evaluation sheets. The feedback from the participants was also used to conduct step 4 of my action research spiral, *reflect*. According to the feedback I received from the mentor teachers and pre-service teachers, five of the 11 participants indicated that the mentoring models I had mostly used were self-regulation and friendship.

I was satisfied with the participants' feedback as once again none of them suggested that I had implemented the mentoring model cloning during Cycle D. Focus group interviews were also conducted, as can be seen in Photo-evidence 21 and 22. This is probably why the participants thought that the mentoring model friendship was the model mostly employed.



Photo-evidence 21: Pre-service teacher focus group interview during Cycle D

In Photo-evidence 21, the pre-service teachers are seen sitting in a circle, thus demonstrating equality in the scholarly community of practice. In Photo-evidence 22, the mentor teachers are laughing and enjoying one another's company while completing their self-reflective assessments.



Photo-evidence 22: Mentor teachers doing self-assessments during Cycle D

The mentor teachers are seen sitting in a circle, creating a collaborative atmosphere in which different ways of thinking could be embraced (Photo-evidence 22). At the end of the two short courses, I handed out copies of a feedback questionnaire to all the participants. Ten of the 11 participants stated that they had experienced the two sessions as enjoyable and productive. Nine of the mentor teachers and pre-service teachers strongly agreed that they had cultivated their self-regulated professionalism. Eight of the 11 mentor and pre-service teachers confirmed that they were taking responsibility for nurturing their professional learning. None of the participants disagreed in this regard.

I considered how I implemented Whole Brain® Mentoring into my practice. In action research Cycles A and B, the feedback from the participants showed that quadrant C had been typically activated. In Cycle C, the participants found that quadrant D was mostly activated. In my opinion there was a better balance between the four brain quadrants in the feedback I received in Cycle D. The mentor and pre-service teachers indicated that quadrants A (10 of the 11 participants) and D (nine of the 11 participants) were mostly activated.

I proceeded by using the video recording, the observation sheets I had completed and the feedback to *reflect* in Cycle D. Figure 80 shows how I thought I had addressed the four brain quadrants:

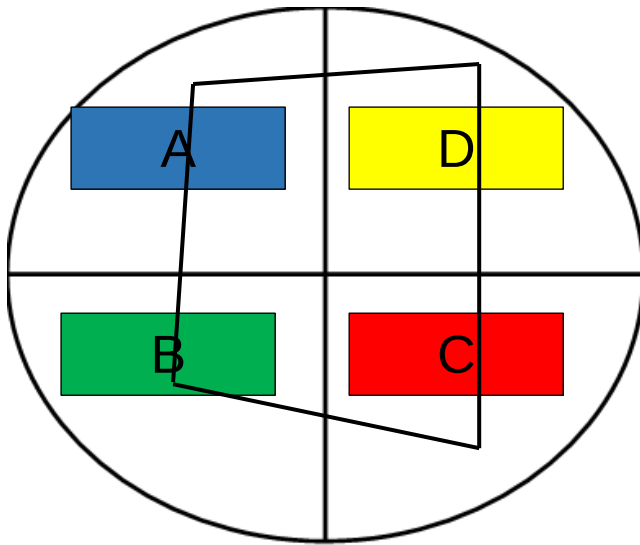
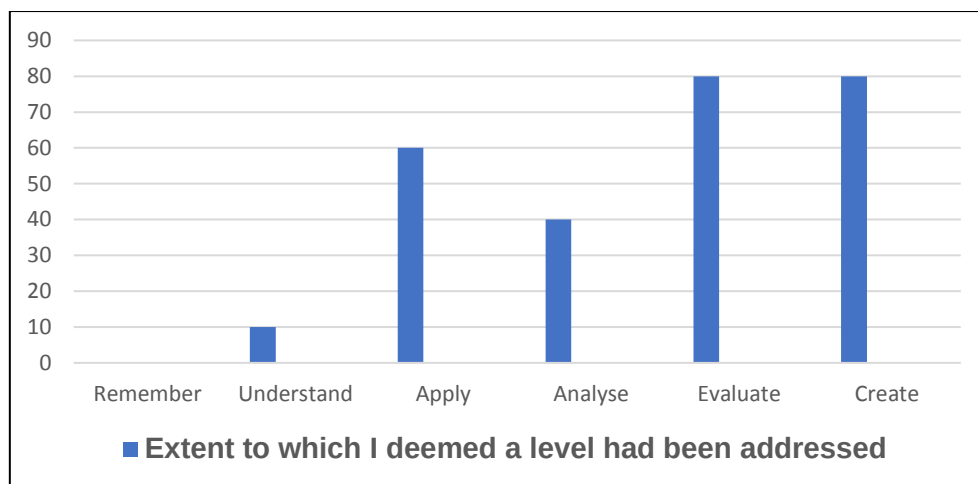


Figure 80: My depiction of how I thought I had activated Whole Brain® Mentoring during Cycle D

My illustration of how I thought I had activated the brain quadrants (Figure 80) was fairly similar to the feedback received from the participants. In the last session, we did individual and group reflections, and I therefore think that quadrant C was most activated. I used innovative ideas and activities during the two sessions, and the mentor and pre-service teachers agreed that quadrant D had been satisfactorily implemented. I found the participants' positive feedback regarding quadrant A surprising, even though I had planned to make this session relatable to their work environment and practice.

I furthermore reflected on the extent to which I had addressed Bloom's Taxonomy in my practice. Graph 42 illustrates how I thought I had incorporated the different levels.



Graph 42: My reflection on how I had incorporated Bloom's Taxonomy in Cycle D

In my depiction (Graph 42) of how I thought I had incorporated the levels of Bloom's Taxonomy during Cycle D, it is clear that Levels 5 (*evaluate*) and 6 (*create*) were well addressed. The assessment opportunities in the mentor teacher short course focused mainly on Level 5 (*evaluate*), which comprised of self-assessment (20%), peer assessment (20%) and group assessment (10%). The summative assessment included Level 6 (*create*) as the participants had compiled a portfolio of evidence (50%). In my opinion, the use of the higher levels of Bloom's Taxonomy had empowered the participants to take responsibility for cultivating their self-regulated professionalism.

In the final step of Cycle D, *evaluate*, I regarded the action research process continuous and never-ending. Although the Whole Brain® Participatory Action Research process with the mentor teachers and pre-service teachers ended, my meaning-making process is ongoing. In the last mentor teacher short course session, I stood on the chair, as seen in Photo-evidence 23, emulating the character Mr Keating in the movie "Dead Poets Society".



Photo-evidence 23: Here I was thanking the mentor teachers during Cycle D

In Photo-evidence 23, I was telling the mentor teachers that, owing to their participation in the programme and their continuous engagement, I now “*look at things in a new way*”. To show my gratitude for their willingness to take part in the Whole Brain® Participatory Action Research process, I concluded by saying: “*Thank you, mentor, my peer mentor!*”

4.7 DATA FROM MY ACTION RESEARCH SPIRAL ENCAPSULATED

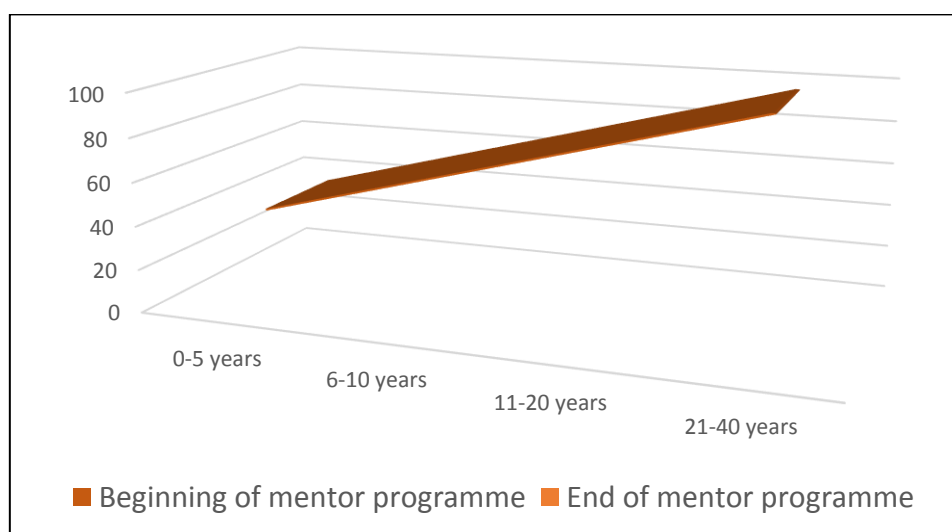
In the sections that follow, I will discuss the self-reflective progression charts compiled by the mentor teachers at the beginning and end of the short course. The pre-service teachers’ self-reflective feedback is also communicated with the constructs that emerged from my interviews with the mentor teachers and pre-service teachers. Finally, I include some of the logos, slogans, poems and executive summaries made by the mentor teachers as part of their online portfolios of evidence.

4.7.1 Mentor teachers' self-reflective progression charts

In the following sections, I report on the mentor teachers' self-reflection in the form of a chart. The first graph shows how they reflected on how they had developed professionally and the second represents their reflection on their mentoring practice.

4.7.1.1 Susan's self-reflection on her professional development and mentoring practice

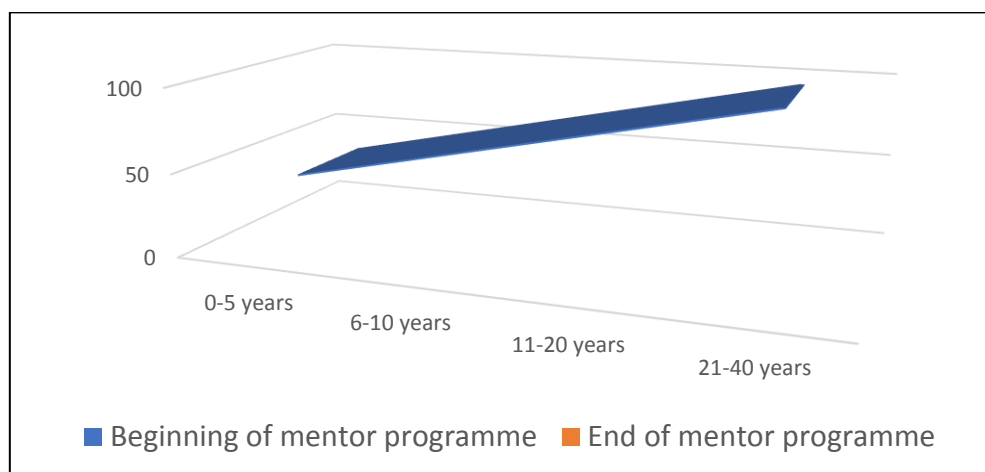
Susan left the mentoring programme due to medical reasons after the first scholarly community of practice session and after completing the HBDI®. She only reflected at the beginning of the programme in terms of her professional development and the quality of her mentoring practice as seen in Graphs 43 and 44.



Graph 43: Reflection cart made by Susan to show how she had developed professionally during her career

Next to her charts (Graphs 43 and 44) Susan wrote that it “*does not mean I do not have room to improve, but [I] probably would not change*”. Her narrative reflection indicates that she was, at that stage, not open to possible transformation. The feedback is in line with her brain profile, as Susan showed a preference for being in

control of situations and relationships. Her representation of her reflection about her mentoring practice is shared in Graph 44.

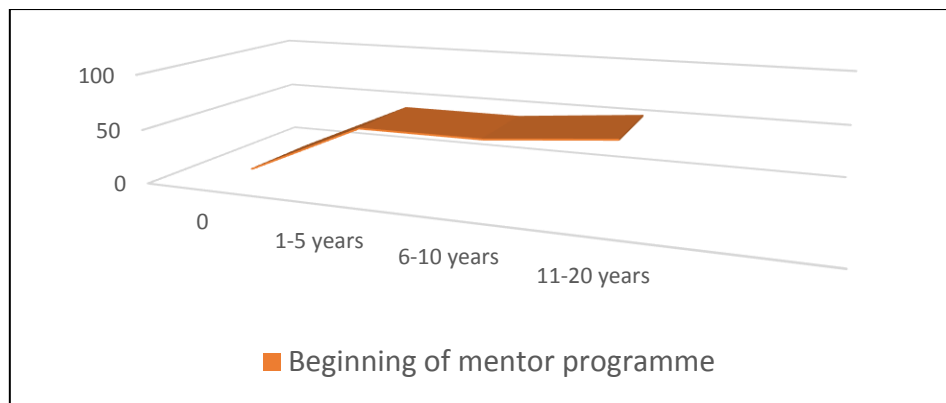


Graph 44: Reflection chart made by Susan of her mentoring practice

In the beginning, Susan had indicated that she was not eager to complete the entire programme. Although she was still prepared to mentor her pre-service teacher as she had always done in the past, she was not open to transforming her mentoring practice.

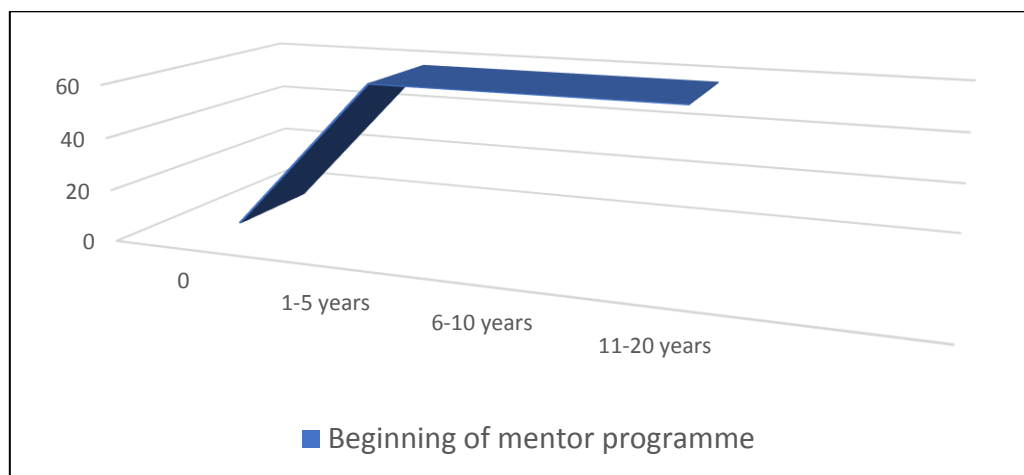
4.7.1.2 Mzamo's self-reflection on his professional development and mentoring practice

Mzamo did not complete the mentoring programme and opted out of the study before submitting his portfolio of evidence. His reflection on his professional development is represented in Graph 45.



Graph 45: Reflection chart made by Mzamo to illustrate how he had developed professionally during his career

Since Mzamo completed only one self-reflection chart in terms of his professional development and the quality of his mentoring practice, Graphs 45 and 46 contain only a one-line chart.

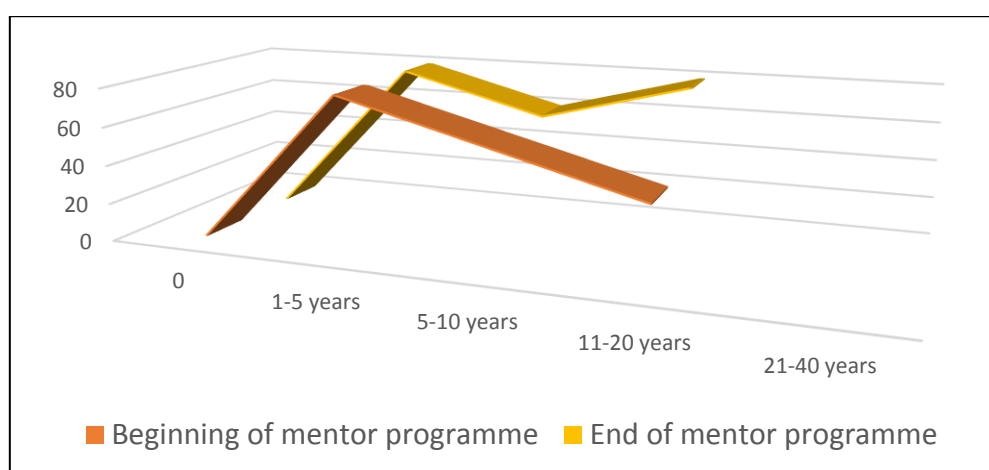


Graph 46: Reflection chart made by Mzamo of his mentoring practice

Graph 46 indicate how Mzamo had reflected on his mentoring practice. Initially he had indicated that he wanted to develop during the short course. The extent to which he developed is not known.

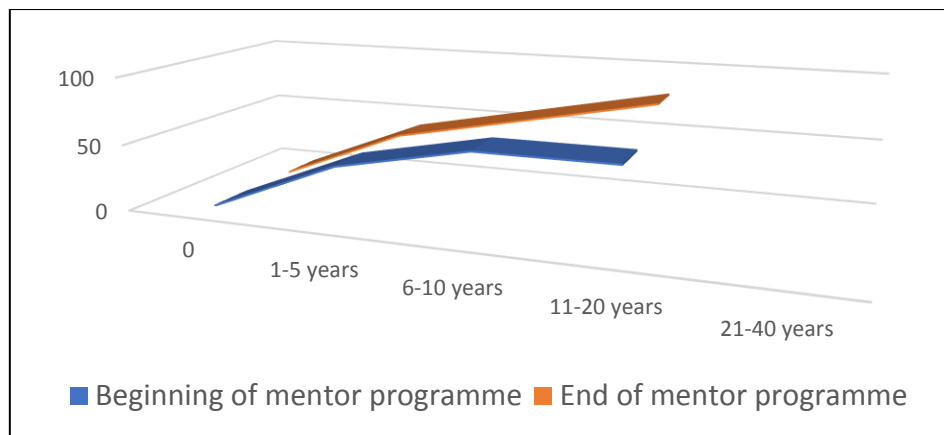
4.7.1.3 Melissa's self-reflection on her professional development and mentoring practice

At the beginning of the programme, Melissa indicated that she wanted two things from the programme: *“Change and community”*. She showed remarkable professional development (Graph 47) and indicated that she would continue with the process after the end of the short course.



Graph 47: Reflection chart made by Melissa to show how she had developed professionally during her career

Melissa indicated in a narrative format that the reason for the rise in her professional development after the short course (Graph 48) was that the mentoring programme had sparked her creativity and curiosity. She stated, *“I came to understand the [mentoring] role and its requirements”*.

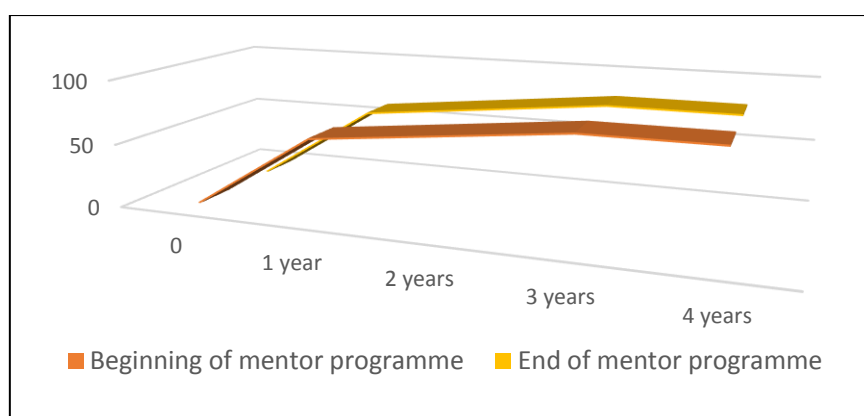


Graph 48: Reflection chart made by Melissa of her mentoring practice

There was an improvement in the quality of Melissa’s mentoring practice (Graph 48) as she stated: *“I would love to continue the process of reflection and feedback”*. She mentioned that she had experienced the scholarly reflection done as part of the Whole Brain® Participatory Action Research process as insightful.

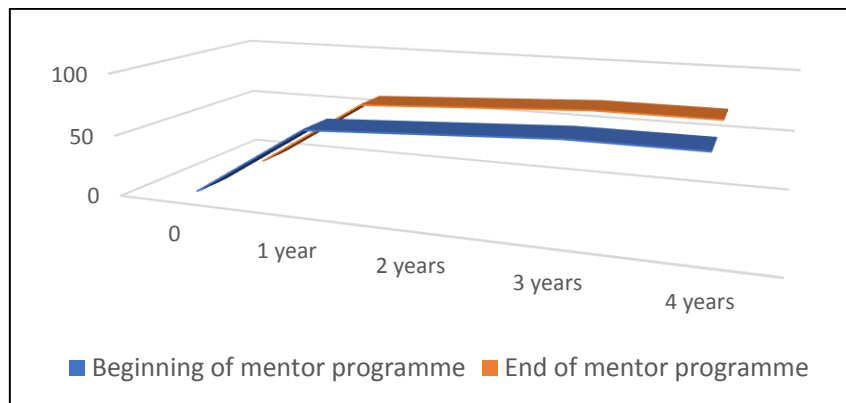
4.7.1.4 Lindie’s self-reflection on her professional development and mentoring practice

Although essentially Lindie (Graph 49) showed no improvement in her professional development, she did state: *“I think personally, I learnt a lot about myself”*. She felt that the HBDI® profile had enhanced her understanding of her way of thinking.



Graph 49: Reflection chart made by Lindie on how she had developed professionally during her career

Lindie did not show any significant progress in the quality of her mentoring practice, as can be seen in Graph 50. She deemed that this was due to the fact that her pre-service teacher, Emma, was not with her in the same classroom during the Work Integrated Learning period.

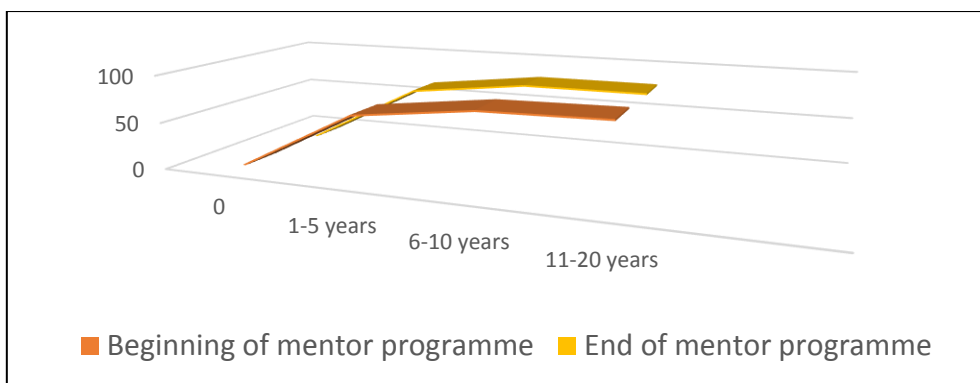


Graph 50: Reflection chart made by Lindie of her mentoring practice

Lindie is a beginner teacher, but was previously employed in the corporate sector. In her final self-reflection she stated: *“I would like to use this programme in my professional life”*.

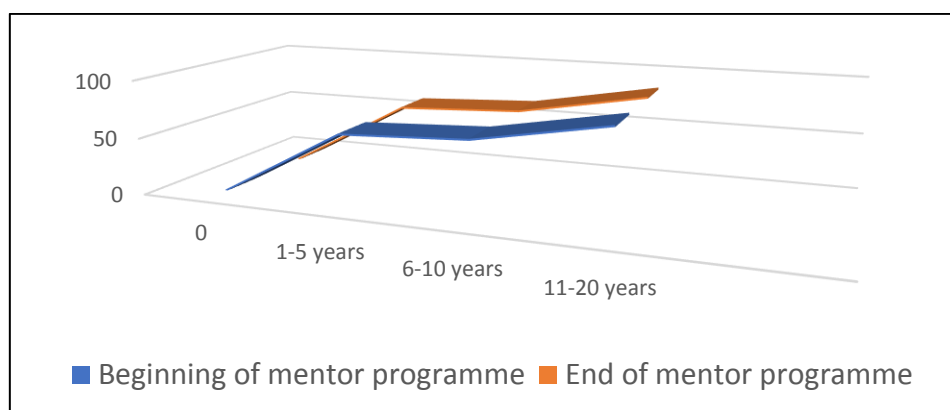
4.7.1.5 John’s self-reflection on his professional development and mentoring practice

John’s chart in Graph 51 shows no significant increase in his professional development.



Graph 51: Reflection chart made by John to show how he had developed professionally during his career

In his feedback at the end of the programme (Graph 51), John expressed the opinion that *“this programme equips teachers to improve their own professionalism”*. His reflection on his mentoring practice is represented in Graph 52.

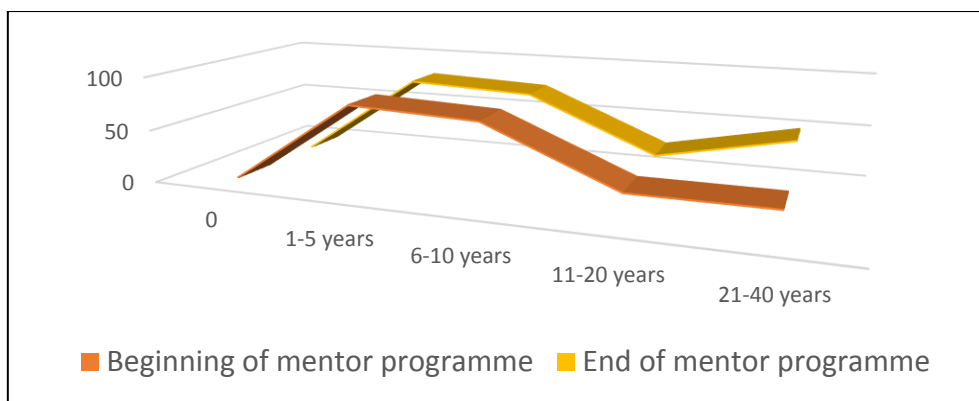


Graph 52: Reflection chart made by John of his mentoring practice

John also did not show an increase in the quality of his mentoring practice in Graph 52.

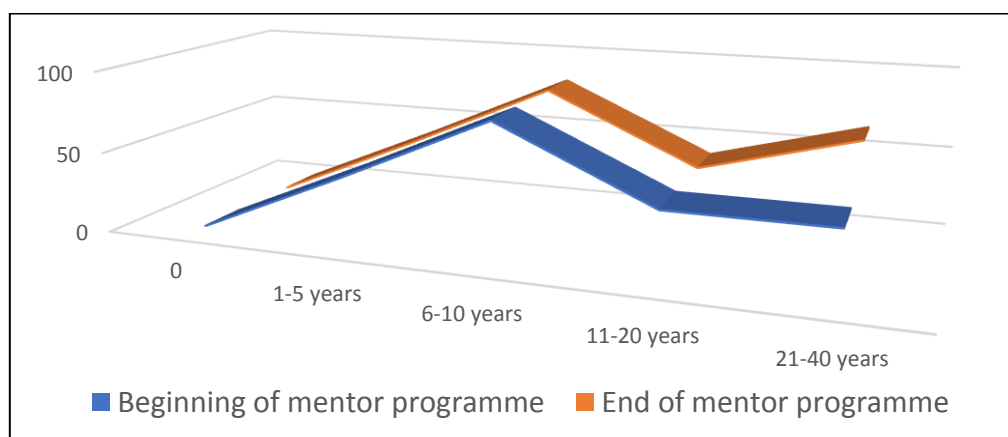
4.7.1.6 Carel's self-reflection on his professional development and mentoring practice

The chart made by Carel indicates an increase in his professional development, as seen in Graph 53.



Graph 53: Reflection chart made by Carel to show how he had developed professionally during his career

Carel regarded that there had been an improvement in his professional development and his mentoring practice (Graph 54). He found the programme “*insightful and informative*”. In Graph 54, Carel’s depiction of the quality of his mentoring practice is represented.

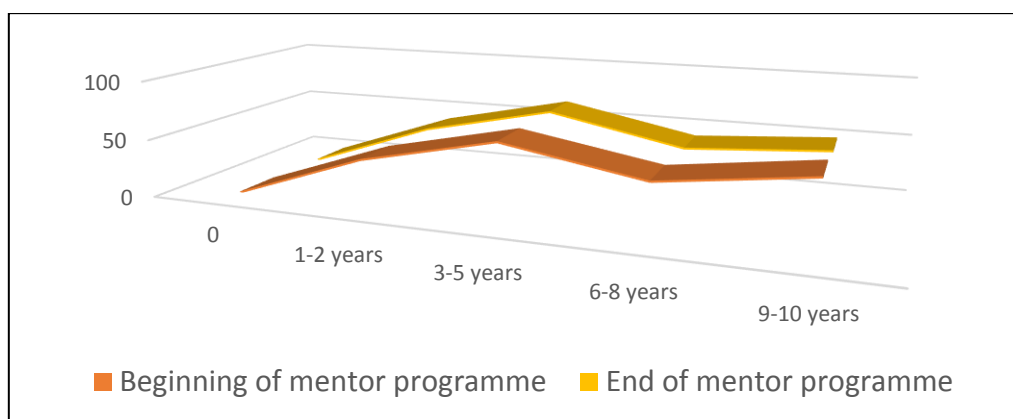


Graph 54: Reflection chart made by Carel of his mentoring practice

Referring to the increase in the quality of his mentoring practice, Carel stated that “*this professional development opportunity would impact my mentoring practice with future pre-service teachers*”.

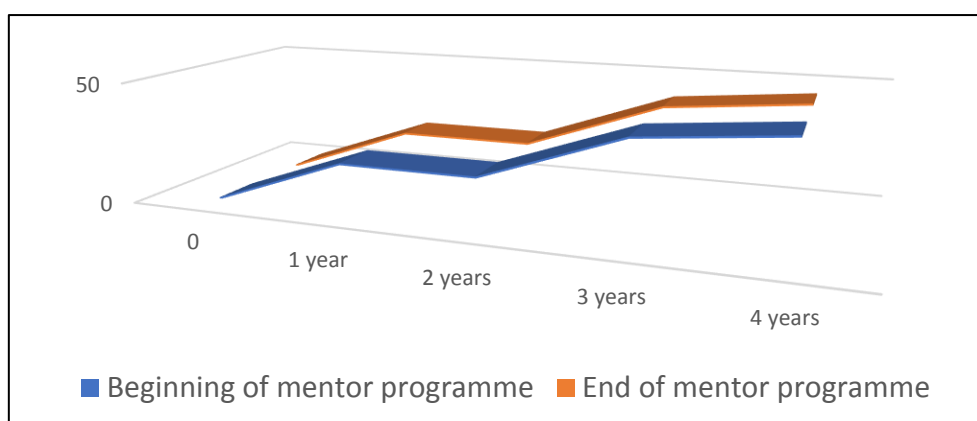
4.7.1.7 Carol's self-reflection on her professional development and mentoring practice

In Graph 55, a slight decrease is visible in Carol's self-reflection on her professional development.



Graph 55: Reflection chart made by Carol made to show how she had developed professionally during her career

The decline in Graphs 55 and 56, however, does not correspond with the narrative shared by Carol. In her self-reflection corresponding to the chart (Graph 55), she stated that in the scholarly community of practice she had obtained “*fellowship, ideas, fun, laughter and a wonderful sense of not being alone in my challenges and problems*”, yet in Graph 56 her reflection on her mentoring practice shows a slight decrease.

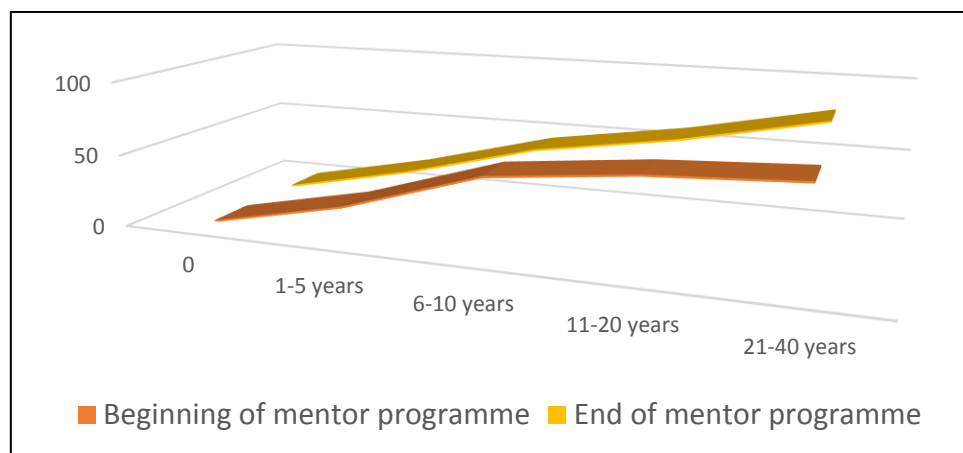


Graph 56: Reflection chart made by Carol of her mentoring practice

With regard to the progression of her mentoring practice, Carol said that *“this course [programme] showed me my mentoring capabilities and gave me the tools to improve and reflect”*. Although she did not depict it in her charts in Graphs 55 and 56, she indicated that the experience *“empowered me as a teacher and a mentor”*.

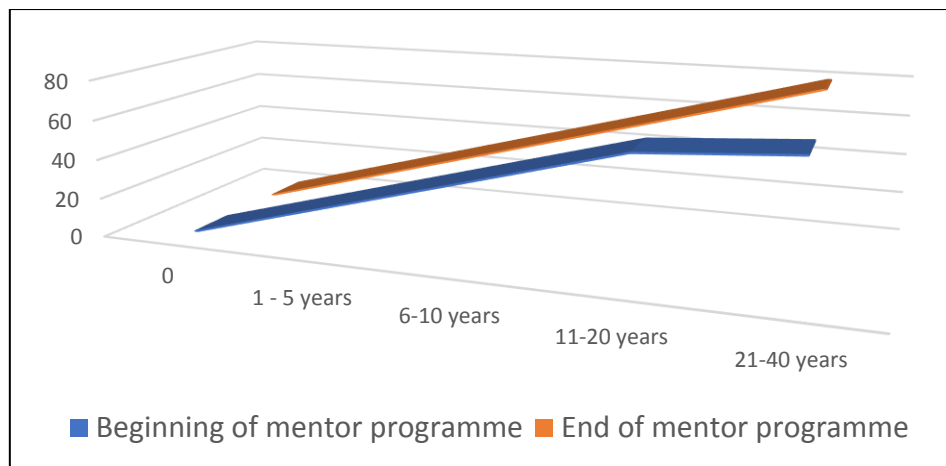
4.7.1.8 Elize’s self-reflection on her professional development and mentoring practice

In Elize’s explanation of the visible development indicated in Graph 57, she stated: *“I had experienced tremendous growth because I had the opportunity or challenge”*.



Graph 57: Reflection chart made by Elize to show how she had developed professionally during her career

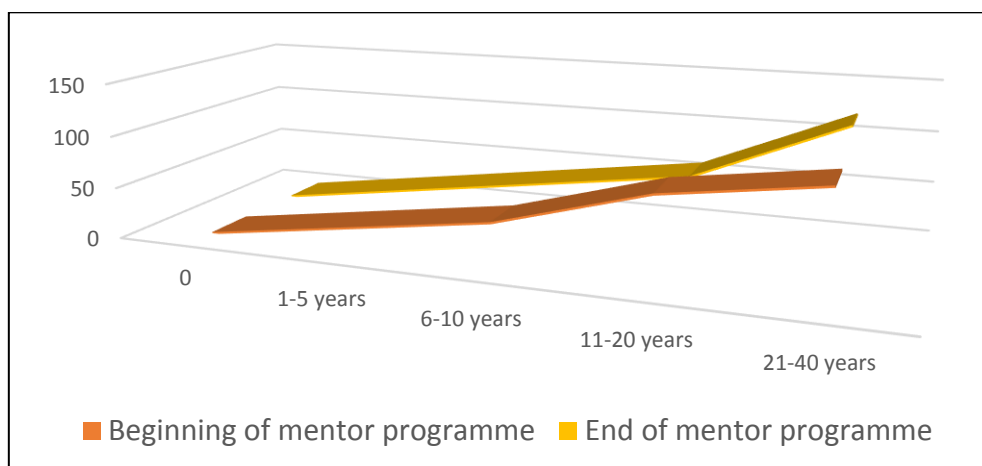
In her feedback, Elize indicated as shown in Graph 57 *“that she desired to grow”*. She felt that she had developed as a mentor by *“facing my own shortcomings”*. In Graph 58, she indicated an increase in the quality of her mentoring practice.



Graph 58: Reflection chart made by Elize of her mentoring practice

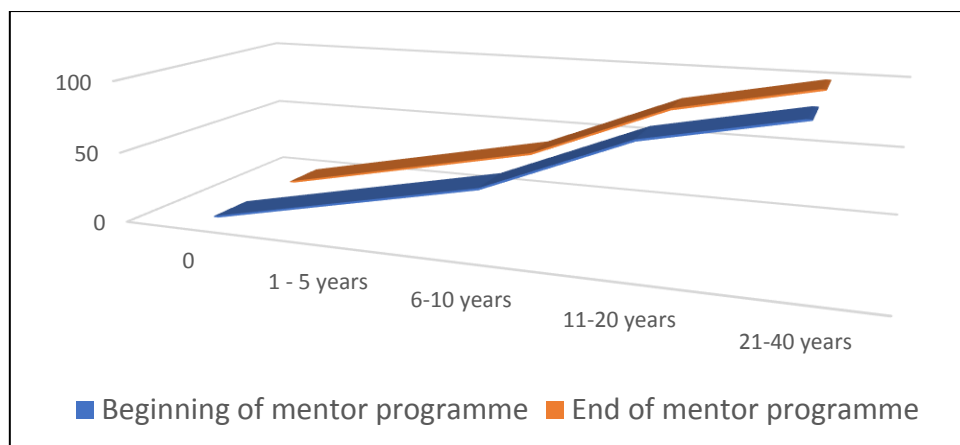
4.7.1.9 Chris's self-reflection on his professional development and mentoring practice

At the start of the programme, Chris indicated that he wanted to develop in respect of “*leadership*”. Graph 59 shows how Chris reflected on his progress during his education career.



Graph 59: Reflection chart made by Chris on how he had developed professionally during his career

Chris experienced that he developed professionally in the course of his career (Graph 59). His reflection on his mentoring practice is represented in Graph 60.



Graph 60: Reflection chart made by Chris of his mentoring practice

At the end of the short course, the chart Chris made showed no remarkable improvement in his mentoring practice (Graph 60). He shared that “*with time a person becomes independent and it, therefore, becomes more comfortable to take the lead*” (Graph 60). I interpreted his feedback in terms of how he and Mia had become leaders in their practice after taking responsibility for nurturing their professionalism.

4.7.2 The narrative self-reflections of the pre-service teachers

In the following section, the pre-service teachers’ self-reflections with regard to their self-regulated professionalism and teaching practice are discussed. Since two of the pre-service teachers, Thandi and Nandi, did not complete the programme or any of the action research cycles, their reflections are shared only up to the time when they withdrew from the programme and study.

4.7.2.1 Thandi’s self-reflection on her professional development and teaching practice

Thandi did not progress past the completion of the HBDI®. No feedback on her progression was available.

4.7.2.2 Nandi's self-reflection on her professional development and teaching practice

Nandi indicated that during the programme she had progressed with regard to her self-regulated professionalism. She did not complete the programme and the two action research cycles and only did a self-reflection at the beginning of the pre-service teachers' short course.

Initially, Nandi had considered herself well-prepared for the lessons she had to present, but indicated that she struggled with classroom discipline. In a personal interview I had with Nandi at the end of the programme, she was emotional as her mentoring experience had not been positive. She stated that "*some mentor teachers do not want to have mentees [pre-service teachers]*". She felt that all mentor teachers should go through this mentoring programme and stressed that "*student teachers [pre-service teachers] are not their [mentor teachers'] personal assistants*". In her teaching practice, Nandi experienced support from the learners but struggled with teamwork. She found that maintaining discipline in the classroom was daunting and felt that she had mostly been left to handle the class without any support.

4.7.2.3. Feedback from the pre-service teachers on the influence of the short course on their self-regulated professionalism

Towards the end of the short course, the pre-service teachers who had completed the programme reflected on the effect the study and programme had on their self-regulated professionalism and their teaching practice.

The pre-service teachers reflected on Whole Brain® Thinking, their implementation of Whole Brain® Learning and also on how they had cultivated their self-regulated professionalism. The final-year education students referred to Whole Brain® Thinking seven times. Emma mentioned that the short course had helped her to "*understand that there are various thinking preferences in class, and they [learners] learn differently*", and Anneli stated: "*I would try and use my new and internalised knowledge to create balanced lessons where all my students can gain the most [sic]*". All the pre-service teachers agreed that their implementation of Whole Brain® Learning had assisted the transformation of their practice and the self.

Thomas indicated that the acquisition of new ideas had significantly influenced his practice, while Zandile said that she had come to understand the real-life workplace and what it entails to be a full-time teacher: *“I actually know what to expect in my teaching, and I will be better prepared to handle it”*.

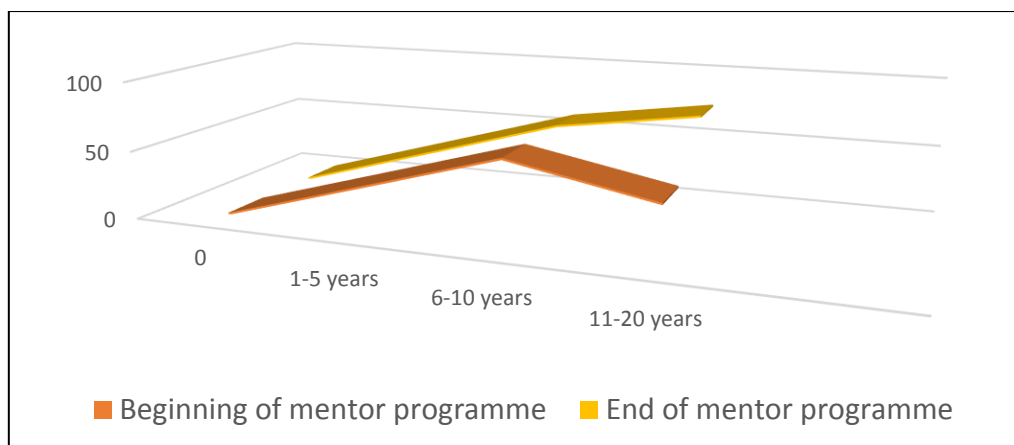
Four participants mentioned how the programme, and especially the use of the Comprehensive Whole Brain® Model, had assisted them with the more effective structuring of their lessons. Dorothy said that the programme *“helped me understand how I conduct a lesson”*, and Mia said that the short course *“gave me a key to work with to plan my lessons and gave me confidence as I had a great mentor who helped me through my practice”*.

Seven pre-service teachers mentioned self-regulated professionalism in their self-reflections. Dorothy indicated that *“self-regulated professionalism had an influence, as she never took notice of it before”*. Anneli found that she was better equipped to reflect on and analyse her practice after conducting action research in her practice. Steve agreed with this, and said that he had become able to regulate his practice and teaching. At the end of the programme, Dorothy resolved to actively *“change and challenge”* herself to do more and *“break from her comfort zone”*. Dorothy also stated that because of her participation in the programme, *“I am now aware of the fact to keep developing myself within the profession”*. Anneli concluded that in order to assist others, she needed to first understand and help herself.

From the final-year education students’ self-reflections, I concluded that they had been positively affected by their involvement in the Whole Brain® Participatory Action Research process and had cultivated their self-regulated professionalism. The pre-service teachers acknowledged that the experience had benefitted their current, and possibly also their future learners. In the following section, I will share my self-reflective progression charts.

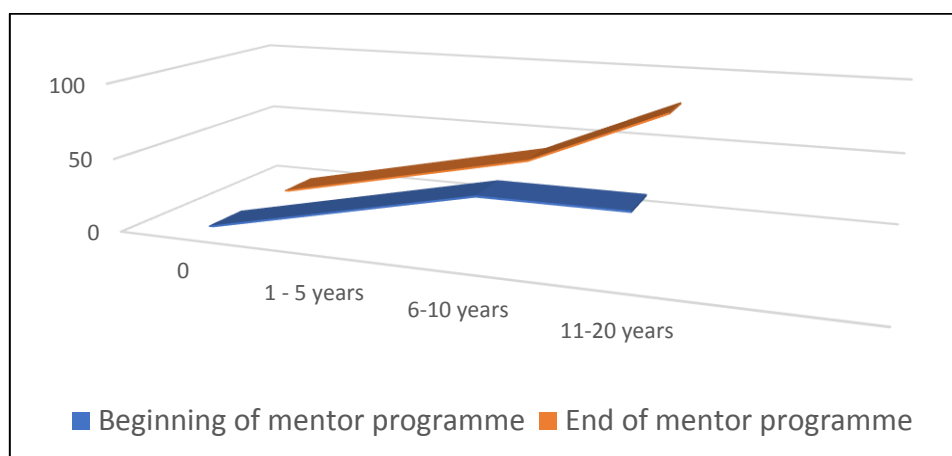
4.7.3 My self-reflective progression charts

I reflected on my previous professional development as a facilitator and a novice academic. During this Whole Brain® Participatory Action Research process, I developed more than I had anticipated, as is depicted in Graph 61.



Graph 61: The reflection chart I made to show how I had developed professionally during my career

As can be seen in Graph 61, I took control of my learning and professionalism during this process. I realised that the transformation of my practice was not a final goal, but was and still is a process of “*becoming*”. In Graph 62, my reflection on the quality of my mentoring practice is depicted.



Graph 62: The reflection chart I made of my mentoring practice

I compared the quality of my overseeing mentoring practice (Graph 62) with previous experiences during my master's degree studies. I had previously worked with beginner teachers as participants and peers. I indicated a rise in the chart, as I had transformed my practice when I implemented the types of mentoring in my practice.

4.7.4 Focus group interviews with the mentor and pre-service teachers

In this section, I share some of the qualitative data I harvested during the scholarly community of practice focus group interviews. I refer to this as the budding phase of the study. Construct analysis was used during the analysis of the transcriptions of the interviews conducted with the mentor and pre-service teachers, as explained in Chapter 3.

4.7.4.1 Constructs that emerged from focus group interviews with mentor teachers

In the following sections, I discuss the constructs that emerged from the focus group interviews with the mentor teachers, namely “managing pre-service teacher mentoring”; “pre-service mentoring” and “pre-service self-regulated professionalism”. Furthermore, the “Whole Brain® Participatory Action Research process”, “mentor teacher self-regulated professionalism”; and “the mentor teacher scholarly community of practice”.

4.7.4.1.1 Managing pre-service teacher mentoring

The pre-service teacher Work Integrated Learning period is usually managed in the school by a teacher or member of the management team. In the mentor teacher scholarly community of practice, Chris, a deputy principal, shared his ideas on various methods for managing the Work Integrated Learning period. Before the Work Integrated Learning period starts, he contacts the pre-service teachers on WhatsApp to inform them on the subject they will be teaching and who their mentor teacher will be. He provides each final-year education student with a file containing information about the school. After the Work Integrated Learning period, he hands out reflection forms for completion by the pre-service teachers to obtain feedback on their experiences during their time at the school. Mentor teachers about whom complaints are received are not chosen to mentor again.

John emphasised the role of the school: “[T]he school sets the tone, so you also have a responsibility to make sure your students [pre-service teachers] understand what is going to happen.” Lindie added that in their school the teacher responsible for managing the Work Integrated Learning period also “talks to the pre-service

teachers on how to dress". Carol was of the opinion that the person who manages the Work Integrated Learning period should talk not only to the students, but also to the mentor teachers. Carol indicated that she would want to discuss the Whole Brain® Model with the mentor teachers so they *"can maybe understand students better"*.

During the interviews with the mentor teachers it was evident that the culture of the school and how the school community views final-year education students play a critical role in the success of the Work Integrated Learning period experience. Chris mentioned teachers would not hesitate to report a final-year education student who is sitting in the staffroom during a lesson and would want to know what he intended doing about it. According to Chris and Lindie, students are often used to look after the teachers' classes instead of being given opportunities to learn about the practice of teaching.

Carel and Melissa were concerned about the influence of the school culture as pre-service teachers might *"get the first experience in the wrong school, and then they leave the profession"* (Carel). Melissa deemed that *"schools need to develop or keep on developing"*. The mentor teachers mentioned the possibility that students may be exposed to privileged schools only during Work Integrated Learning, and Carol *"felt that is not the reality of South African education and it is no good lying to pre-service teachers saying you will get your own classroom, you will have a smartboard. There are schools where you have to bring your own toilet paper, so that is the reality"*.

Lindie shared with the group how some institutions of higher education *"require students [pre-service teachers] to choose one school in a rural or township area"* to visit, but indicated that the logistics might be a problem. Carol believed that pre-service teachers need to make the most of the Work Integrated Learning period. *"It is so much more effective [than] to have the job interview."*

Lindie shared from a mentor teacher's perspective that *"no one asks you to mentor, because they [the school] have to accommodate 35 students"*. Some mentor teachers then *"get two students"*. Although the Work Integrated Learning period is regarded by some schools as an inconvenience, Carol expressed the opinion that *"a school has the responsibility to train teachers"*. The mentor teachers therefore

suggested that the process of improving the mentoring process in schools should start with the leaders in the schools.

With regard to how institutions of higher education manage the Work Integrated Learning periods, Carol believed that universities would find it “*helpful if they had more input on what schools require pre-service teachers*” to do. She regarded the University where this study was conducted as having “*the most forward-thinking programme*”. Chris stated that it was problematic to have to mentor students from different universities with different requirements, and Lindie regarded a ten-week Work Integrated Learning period as too long. She described the information booklet provided by the Institution of Higher Education as “*sweet, but not helpful*” and that it should include more practical information on the teaching environment and be available online. Carol and Elize suggested that the Work Integrated Learning period be viewed as an internship and the pre-service teachers be treated as teaching assistants.

The members of the discussion group were critical of the pre-service teacher assessment file as the final-year education students wasted too much time on organising their files and on their lesson plans. Carol and Lindie agreed and said that because of this the students missed opportunities to, inter alia, take a register class period, do extra-mural activities or mark learners’ work, which the mentor teachers felt was an important skill to acquire. Carol reported that final-year education students often use school resources to make photocopies for their assessment files. The mentor teachers made some suggestions in this regard. Carol, for instance, recommended “*more crit lessons and less paperwork*”. It was further suggested that the pre-service teachers should rather use Google Drive to upload their lesson plans as final-year education students, mentor teachers and mentor lecturers all have access to the Drive.

The mentor teachers agreed that pre-service teachers are required to plan too many lessons. Carol and Lindie considered this to be “*unrealistic*”, but Lindie, acknowledged that the lesson plan forms should remain in use as she had found them to be helpful during her studies. The mentor teachers indicated that they found the assessment of the pre-service teachers’ crit lessons to be challenging. Elize acknowledged that she found it difficult to assess her student objectively as she used

a peer mentoring approach. Both Carol and Elize found that the assessment rubric was not really useful as it can be interpreted in different ways. The mentor teachers wanted to know what was considered to be “*exceptional*” as stated on the rubric in a pre-service teacher lesson, and Melissa described the pre-service teacher lesson assessment as “*so artificial*”. She recommended that mentor teachers should assess students who teach their subjects. The mentor teachers recognised the importance of adequate reflection by pre-service teachers. Chris agreed that they “*need to do a lot of reflection*”, while Carol regarded the writing of a reflective essay as enough.

According to Chris, final-year students should be more thoroughly prepared for the classroom situation as “*they think they are only going to do the lessons in front of the kids [learners]*”. Lindie agreed that pre-service teachers should be given more actual teaching opportunities and Carol suggested that to better prepare the pre-service teachers they should take part in peer teaching sessions at university. The mentor teachers also pointed out the need for final-year education students to know how to manage their social media accounts.

4.7.4.1.2 Pre-service teacher mentoring

During the mentor teacher focus group discussions relating to pre-service teacher mentoring, Elize acknowledged the importance of mentoring, stating that “*it is actually, sjoe, it is crucial, it is crucial*”. During the first scholarly community of practice session interview, the mentor teachers mentioned the following problematic situations: A teacher taking time off during the Work Integrated Learning period; a pre-service teacher handling the teacher’s responsibilities; mentor teachers using cloning as a mentoring model; and having a culture of subordination in a mentoring relationship. It was agreed that it is extremely important to select mentor teachers carefully.

The general feeling was that a mentor teacher should be enthusiastic about education and mentoring. Chris and Carol added that a mentor teacher should be a subject specialist and reflect in practice. Elize recommended that a pre-service teacher should visit other classes during the Work Integrated Learning period to observe different teachers’ approaches to teaching. The mentor teachers did not agree about the characteristics, qualifications or experience that the ideal mentor

should have. While Chris indicated that a mentor teacher should have at least five years' experience in the profession, Elize argued that beginner teachers "*could be mentors, as they have just been through this*". Carol felt strongly that heads of departments or members of management should not mentor as they "*do not have any substitution classes and no extra-murals*". Elize mentioned a colleague who is an excellent teacher, but whom pre-service teachers find very "*unapproachable*". The mentor teachers indicated that they wanted school managements to select mentor teachers and pair them with pre-service teachers.

The mentor teacher scholarly community of practice had the following viewpoints about how mentor and pre-service teachers ought to be partnered: Carel recommended that partnering should be done according to subjects, as Carol had asked about "*how to judge lessons and subject content*" if the mentor and pre-service teacher are not teaching the same subject. Lindie said, "*pair the right people with the right people*", and the mentor teachers agreed.

The mentor teachers acknowledged that pre-service teachers found classroom management challenging. Susan indicated that the learners "*do not see the students as being authoritative*", and Lindie added that "*they [pre-service teachers] want to be their [learners'] buddies*". John agreed as he perceived the pre-service teachers wanting to be "*nice or popular*". According to Chris, there "*is a change in classroom discipline as the kids get confused*" with different approaches used by the teacher and the pre-service teacher during the Work Integrated Learning period. Elize also mentioned a similar experience, which resulted in "*poor discipline with Miss Nice [pre-service teacher] and Mrs Horrible [mentor teacher]. I ... had to discipline ... greatly, I had to ... get the reins back*". Mzamo suggested that pre-service teachers should be exposed to a greater extent to the authentic classroom management environment.

The mentor teachers revealed the following about the mentoring process: They acknowledged that what they had previously done in their mentoring practice was not satisfactory. Elize stated: "*What we [mentor teachers] have been doing in the past is not right; it was dangerous, actually*". Chris agreed and added, "*in the past, the students come and present classes, get a mark and go, it is not meant to be like*

that". Elize and Carol were passionate about the need for mentor teachers to transform their practice.

In the scholarly community of practice, the mentor teachers implemented Whole Brain® Participatory Action Research while using a self-regulated professionalism approach to pre-service teacher mentoring. They experienced this approach as positive. Carol indicated that her *"mentoring is more effective"* than previously, and Melissa added, *"I would actually market it [the programme]"*. During the interviews, the mentor teachers indicated that they had started to take note of what they were doing in their mentoring practice. Carol and Elize believed the approach gave *"focus and structure"*. Carol had started questioning her pre-service teacher about what she was doing instead of telling her what to do and would use the knowledge she had gained whenever she was partnered with a pre-service teacher in the future.

Peer mentoring, blended mentoring and Whole Brain® Mentoring were introduced in the mentoring practices of the mentor teachers in an innovative fashion. The mentor teachers gave the following feedback with regard to how they had implemented the types of mentoring and the effect they had afterwards observed: Melissa wanted to explore further the concept of co-facilitation during Work Integrated Learning with the notion of the pre-service teacher and herself being *"a team"*. She commented that there was a *"partnership as value is added, in terms of my learning as well"*.

The influence of Whole Brain® Mentoring was perceived in various ways. Overall, as Melissa indicated *"it sort of becomes the jargon of the day"*, as the mentor teacher and pre-service teacher could relate better to one another. She experienced Whole Brain® Mentoring as constructive, as *"you want different perspectives; it is the two parts of the whole"* and summed up that a mentor and pre-service teacher need to *"adapt and basically not fall back on old thinking"*.

With regard to the implementation of blended mentoring, Carol found it very useful. In the scholarly community of practice, she mentioned that *"blended mentoring helped us deal with the fact [that] we do not see each other; we were both busy"*. She also said that, to some extent, she was more comfortable with Google forms than her pre-service teacher, Zandile.

In the scholarly community of practice session, Carol said the following with regard to pre-service mentoring: *"I did not have less work while she was there, in fact*

sometimes I feel that I had more work because I still had to watch her lesson [and] sometimes I had to re-teach work". She found that limited time was a "huge threat". However, she said "this time, I am learning about myself as a mentor and a teacher. I do not really see myself as a mentor. I do not know why I chose to do this, and now I see that I need to deal differently with the mentee and help in different ways that I am, or I have been doing".

Due to the importance of the work done by mentor teachers, Elize reasoned that mentor teachers should receive a *"little incentive"*. Chris and Lindie, however, did not agree and stated that *"we should not create a culture where people get something for everything they do (Chris) as people would be volunteering who should not volunteer"* (Lindie). However, the rest of the group agreed with Elize that mentor teachers should receive an incentive in the form of *"professional development points, just getting those points, you are safe and sorted"*.

4.7.4.1.3 Pre-service teacher self-regulated professionalism

During the focus group interviews of the mentor teachers, the sub-constructs that emerged with regard to the self-regulated professionalism of the pre-service teachers were *"the authentic workplace environment"*, *"the development of pre-service teacher identity"*, *"resilience"* and *"self-regulated professionalism"*.

The mentor teachers emphasised the importance of the Work Integrated Learning period for the self-regulated professionalism of pre-service teachers, adding that *"you cannot prepare for a classroom unless they are standing in front of a class"* (Carol) and that *"it is not part of their [pre-service teachers'] training at varsity [University]"* (Chris). Elize, however, regarded the school as *"a very ... protected environment"* and added that *"it is not life or death for these guys [pre-service teachers]"*. The mentor teachers offered suggestions for the preparation of pre-service teachers for the authentic teaching environment: Carol thought that pre-service teachers should gain experience in the administrative duties of a teacher as no one tells them about IQMS. The mentor teachers indicated that the Work Integrated learning period had a definite value. Chris and Carol were of the opinion that not all final-year education students understand the reality of the education situation in South Africa, particularly in the light of the fact that many of them might

eventually find themselves teaching in “*underdeveloped schools*”. Chris and Lindie therefore recommended that pre-service teachers be assisted with gaining as many skills as possible to enable them to be innovative when working in challenging conditions.

The mentor teachers indicated that the pre-service teachers were to some extent “*needy*”, but described the mentor teachers’ transformative approach of the short course as ideal for fourth-year education students who are mostly millennials. Elize pointed out that there was a difference between how millennials function and how the traditional school environment operates. From the interviews it was evident that the mentor teachers attempted to focus on understanding the identity development process of the pre-service teachers. They wanted to be better prepared for the mentoring relationship and agreed that pre-service teachers had to take responsibility for their professionalism. The mentor teachers were also aware of the influence of the school. Carol admitted that “*if you are a beginner teacher, you are treated like a kid as well*”, and Melissa added that “*schools need to develop or keep on developing*”.

Carol emphasised the need for pre-service teachers to take responsibility for their development so that they can be prepared for the profession, “*as there is that moment when you [beginner teacher] are completely on your own*”. Melissa referred to self-regulated professionalism as a continuous process, “*a life-long thing*”. The construct “*resilience*” surfaced during our group discussions and it was clear that the mentor teachers realised that it was an essential part of mentoring: “*If you are a self-regulated teacher, you are resilient*” (Carol). According to Carol, some of the teachers who are just starting out “*crack [sic] and they leave the profession because no one told them to get tough*”.

4.7.4.1.4 The Whole Brain® Participatory Action Research process

The mentor teachers gave feedback about the implementation of action research in their own and the pre-service teachers’ practice. Melissa found that establishing a vision in the first step of the action research process was useful as it provided an indication of what was needed in one’s practice. Reflection during the action research process was also regarded as meaningful and Lindie and Elize

acknowledged that a person either need make time, or be forced to reflect. Carol confessed: *“I only reflect when I think I have screwed [sic] up”*. Melissa defined reflection as to *“think about what you think about”*.

Whole Brain® Thinking was central to the mentoring practice of the mentor teachers. They experienced the completion of the HBDI® as positive as it provided clarification regarding their thinking preferences. They confirmed the value of having a vision, reflecting and progressing through the action research process. Lindie, however, admitted that whenever she was under pressure, she tended to revert back to her previous way of thinking and teaching.

The mentor teachers mentioned some positive experiences relating to the feedback questionnaires distributed by the pre-service teachers in their teaching practice. Melissa stated that the feedback questionnaires were *“amazing and useful”*. However, Carol and Melissa were doubtful about the ability of the learners to complete the questionnaires. Carol indicated that she would like to use the questionnaire when she did her IQMS, as this tool would *“make IQMS more user-friendly”*. Feedback on the self-regulated professionalism of the mentor teachers will be discussed next.

4.7.4.1.5 Mentor teacher self-regulated professionalism

During the focus group discussions, the mentor teachers discussed the way in which the short course and Whole Brain® Participatory Action Research process had influenced their self-regulated professionalism.

Lindie admitted that *“you get stuck in your ways”* and Melissa said that the pre-service teacher mentoring experience was *“different this time around”*. Melissa also defined self-regulation as *“a whole process, it is the Whole Brain® Thinking [sic], and you have to realise or develop your different roles”*. Carol added that this approach to professional development showed the pre-service teachers that *“being willing to learn is part of teaching”*.

The mentor teachers agreed that they had nurtured their self-regulated professionalism and Carol described herself as *“more confident”* than before *“and a quality mentor”*. Lindie indicated that, as a mentor, you *“think differently, [see] new*

possibilities [in] the way you approach things. When I asked the mentor teachers whether the short course had assisted them in addressing their self-regulated professionalism, their response was positive.

4.7.4.1.6 Mentor teacher scholarly community of practice sessions

The mentor teachers acknowledged that the teaching profession could be, as Carol stated, “*a pretty solitary profession*”. Although all the members of the scholarly community of practice could not always attend all the sessions, Carol stated that “*there was always enough of us to have a discussion*”. Lindie suggested that the participating mentor group should meet regularly after the programme ended.

With regard to the value of the scholarly community of practice, Carol, Lindie and Elize in particular, shared how it had influenced them. Carol praised the practice on which we had based the scholarly community of practice as the sessions were different in that we focused on our mentoring and teaching practice. Carol stated that the sessions were not “*just chatting about anything*”. Elize indicated that she had learned to listen more, and that the scholarly community of practice had influenced her mentoring: “*Sjoe, definitely sjoe!*” She found that it was a benefit to know her thinking preferences, to learn from others and understand how people think.

During the final mentor teacher scholarly community of practice session the SWOT analysis was used to review the mentor teacher short course and the Whole Brain® Participatory Action Research process. As part of the SWOT analysis I asked the mentor teachers how they would suggest the weaknesses they identified could be changed to strengths and the threats to opportunities. They suggested that mentor and pre-service teachers should be correctly placed according to the subjects they teach by the Work Integrated Learning office and the school. They also recommended that all institutions of higher education should send their Work Integrated Learning placements to schools at the same time.

The mentor teachers indicated that blended mentoring was useful with regard to the threat posed by the limited time available for pre-service teacher mentoring. They suggested that the short course should perhaps be more condensed so that it can be completed in two, rather than in four sessions in the four-month period. In the

following section, the constructs that emerged from the scholarly community of practice interviews of the pre-service teachers will be discussed.

4.7.4.2 Constructs that emerged from the focus group interviews with pre-service teachers

The constructs that emerged from the focus group interviews with the pre-service teachers were “classroom management”, “the stakeholders”, “pre-service teacher mentoring”, “self-regulated professionalism”, “the scholarly community of practice” and “Whole Brain® Participatory Action Research”.

4.7.4.2.1 Classroom management

The final-year education students expressed their uncertainty about classroom management. They sensed that the learners did not respect them, and that the school culture affected their ability to enforce discipline in their teaching practice. The pre-service teachers also found having to discipline Grade 12 learners rather daunting.

In the final session, the pre-service teachers shared the following experiences of the Work Integrated Learning period when they conducted Whole Brain® Participatory Action Research: Thomas indicated that he felt unprepared at the start of both Work Integrated Learning periods: *“The thing with discipline you have to give this whole explanation of how you are going to control these kids [learners], but I mean you stand in front of the classroom, and they [learners] have no respect”*.

Mia believed that the reason for pre-service teachers struggling when managing their teaching practice was the attitude of the learners and mentioned that one learner had commented: *“Oh, but you are not a real teacher yet”*. Mia also stated that mentor teachers did not always make it any easier for pre-service teachers to gain the learners’ respect as some mentor teachers did not even know the name of the pre-service teachers and referred to them as students. Anneli told the group that during the programme, her mentor teacher had *“allowed me to introduce myself”*. Previously the mentor teacher had *“told the classes this is your new student, but she had said student-teacher, [and] that student teacher got fixated”*. Emma indicated that she had

managed to take charge of her class. Zandile found this difficult as the learners were used to the environment created by the mentor teacher and did not know how you might want to manage the class.

Anneli reasoned that *“you [a pre-service teacher] are not allowed to be alone in the classroom ... which makes no sense, I mean next year ... I am going to be alone so that whole concept already puts us in a mindset that, oh, we cannot do this alone”*.

The rest of the focus group also shared their concern in this regard and indicated that it caused them to feel that they were actually not adequately prepared for when they would start teaching the following year. Anneli appreciated the possibility of facing the harsh reality in a safe environment and being able to go to her mentor teacher for comfort and assistance. Steve suggested possible solutions for the discipline problems experienced by pre-service teachers, stating that the scholarly communities of practice sessions *“would be beneficial for classroom management”* and that it is vital to know the learners.

4.7.4.2.2 Stakeholders in pre-service teacher mentoring

During the pre-service teachers' scholarly community of practice focus group interviews the following stakeholders emerged: The “institutions of higher education”, “schools” and “other stakeholders” who were or would be affected by the programme.

The pre-service teachers raised concerns about the hardcopy assessment file they were required to submit to their mentor lecturers at the end of the Work Integrated Learning period. An assessment file comprises the pre-service teacher's lesson plans, information obtained about the school and the applicable printed CAPS (Curriculum Assessment Policy Statements) documents. In the file, the mentor lecturer evaluates the reflections made after each lesson, the resources used by the final-year education student, and the marks the mentor teacher and mentor lecturer had allocated to the lessons they presented.

One of the pre-service teachers' main concerns regarding the file was that it was not a true reflection of their practice. Steve remarked that the file *“takes away the student teacher creativity, professional development from the actual practice”*. Five

of the pre-service teachers emphatically stated that the activities in the file were simply repetitive, no more than a *“copy and paste”* (Anneli) activity. Dorothy agreed as *“you stop developing yourself after twenty-eight reflections”*. Dorothy and Anneli stated that they did not understand the value of copying the whole CAPS (Curriculum and Assessment Policy Statement) for inclusion in the file.

Mia recommended a change in the format of the assessment file and Steve said that in his opinion the file did not have any worth as *“it is no indication of my ability as a teacher”*. Mia admitted that *“I can lie so much in the file, you can think I am the most amazing teacher, and then I am the worst teacher, and then they take the file and say, oh, this is probably a good teacher”*.

The following changes to the pre-service teacher assessment file were proposed: First, the pre-service teachers recommended that action research should be conducted in one’s practice and second, that a portfolio of evidence for assessment be submitted online as it would save time and would be cheaper as pre-service teachers would not have to print everything (Anneli). Steve was of the opinion that the entire structure of the file needed revision and stated that an electronic format would not *“make any difference and that in reality all that is important is your personal philosophy in teaching and your reflections, and the yes from your lecturer and teacher that you can teach”*. Lastly, the pre-service teacher focus group suggested doing fewer lessons during the Work Integrated Learning period.

The pre-service teachers highlighted the impact of *“proper relations”* and Steve acknowledging the essence of the relationship between *“the universities and schools”*. He also deemed that institutions of higher education should be more involved during pre-service teacher mentoring.

4.7.4.2.3 Pre-service teacher mentoring

During the focus group discussions of the pre-service teachers, the final-year education students were realistic about what they might experience as beginner teachers. They wanted to learn as much as they could in the authentic school environment. Anneli and Zandile said that they wanted to teach as many grades as possible to be well prepared. Steve and Zandile found the management of the

register class period daunting as “*they [the learners] hand in things and you do not know where it goes*”.

According to the pre-service teachers, some mentor teachers had exhibited undesirable behaviour: Zandile and Mia had experienced the effect of a mentor teacher not wanting a pre-service teacher as they were asked to leave the classroom or were “*tossed around between four or five other teachers because that teacher does not want you*” (Zandile). Some mentor teachers used their final-year education students as personal assistants and expected them to do school or personal admin. Steve had seen how a mentor teacher “*lent*” a pre-service teacher to other teachers and then proceeded to “*blackmail her [pre-service teacher] with marks*”. The pre-service teachers reported that some mentor teachers who were very good in their teaching practice did “*not want to share [knowledge or experience]*” with others (Emma). Anneli also observed how a mentor teacher would approve and change lessons in order to turn the pre-service teacher into “*a copy of herself*” and then “*bragging about it*”. Mia stated that because of what they discovered about mentoring as a scholarly community of practice, they would in future when they need to mentor students, “*not be like that*”. Zandile mentioned that some mentor teachers appeared to feel a “*bit threatened because you are young, innovative, you are now coming up with fresh ideas, and they [mentor teachers] are like: No!*” Emma agreed as she had experienced that some mentor teachers were reluctant to learn how to use technology and particularly did not want to learn from pre-service teachers.

The pre-service teachers and mentor teachers had four compulsory mentoring opportunities during the short course. Steve and Anneli indicated that the communication and discussion did not end then as they would afterwards regularly interact with their mentor teachers. It was worthwhile for Zandile to have sit-down sessions as mentoring was “*more focused and beneficial*” and agreed with Anneli that the discussions consisted of elements of reflection with a view to transforming practice. According to the pre-service teachers, the introduction of the types of mentoring contributed to a positive mentoring experience. Steve observed that good mentor teachers “*need to be confident in their ability and secure in their practice*”. The pre-service teachers shared their positive mentoring experiences in terms of self-regulation, peer mentoring and the mentoring opportunities they had had with their mentor teachers. Zandile described her mentor teacher, Carol, as “*really, really*

amazing". In the following section, I will report the viewpoints shared by pre-service teachers regarding their self-regulated professionalism.

4.7.4.2.4 Self-regulated professionalism

During the focus group interviews, the pre-service teachers discussed their self-regulated professionalism and reflected on the development of their pre-service teacher identities.

During the final session, the pre-service teachers admitted that they had had realistic expectations regarding the education profession. Zandile shared how her mentor teacher had challenged her to "*implement things your own way*". Anneli stated that she had started changing her mind-set about her practice and her professionalism. This indicated that the pre-service teachers had started regulating their professionalism. Steve said that in the end he regarded himself as more than just a student teacher, he had become a professional and understood that he had to take responsibility for nurturing his professionalism.

The pre-service teachers regarded the development of pre-service teacher identity as important as they acknowledged the self. They admitted that during a previous Work Integrated Learning period that they had focused only on presenting their lessons, not on their professional teacher identity. However, during the short course they had concentrated on "*the type of teacher you [the self] want to be*" (Mia), which is essential for the development of professional teacher identity.

4.7.4.2.5 Scholarly community of practice sessions for pre-service teacher

During our last scholarly community of practice session, the pre-service teachers reflected on how they had experienced the four sessions held during the programme and made suggestions about possible improvements. The final-year education students also gave feedback on the scholarly community of practice sessions.

The pre-service teachers agreed that they had all learned from one another. Anneli shared that it "*was nice being able to hear everyone's experiences and how they managed something, that was a very, very big influence*". Mia agreed that it had

been helpful to know what the others were going through. The pre-service teachers recommended having a few more scholarly community of practice sessions, which Steve had described as “*beneficial*”. The pre-service teachers proposed that future final-year education students at the Institution of Higher Education where they studied should also complete the short course, and that scholarly communities of practice should be established at schools during the Work Integrated Learning periods. The focus should be on the transformation or improvement of practice. The pre-service teachers indicated that they preferred having more scholarly community of practice sessions during which the mentor teachers are also present. Anneli described pre-service teachers as “*sponges to their [mentor teachers’] knowledge*”.

Zandile said the following about the mentor teachers’ scholarly community of practice sessions: “*Mine [mentor teacher] actually did say it was nice to meet up with all the other teachers because you get to hear a lot of things*”. In the following section, I will discuss the pre-service teachers’ experiences regarding the Whole Brain[®] Participatory Action Research process.

4.7.4.2.6 Whole Brain[®] Participatory Action Research

All the pre-service teachers experienced the implementation of action research into their teaching practices positively. They indicated that they were able to see their mistakes and understood the learners better. Zandile, however, realised that she had been too focused on conducting action research, instead of concentrating on the learners. Dorothy felt that the learners did not always take the lessons seriously. The feedback received in response to the questionnaire given to the learners was insightful. Mia commented that “*you think a certain way and then when you see their [the learners’] feedback, like oh, they actually experienced it in a completely different way*”.

All the pre-service teachers acknowledged that the Comprehensive Whole Brain[®] Model had been easy to use while planning their lessons. Anneli received “*a lot of positive feedback*” from her learners. The pre-service teachers recommended that in the future all final-year education students in their faculty should be provided with a copy of the Comprehensive Whole Brain[®] Model for use in their teaching practice. Other pre-service teachers regretted not having been included in the programme. The pre-service teachers admitted that they sometimes struggled to implement all

four brain quadrants in a lesson. In the following section, the personal, professional logos and slogans of the mentor teachers will be discussed.

4.7.5 Professional logos and slogans of the mentor teachers

The mentor teachers were challenged to design their own personal logos and slogans on the application Canva. The seven teachers developed the logo in the “pre-mentoring” phase of the mentor teacher short course and shared it with the other members of the mentor teachers’ scholarly community of practice by means of WhatsApp. The mentor teachers had to reflect on their professional practice (including their teaching practice, position in the school, the subject they were teaching and their mentoring practice). The rationale behind the activity was for them to view the self as a brand in the education sector.

Four of the mentor teachers’ logos and slogans can be seen below. The first (figure 81) was developed by Melissa.



Figure 81: Professional logo and slogan of Melissa

Melissa’s slogan and logo emphasised the self steadily becoming with a view to transforming. In her portfolio of evidence, Melissa stated: *“I had several opportunities to act as a mentor for first- and final-year students and can honestly say that none of the processes that I have followed before was as captivating and integrated as being part of this mentor [scholarly] community of practice”*. In her self-reflection, Melissa

shared *“this journey of self-empowerment confirmed that I am still committed to bringing my best work into the world of education”*.

The logo and slogan developed by Carol can be seen below.

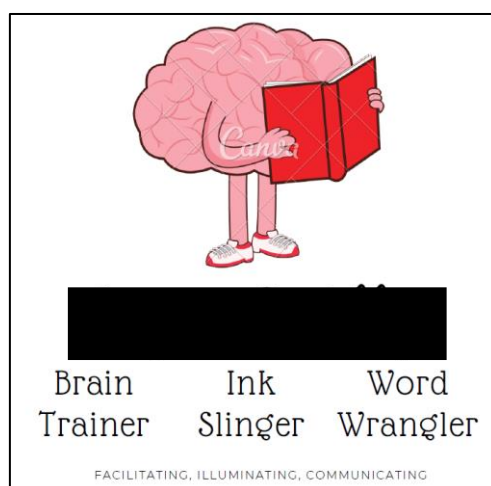


Figure 82: Professional logo and slogan of Carol

Carol, who speaks four languages, is a language teacher, which explains her creative wordplay with “ink slinger” and “word wrangler”. In her teaching and mentoring practice, she chose to use the word “brain trainer” although, in the second part of her slogan, she favoured the word “facilitating” which, in my opinion, is better suited to the constructivist theory in this study. Her choice of the word “illuminating” fitted in the context of her practice as it referred to her own and her pre-service teacher, Zandile’s self-regulated professionalism.

Elize wanted to combine her preferences with her professional identity in the design of her logo, as shown in Figure 83.



Figure 83: Professional logo and slogan of Elize

Elize is an English teacher who has been in the education profession for 28 years, and by including different “old school” objects in her logo in Figure 83 she shared a little about her professional identity. I interpret the addition of the words “with a twist” to the logo as an indication of how she views herself: *“I would like to believe I am a life-long learner.”* This was confirmed by the fact that she registered for a master’s degree after the completion of the short course. Her use of the quote “We know what we are, but not what we may be” from “Hamlet” is aligned with the purpose of the short course I developed.

4.7.6 Reflective poems the mentor teachers included in their portfolios of evidence

The mentor teachers were challenged to be brave and creative when writing self-reflective poems about their mentoring practice. Their poems were included in their final conclusion in their portfolios of evidence for assessment submitted on Google Drive. I selected three of the poems to share in the following section.

In the allegory Elize wrote for her self-reflection, her mentoring practice is symbolised in the form of a garden in which she is the gardener, as seen in Figure 84.



The Gardener

The gardener knew she had to teach the delicate rose in front of her to survive in a strange garden called Resilience without any help or guidance. She started taking the rose out of the hot house into the enormous garden outside. Unfortunately, there were also many dangers lurking in the garden, but the gardener did not get rid of all the spiders, snails and dry patches. Instead she challenged the rose to face her enemies and fears on her own. The rose grew stronger by the day. One by one she conquered her enemies. Then one day the time came for the

final test. The Gardener took the rose to the gate of a vast parched piece of land. "What is this?" asked the rose. "This is the future where you have to survive on your own, it is called Resilience," answered the gardener. "But this is a desert and I am a rose! How will I survive?" complained the rose. The gardener held a mirror up to her face. "I am different... Why?" "You have changed. Now you are a rock rose and although you are still beautiful, you are strong enough to survive anywhere."

Figure 84: Self-reflective allegory by Elize

Elize combined various aspects of her mentoring practice and her experiences in the mentor teacher short course in the above allegory. In the first session of the programme, the participants were asked to compare themselves to a tree or plant as part of an ice-breaker activity. Elize chose the rock rose, and as she completed the short course she picked the same symbol in her self-reflective conclusion. The allegory accurately portrays the transformative progression that her pre-service teacher underwent.

Lindie wrote a poem (see Figure 85) summarising and describing the mentor teacher short course and the transformation of the self and her practice.

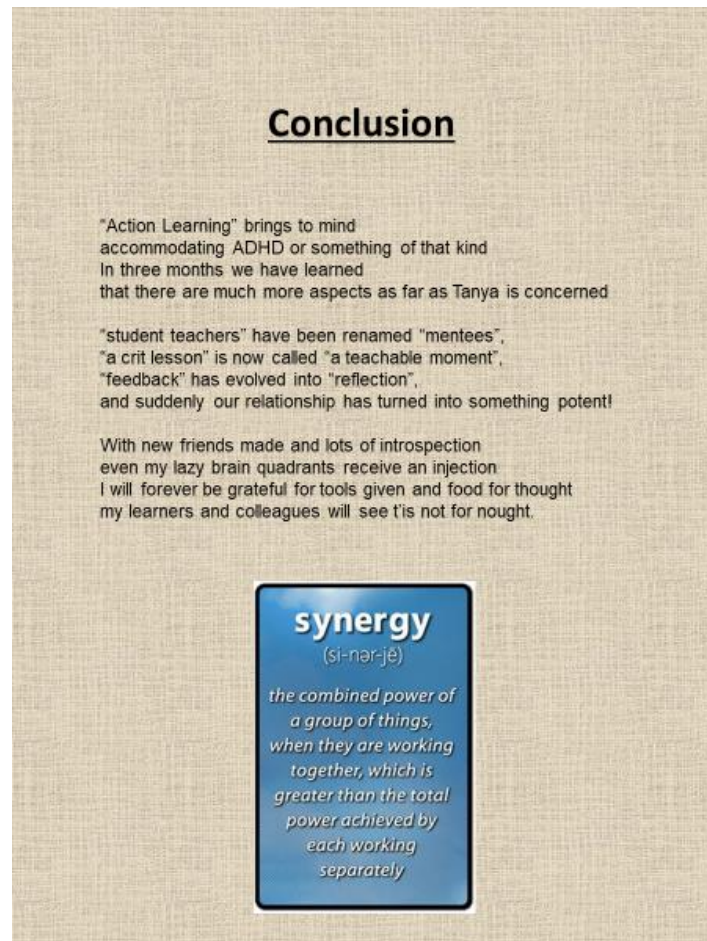


Figure 85: Self-reflective poem by Lindie

Lindie chose to call her poem "Synergy" (Figure 85), which refers to the effect if the self cooperates with others, as experienced in the scholarly community of practice. Lindie did not work with her pre-service teacher, Emma, on a daily basis and did not implement all the aspects of the programme into her mentoring practice. However, it is evident from the poem in her portfolio of evidence that she had empowered herself as she stated: *"I will forever be grateful for tools given and food for thought"*.

In the following poem, Carel shared his experience of participating in the scholarly community of practice sessions:

Community of practice

*So, we started off with a bang
 Not really knowing how it was going to hang.*

*I gladly signed up to help and support,
but didn't really know what we were going to report.
After the introductions in contact session one
There were a lot of instructions in the sessions to come.
From pre-mentoring to post-mentoring to be done
to worksheets and evidence to name but some.
Mentor types and mentor models were new
Also, discussions and voice recordings, although sometimes a bit skew.
I developed and learned quite a lot
And maybe again I will see ye lot.
'T was great meeting all
Thanks, Tanya, we had a ball!*

Carel's poem captures the atmosphere of the mentor teacher scholarly community of practice and includes references to most of what was done in the programme and was expected of the mentor teachers.

4.7.7 Executive summaries or infographics the mentor teachers made

The mentor teachers were tasked with making executive summaries in PowerPoint or infographics on the Pictochart app. They had to be creative and reflect on the programme and their professional development in a scholarly fashion. The mentor teachers considered the types of mentoring they had incorporated in their mentoring practices and had to discuss the effect of the scholarly community of practice and the action research they conducted. They also had to explain how they took responsibility to cultivate their self-regulated professionalism. Chris, Melissa and Carol's mentor teacher executive summaries or infographics are depicted below. Chris developed his executive summary in PowerPoint, as seen in Figure 86.

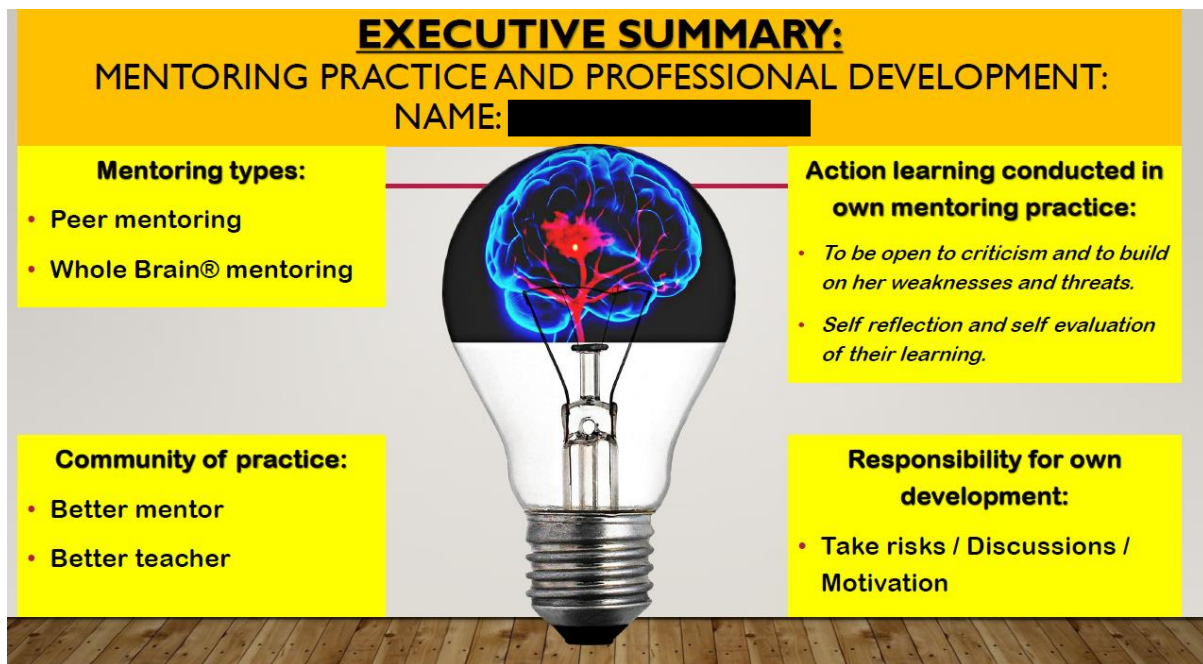


Figure 86: Executive summary designed by Chris

In his executive summary (Figure 86), Chris indicates that as a result of the scholarly community of practice he believed that he had become a better mentor and teacher. He incorporated peer mentoring and Whole Brain® Mentoring into his mentoring practice. After conducting action research, he had become self-reflective in respect of his own learning. He took risks in his practice, had scholarly community of practice discussions and was motivated by his peers. He therefore believed that he took responsibility for nurturing his professional development.

In Figure 87, the front page of Carol's infographic, designed in Pictochart, is shown:



Figure 87: Carol's infographic

Due to the scope of the infographic (Figure 87), only the cover is depicted here. Carol reflected how she had incorporated peer mentoring, Whole Brain® Mentoring and blended mentoring in her practice. She furthermore shared the following about how she had taken responsibility for nurturing her professionalism: *"I determined to get as much as possible out of this experience. This meant rearranging school responsibilities to attend the workshops, completing the worksheets in the allocated time and constantly reflecting on what I was doing. As much as I was focused on my mentee's [pre-service teacher's] need, I was also aware of my mentoring practice and extrapolating what I was experimenting with into my teaching practice and other spheres of responsibility in the school".* Carol had found that the scholarly community of practice *"made a world of difference to my experience. Teaching and mentoring is a solitary pursuit, and having a group of different, yet like-minded people to share experiences and suggestions allowed me to explore, reflect and experiment in a safe, supportive environment"*.

Melissa used an aeroplane analogy for her infographic designed in the Pictochart app (Figure 88). Due to its size, only part of it is included here. In her conclusion in her portfolio of evidence, Melissa explained her infographic as follow:

“Although mentoring is not new to me, I was tasked to becoming innovative and reflective in my mentoring practice. I decided to use the analogy of a descending aeroplane as I worked step-by-step through the mentor teacher self-empowering process.

The aeroplane analogy addresses several levels (from 50 000 feet to 10 000 feet) and takes the things you do and shows you how they fit in the context of your life. The actions you perform funnel into projects, which support the stuff you are responsible for, which support your medium- and long-term goals, which support your life purpose.

In this context, “the flight plan” involved taking responsibility for my mentor role in collaboration with my mentee [pre-service teacher]. The process of action research made it possible for me to understand better [sic] and list the mentee’s expectations.



Figure 88: Melissa’s infographic

The final destination captured the essence of my innovative and reflective journey.

The four key elements that I identified were:

the power of [scholarly] community in practice.

the power of opposites to enhance whole [sic] learning.

the power of personal mastery of a process.

the power of acknowledging Whole Brain® Thinking and Teaching.

With this programme, I have dared into the cloudiness of peer mentoring, Whole Brain® Mentoring and blended mentoring. It should not be surprising to say that the latter was hugely fundamental and innovative in my self-learning. I enjoyed creating my Pictochart so much because I could finally connect the dots of my learning, from 50 000 feet to reaching the runway and landing to reach my destination. I love to journey through this life of productivity”.

4.8 CHAPTER CONCLUSION

In Chapter 4, I shared the meaning that the participants and I had harvested in our practice. I included the results from the exploratory baseline surveys, the thinking preference profiles of the participants and myself together with the reflections on the curricula I had developed. I described the Whole Brain® Participatory Action Research the participants and I had conducted and discussed the findings.

The data that emerged from my action research spiral and was discussed in this chapter included: The self-reflective progression chart of the mentor teachers, the pre-service teachers’ reflections, the constructs that emerged from the focus group interview discussions, the logos, executive summaries, infographics and poems developed by the mentor teachers. In the next chapter, I untangle the meaning of my study by sharing my final conclusions.

CHAPTER 5

BLOSSOMING: UNTANGLING THE MEANING



Artwork 5: “Tree of resilience” by Judy King and the children at Bear Cottage (*King, 2017*)

5.1 INTRODUCTION

The artwork featured here (Artwork 5) was created by Judy King and children at the Bear Cottage Children’s Hospice in Manly, Australia as part of a therapy project and in my opinion reflects the uniqueness of every child who contributed. The “Tree of Resilience” incorporates different artistic inputs from the children at Bear Cottage and their handprints can be seen on the leaves. Judy King introduced innovative and authentic “art tools” for this project—the children used syringes, their footprints, the tyre tracks of their wheelchairs and trolley trails to make the artwork. The word “blossoming” comes to mind when I look at it.

I have found various links between what Judy King and the children did in the art therapy project and my study. The participants and I had started to blossom in our mentoring relationship once we understood our own thinking preferences and could accommodate one another’s. The word resilience, which is included in the title of Artwork 5, also emerged during the focus group interviews. The mentor teachers regarded resilience as vital to becoming a self-regulated professional while Artwork 5

shows how the children at Bear Cottage created an adaptation of their circumstances to give meaning to their experiences. During the Whole Brain® Participatory Action Research process the participants and I worked innovatively and collaboratively to make meaning in a scholarly manner in our practice.

This chapter is subtitled “untangling the meaning”. In Chapter 3, I refer to the Whole Brain® Participatory Action Research process metaphorically as overlapping and growing. From a Whole Brain® Constructivist viewpoint, I rather regard the production of knowledge as an ongoing meaning-making Whole Brain® Scholarly Endeavour (Du Toit, 2013). In the following sections, I will review how the research matured from theory and literature in Chapter 2 to produce findings in Chapter 4, and the sharing of the knowledge we had constructed.

5.2 UNTANGLING THE RESEARCH QUESTIONS

I wanted to determine the means required to take action to transform practice and the self, as explained in Chapter 1. The pre-service teachers used the novel action research design in their teaching practice, while the mentor teachers employed Whole Brain® Participatory Action Research in their mentoring practice. In this chapter, I clarify what was discussed in Chapter 1 when the participants and I each asked ourselves: How can I become an agent of transformation in my practice? and jointly: How can we become agents of transformation?

In Chapter 4, I shared the analysed baseline data and the meaning that the participants and I had harvested during the Whole Brain® Participatory Action Research process. After harvesting, interpreting and triangulating the data, my vision, as stated in Chapter 3, was for us to construct meaning in our practice and then opt to contribute to the current body of knowledge in the fields of action research and mentoring in the education context. In the following sections I answer the research questions.

5.2.1 Unravelling the main research question

I regard this research as a distinct part of our professional make-up. The main research question revolves around how the participants and I constructed self-

regulated professionalism by using Whole Brain® Participatory Action Research (Fringe, 2013). My chosen research design had never been incorporated into the pre-service teacher mentoring field. I consider the joint scholarly venture I had embarked on with a group of pre-service and mentor teachers as part of the faculty at a university to be innovative.

How is self-regulated professionalism constructed in a pre-service teacher mentoring context using a Whole Brain® Participatory Action Research design?

In essence, the participants and I implemented the principles of self-regulated learning by using a constructivist Whole Brain® Thinking mix as an epistemological foundation. The exploratory baseline survey distinctly revealed that mentor teachers had a significant impact on the development of the professional teacher identity development of pre-service teachers. My initial ontological intent refers to my view that the transformation of the self is an ongoing process in the context of pre-service teacher mentoring. I created opportunities for the final-year education students to cultivate their self-regulated professionalism.

During the collection of data I soon realised that not only the pre-service teachers' points of view, but also those of the mentor teachers and my own mattered and that we too needed to regulate our professionalism. I chose to change the main research question so that instead of focusing only on the self-regulated professionalism of the pre-service teachers, it would also include that of the mentor teachers and my own. The participants and I completed the HBDI® and realised that Whole Brain® Thinking as a vital part of each one's practice. Individually we wanted to construct meaning and transform practice. The construct "self-constructivism", as introduced by Du Toit (2018b:4), describes not only how we conducted action research, but also how we nurtured our professionalism. The mentor teachers, pre-service teachers and I jointly contributed to the study. Socio-constructivism (Blankenship, 2010) framed this co-constructive process.

In my study, I progressed from the construct frame outlined and described in Chapter 1 to sharing the knowledge we had constructed in Chapter 5. I acknowledged the

reference by Du Toit (2018b) to meaning-making as a “construct process”. In the pre-service teacher mentoring context, the participants and I conducted Whole Brain® Participatory Action Research during our constructing of meaning process. The pre-service teachers, the mentor teachers and I adapted to our changing education environments by executing an innovative idea and envisioning the transformation of the self and our practice.

The mentor teachers agreed that this research process had assisted them in transforming their practice and emphasised the following positive experiences: The establishment of a vision, doing scholarly reflection and the construct Whole Brain® Thinking. During the programme Elize and Melissa stated they regarded “*knowing your brain profile*” as the most valuable benefit. They had experienced learning about the thinking preferences as a “*huge opportunity*”. In her infographic in her portfolio of evidence Melissa wrote that “*action research reduced decision-making from a tedious chore to a systematic process*”. She described action research as a highlight as it had addressed her self-regulated professionalism and stated she thought that the action research process “*could be applied by anyone*”.

All the pre-service teachers agreed on the value of conducting Whole Brain® Participatory Action Research. They were able to recognise their mistakes while facilitating their teaching practice. The final-year education students showed mixed reactions with respect to how they conducted action research. Zandile acknowledged that she had started to focus too much on the research she had to conduct and not enough on the learners. The pre-service teachers considered the use of feedback questionnaires as beneficial as they were able to comprehend exactly how the learners judged their practice. The pre-service teachers sometimes struggled to activate all the brain quadrants in a single lesson. They recommended planning in a Whole Brain® Manner, which would include a week or a day of different lessons that would all contribute to their Whole Brain® Teaching Practice.

I developed the following models to assist professionals in constructing and nurturing their self-regulated professionalism during action research. The Whole Brain® Scholarly Reflection Model was inspired by Du Toit (2013) and by the Comprehensive Whole Brain® Model (De Boer *et al.*, 2015:55). This scholarly

reflection process is rooted in constructivism and the Whole Brain® Theory. The objective was to make reflection uncomplicated and practical. During reflection, a professional answers four reflective questions: What? Why? How? and Where? The Comprehensive Whole Brain® Mentoring Model was part of my meaning-making, as will be discussed in Chapter 6. This model was designed to be emancipatory. During mentoring in the education context, professionals should accommodate one another, mentor in a Whole Brain® Fashion and become self-regulated professionals.

The participants and I regarded action research and self-regulated professionalism as a never-ending process focused on the self. As stated in Chapter 1, transformation refers to the introduction of an innovative idea into practice. I conclude that in this Whole Brain® Participatory Action Research study, self-regulated professionalism was initiated. In the sections that follow I will unpack the sub-research questions as I explain in detail how we constructed our practice and nurtured our self-regulated professionalism.

5.2.2 Unravelling the sub-research questions

In the following section, I explain how I opted to initiate the cultivation of self-regulated professionalism during the scholarly community of practice sessions. I will explore how the mentor and pre-service teachers transformed their practice and nurtured their self-regulated professionalism. Finally, I elaborate on the Whole Brain® Mentoring Model that I had constructed for education contexts, as explained in detail in Chapter 6.

5.2.2.1 How can I, as the principal researcher, initiate self-regulated professionalism in scholarly communities of practice?

The “South African National Development Plan” (South Africa, 2012) highlights the significance of the professional development of educators. During the two short courses I had developed, the mentor teachers, and the pre-service teachers as up-and-coming professionals, were guided to acknowledge the importance of taking responsibility for their professional development. As elaborated on in Chapter 2, I obtained approval and accreditation from the South African Council for Educators (SACE) for the course, “Mentor professional development: Self-empowerment in a community of practice”.

Since I agree with Ioannidou-Koutselini and Patsalidou (2015) that the most effective professional learning transpires within a learning community, I planned for the short courses to function within the pre-service teacher and mentor teacher scholarly communities of practice, where together we actively addressed our self-regulated professionalism in the South African education landscape.

The mentor teachers experienced the scholarly communities of practice sessions positively as they referred to it as “*great*” (Carol), “*a support group*” (Elize) or “*in love with this*” (Carol). The scholarly community of practice sessions of the mentor teachers were experienced by the participants as focused. They were transforming their mentoring practices while reciprocal learning took place between mentor and pre-service teachers during mentoring opportunities. Furthermore in the scholarly community of practice, the mentor teachers understood and accommodated each other’s thinking preferences as they developed during the short course.

Unfortunately time was limited and the mentor teachers suggested that a “*condensed version of the course*” (Carel) be developed. Elize, however, acknowledged that the scholarly community of practice sessions should be prioritised and said that “*the one person that was not here was losing out*”.

The pre-service teachers understood that the scholarly community of practice sessions offered opportunities to learn from one another. As final-year education students, they were made aware of what their peers experienced and how they dealt with situations, and felt content that they were understood. They regarded the Whole Brain® Model and the Comprehensive Whole Brain® Model as two of the strengths of the short course and acknowledged that they and their mentor teachers had developed professionally.

In these scholarly communities of practice, as stated in Chapter 1, my epistemological perspective was, in essence, that everything I do in my practice affects someone else (McNiff & Whitehead, 2012). Carol aptly summarised the essence of the self-regulated professionalism process in the pre-service mentoring context as follows: “*I said to her [pre-service teacher] this was my best mentoring, and she [pre-service teacher] said to me this was her best teaching practice [Work*

Integrated Learning period]. *We learned stuff and did stuff and changed, improved and grew*".

Zehetmeier, Andreitz, Erlacher and Rauch (2015:164) assert that in socio-constructivist, "truth is not always a given entity". I regard that truth or meaning was constructed or reconstructed by the self and as part of a collective in the two scholarly communities of practice. From the findings I conclude that the mentor teachers, pre-service teachers and I made meaning in our practice and that our self-regulated professionalism was nurtured during the scholarly communities of practice. During the focus group interviews the participants revealed that "*exponentially the learners*" (Steve) and future pre-service teachers were identified as other possible stakeholders of the programme. The pre-service teachers thought that future mentor teachers would be advantaged, and the mentor teachers deemed that the universities and schools were also stakeholders that would benefit from the programme and my study.

5.3.2.2 How are the practice and self-regulated professionalism of mentor teachers transformed?

In Chapter 1, I mentioned the fact that hardly any mentor teacher preparation exist (Hall, Draper, Smith & Bullough Jr, 2008). Hennissen *et al.* (2011) highlight, as reported in Chapter 2, that mentoring abilities could be acquired. I do not regard that quality mentoring can be guaranteed when the focus is mainly on preparing mentor teachers to develop specific mentoring abilities.

In an attempt to specify mentoring for ourselves, the mentor teachers and I incorporated the innovative types of mentoring into our practice. The mentor teachers were reciprocally involved during mentoring; while empowering the self, they were also developing as a collective in the scholarly communities of practice and their mentoring relationship with their pre-service teachers. Quality mentoring therefore envisages challenging the other, but also the self. The pre-service teacher and the mentor teacher both taking responsibility for their professionalism.

The mentor teachers transformed their mentoring practice by using action research and implementing Whole Brain® Mentoring, peer mentoring and blended mentoring.

In Chapter 4, I shared the self-reflective progression charts of the mentor teachers. Four of the seven mentor teachers indicated that they thought they had developed professionally during the programme. In their subsequent self-reflection, all the mentor teachers stated that they had nurtured their self-regulated professionalism, and in their self-reflective charts three of the seven depicted improvements in their mentoring practice. In their feedback during the last scholarly community of practice session, six of the seven stated that their mentoring practice had undoubtedly been transformed.

During the mentor teacher focus group interviews, the following constructs emerged:

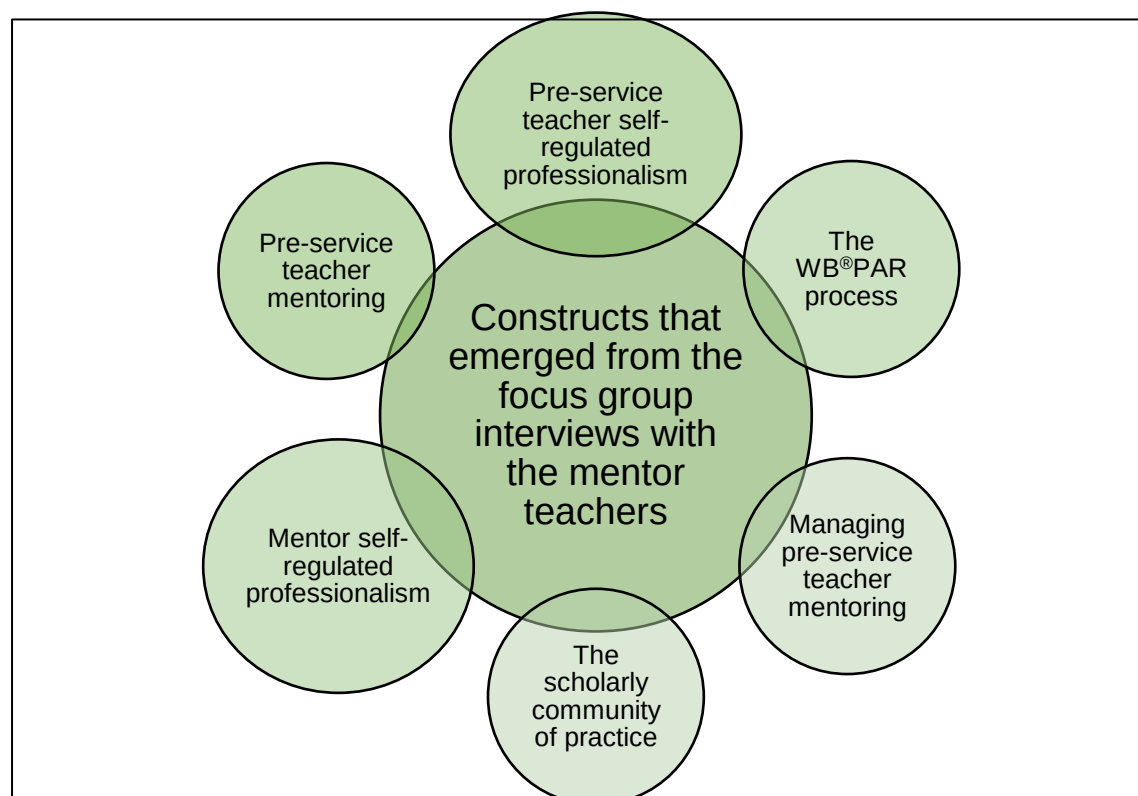


Figure 89: Constructs that emerged from the mentor teacher focus group interviews

The constructs (Figure 89) and the feedback the mentor teachers gave are discussed in detail in Chapter 4. To answer the research question, I discuss the feedback the mentor teachers shared about whether their practice and self-regulated professionalism had been transformed during the programme. Carol stated that “*if we [mentor teachers] are teaching differently and our outcomes are different, then*

the way you mentor should be different”, to which Melissa added that it was “different from being put with somebody this time around”. In Carol’s infographic, she wrote the following about the transformation of her mentoring practice: “I wanted to find fellowship in the course, but it was so much more enriching. I now think about my mentoring practice in a completely new light”.

The mentor teachers acknowledged that the scholarly community of practice sessions and the Whole Brain® Participatory Action Research process positively influenced their self-regulated professionalism. During the programme, Carol said: *“I am here trying to be a better mentor; she [pre-service teacher] is trying to get her degree”*. The mentor teachers collectively responded positively when I asked them whether they had developed their self-regulated professionalism. Melissa admitted that *“value was added in terms of my learning”*. During the focus group interviews, the mentor teachers reflected on what they had learned from their pre-service teachers during peer mentoring, and how the short course had given them a sense of purpose and a desire to transform their mentoring practice. The mentor teacher scholarly community of practice regarded understanding their thinking preferences and accommodating others as beneficial. By the end of the programme, the mentor teachers appreciated themselves as quality mentors. From the mentor teachers’ feedback in the focus group interviews and the other findings shared in Chapter 4 and in this section, I conclude that the majority of the mentor teachers transformed their mentoring practice and self-regulated professionalism.

5.2.2.3 How are the practice and self-regulated professionalism of pre-service teachers transformed?

During a mentor teacher focus group interview discussion, Carol remarked that *“in the same way our kids are changing, our pre-service teachers are changing too, and we forget that they are not adults like us and they are not necessarily like our kids either”*. During the Whole Brain® Participatory Action Research the pre-service teachers and mentor teachers challenged old assumptions, beliefs and practices in order to become what Du Toit (2012) refers to as agents of transformation in practice. Innovations and experiences were shared, and collegial support was given during the scholarly community of practice sessions and in the mentoring relationships. In the pre-service teacher mentoring relationships, scholarly reflection

(Du Toit, 2012) was taking place and peer mentoring was acknowledged by the mentor and pre-service teachers as an opportunity to learn from one another. Anneli shared: “*I was learning to be a better mentee [pre-service teacher], and my mentor [teacher] was learning how to be a mentor*”. Mentoring interactions took the form of discussions, enquiries and problem-solving (MacPhail *et al.*, 2014). Whole Brain® Mentoring (Du Toit, 2012; Du Toit, 2013) was successfully implemented as the mentor and pre-service teachers accommodated one another’s thinking preferences. In a pre-service teacher practice, the development of teacher identity is regarded as significant.

In Chapter 2, reference was made to Beijaard *et al.* (2004), according to whom the development of pre-service teacher identity is related to the self. I appreciate this idea as I furthermore came to understand that the self is an all-inclusive notion and that Whole Brain® Thinking is central to the development of a professional teacher identity. The two baseline exploratory surveys conducted online established that self-regulated professionalism is valuable in the pre-service mentoring context. During the Whole Brain® Participatory Action Research, the pre-service teachers took responsibility for the development of their professional selves. The final-year education students established their goals, nurtured their professionalism, implemented Whole Brain® Learning in their teaching practice, participated in professional discussions and functioned as peers with their mentor teachers. The notion of pre-service teacher self-regulated professionalism not only influences, but also transforms, challenges and underpins the self and practice.

In my opinion, the self-regulated professionalism approach and the Whole Brain® Participatory Action Research process that the pre-service teachers undertook endorsed the development of their professional identity and Whole Brain® Self. In Figure 90, the constructs that emerged from the pre-service teacher focus group interviews are illustrated.

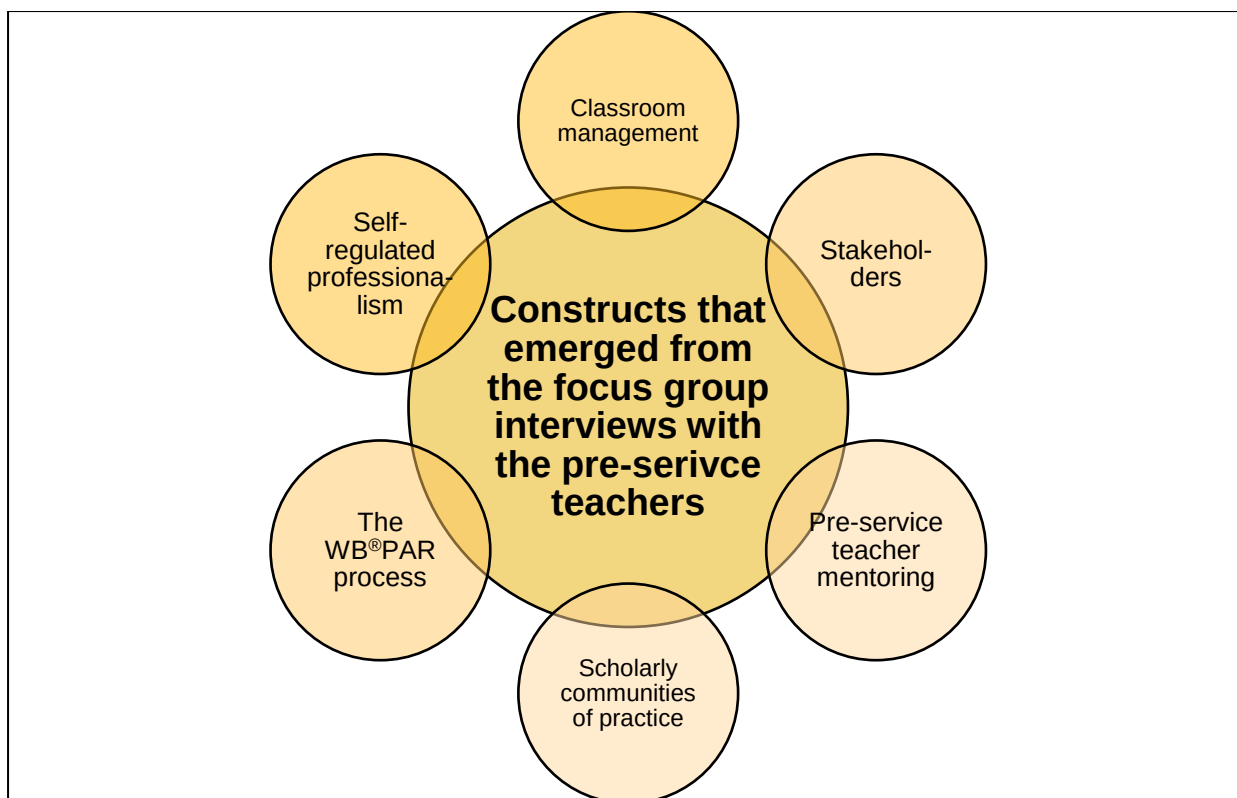


Figure 90: Constructs that emerged from the pre-service teachers focus group interviews

The most significant concern raised by pre-service teachers in the baseline survey and in the Whole Brain® Participatory Action Research study was classroom management (Figure 90). Steve suggested a possible solution in this regard: “[B]est to think in a way learners who think differently to you do, and then the better you understand them, the easier it is to teach them”. What he suggested, therefore, is that the learners’ thinking preferences should be acknowledged. The pre-service teachers who participated in the scholarly community of practice recognised that their participation in the group had assisted them with their apprehensions about discipline. Anneli indicated that *“this [the scholarly community of practice sessions] was a very, very big influence because at first I struggled with classroom management, but after coming together regularly ... where I hear from you what you guys did, what you proposed, and what I tried, that was a big, big help”*.

In the pre-service teachers’ self-reflections, they acknowledged that they had cultivated their self-regulated professionalism. Four of the seven final-year education

students made particular reference to how their teaching practice had been transformed. While implementing the Comprehensive Whole® Brain Model, the pre-service teachers were able to implement novel ideas and accommodate the thinking preferences of their learners. The final-year education students regarded that they were adequately prepared for their entry into the profession. They found the title “pre-service teacher” instead of “student” to be much more fitting in the school environment and indicated that this minor modification positively affected discipline in the teaching practice.

In conclusion, the pre-service teachers provided the following feedback in relation to how they transformed their practice and self-regulated professionalism. Mia recognised that she had become a “*better teacher*” and Anneli stated that “*it is me learning to be me*”. Zandile shared how her mentor teacher had given her a “*realistic expectation of what I am going to experience as a teacher*” and Anneli added that “*if we know we need to regulate our professionalism, then we want to be a teacher, then you already change your mindset. I do not want to do this lesson because I have to. I will do the lesson because I want to learn from myself and my students [learners]*”. Based on the findings discussed in Chapter 4, it seems evident to me that the pre-service teachers had transformed their practice and had cultivated their self-regulated professionalism.

5.2.2.4 What will a Comprehensive Whole Brain® Mentoring Model for education entail?

During the Whole Brain® Participatory Action Research, The Herrmann Whole Brain® Model (Herrmann, 1995) helped us to understand the self while accommodating one another's thinking preferences. In the programme, the mentor teachers, pre-service teachers and I referred to ourselves as Whole Brain® Professionals in the education context.

While we were conducting action research in our practice, the constructs Whole Brain® Researchers, and Whole Brain® Practice Constructivists emerged. I regard myself as a Whole Brain® Practitioner. The constructs that emerged as we focused on transforming our respective practices were Whole Brain® Life-long Learners and Whole Brain® Visionary Practitioners.

The mentor teachers incorporated Whole Brain® Mentoring into their practice and accommodated one another's thinking preferences to aid quality mentoring. The mentor teachers strived to create a balance between the four quadrants of the brain during mentoring and the construction of a Whole Brain Mentoring® Practice. As we progressed in the two short courses, I realised that in practice, achieving Whole Brain® Mentoring was not that straightforward.

I was inspired by the Comprehensive Whole Brain® Model (De Boer *et al.*, 2015), which was explained in Chapter 2. The pre-service teachers successfully implemented the model to incorporate Whole Brain® Learning into their teaching practice. I used a visual design similar to that of the Comprehensive Whole Brain® Model to develop the Comprehensive Whole Brain® Mentoring Model, incorporating the findings and innovative ideas generated during my study with regard to becoming a self-regulated professional. I organised the expectations professionals might have during mentoring in terms of the four brain quadrants. I also incorporated and organised the aspects with which a professional might struggle with in the mentoring context.

5.3 POTENTIAL MEANING OF THE RESEARCH

During the participatory action research process, we made meaning in our practice. The findings contribute to the body of knowledge by providing novel viewpoints and innovations in the fields of action research and mentoring in education contexts. I am of the opinion that the findings of my study will help others to view pre-service mentoring from a new perspective. Education professionals may find value from the meaning derived from my study in order to transform their practice, as explained in the following section.

As explained in Chapter 1, I focused on contributing ontologically, epistemologically, methodologically and constructually to the pre-service mentoring context by using a Whole Brain® Participatory Action Research design. My ontological contribution was made from the point of view that the participants and I had different frames of mind, but together raised our scholarly voices with a view to transforming our self-regulated professionalism and make meaning in our practice.

Epistemologically, the participants and I recognised that we wanted to develop and empower ourselves professionally. Both the mentor teachers and pre-service teachers benefitted from the mentoring relationship. A socio-constructivist approach was followed as the participants and I constructed knowledge collectively.

Whole Brain® Participatory Action Research was implemented methodically by the mentor teachers, the pre-service teachers and myself and the participants were actively involved during the research process. We introduced innovative ideas into our practice and I constructed and introduced a construct frame (Chapter 1). The construct analysis process I used is original and an innovative alternative to thematic data analysis. This analysis approach developed from constructivism. Instead of using themes, I referred to constructs and explained the process in Chapter 3.

The participants and I constructed the following in the mentoring field in South Africa: The two short courses developed for mentor teachers and pre-service teachers; the Whole Brain® Scholarly Reflection model that I developed and which is illustrated in Chapter 2; and the Comprehensive Whole Brain® Mentoring Model for education explained in detail in Chapter 6.

5.4 LIMITATIONS AND JUSTIFICATIONS

First, I will identify and summarise the limitations of my study, after which I will explain it in terms of how I justified them. The limitations I identified are the following: The research is limited as only one institution of higher education was involved and a relatively small sample of participants was used for the Whole Brain® Participatory Action Research study. No specific stakeholders in pre-service mentoring in the South African context were included in the study. Lastly, I acknowledge that my personal assumptions and bias may have been a limitation during action research.

My study was limited by time and space constraints as I focused on the pre-service teacher mentoring context at only one South African University. The Whole Brain® Participatory Action Research study was conducted in 2018 at an Institution of Higher Education in Pretoria. Other stakeholders, such as school principals, mentor lecturers and members of the University staff responsible for Work Integrated

Learning were not involved. I recommend that future related research should include other universities and stakeholders.

With regard to the methodology used, I invited only a small sample of mentor teachers and pre-service teachers to participate in this study. With regard to the Whole Brain® Participatory Action Research study, I admit that the fact that only 14 of the initial 18 participants completed the process might be a drawback. However, each individual did contribute to this participatory action research in various ways as the mentor teachers and pre-service teachers were my co-constructors in the study.

The different roles I had to fulfil, and my personal assumptions or bias as the principal researcher may also be regarded as limitations. I was continuously aware of my different roles as researcher, curriculum developer, facilitator and overseeing mentor. To overcome possible limitations, I first assumed that in order to ensure that I had a thorough understanding of pre-service mentoring, I not only had to include mentor teachers and pre-service teachers, but ultimately had to involve them as my co-constructors. I understood my thinking preferences, accommodated those of the participants and continuously tried to avoid bias and personal assumptions. Lastly, I confirm that I regard my research as trustworthy. Despite my many roles, I succeeded in acting ethically towards the participants, the participating schools and the Institution of Higher Education.

5.5 RECOMMENDATIONS FOR IMMINENT RESEARCH AND PRACTICE

As the study progressed, I was able to not only explain or untangle the extent to which it was a process of meaning-making, but could also make several suggestions regarding possible future related research. My practice also started to blossom.

The participants shared the following recommendations: The pre-service teachers suggested that more scholarly communities of practice sessions be held at the schools at which the pre-service teachers have spent the Work Integrated Learning period. The final-year education students would appreciate more sessions with mentor teachers. They proposed that all the final-year education students in our Institution of Higher Education should be given a copy of the Comprehensive Whole Brain® Model for use in their practice.

The mentor teachers requested that pre-service teachers should be appropriately placed with mentor teachers (two of the participants in this study had experienced problems in this regard). The mentor teachers recommended that the short course be shortened as school responsibilities make a high demand on their time.

I acknowledge that I could have taken more time to reflect in my journal during the action research process. I recommend that researchers in future action research projects focus more on this aspect.

The pre-service teachers should have been given more freedom to decide how they wanted to illustrate the meaning made in practice. While the mentor teachers had an opportunity to conclude what they have learned professionally, the pre-service teachers were not given an opportunity to compile a portfolio of evidence or an executive summary.

During future research I would allow participants more time for interaction and for learning from one another during the focus group interviews in the scholarly communities of practice. I would also propose the use of Interactive Qualitative Analysis in future research. Although the online exploratory baseline surveys were useful, a more blended mode would be preferable for the short courses. I therefore recommend using more technology in research practice by avoiding the use of hard copy material and rather using an Interactive Smartboard during focus group interviews. After receiving the poems written by the mentor teachers as a conclusion to their portfolios of evidence, I realised that as a constructivist researcher I would like to use that format for, among other things, students' feedback on my practice. I also recommend the further development of construct analysis by introducing creative interpretations, such as data poems (Mason, 2018).

I plan to conduct a participatory action research study with my postgraduate students and would like to establish a community of practice together with other scholars in the mentoring context. I support the recommendation by the mentor teachers that research in the field of pre-service mentoring should include school principals. My study focused on pre-service mentoring in the Senior Phase (SP) (Grades 7–9) and the Further Education and Training (FET) Phase (Grades 10–12). I recommend that

research also be conducted in respect of the Foundation (Grades R–3) and Intermediate (Grades 4–6) Phases.

I also recommend that mentor teachers take responsibility by researching their practice in a scholarly fashion, contributing to the current body of knowledge of our understanding of what mentoring is. In terms of life-long professional learning, I recommend the participants to uphold their dedication to doing action research in their mentoring practice. Worthwhile and exciting research that might flow from my study is to follow up on the participants who indicated that they were interested in furthering their studies as postgraduate students. A transformational take on both self and practice advocated. Two participants reported that they would like to enrol for a Masters degree with a focus on mentoring of beginner teachers under my supervision. The one had in mind designing a framework for mentoring beginner teachers at her school. The developed mentoring framework to be explicitly used in the secondary school context. The focus is on the self-regulated profession of mentors. Individual practitioners to make contributions to the knowledge base of mentoring in education contexts by contributing their explanations of their educational influences. The focus on their professional learning and the learning of others

With regard to the two short courses I developed, I would like to design curricula for the professional development and higher education contexts together with pre-service teachers and mentor teachers. I suggest that pre-service teachers conduct action research in their practice during the Work Integrated Learning period. The final-year education students assessed their practice by using an asset-based approach to action research, as we did during the short course. The pre-service teachers therefore made audio recordings of the lessons and asked the learners to complete feedback questionnaires. In order to enable them to analyse the questionnaires, the final-year education students needed to be introduced to fundamental descriptive quantitative analysis. During the focus group interviews, the mentor teachers recommended that any teacher who mentors a pre-service teacher should complete the “Mentor professional development: Self-empowerment in a community of practice” short course. To this I would like to add the suggestion that teachers conduct action research in their mentoring practice and use the Comprehensive Whole Brain® Mentoring Model during mentoring.

I initially developed the Comprehensive Whole Brain® Mentoring Model for the pre-service teacher mentoring context, but it could also be employed in other education contexts. The focus on the transformation of the entire mentoring system in the South African education sectors, which means that the Basic Education sector will be included when a beginner teacher is mentored in a school. I recommend that in the higher education sector the Comprehensive Whole Brain® Mentoring Model be employed during peer mentoring or any other mentoring relationship at colleges and universities and also in the TVET (Technical and Vocational Education and Training) sector.

I recommend working with other institutions of higher education to develop mentoring models specific to sectors such as engineering, medicine and business studies. The Whole Brain® Mentoring Model to be altered and used during student preparation and internship.

5.6 CHAPTER CONCLUSION

In this chapter, I explained and untangled the meaning of the research findings in terms of how I initiated self-regulated professionalism. Furthermore, I elaborated on how the mentor teachers, pre-service teachers and I had used the Whole Brain® Participatory Action Research design in the pre-service teacher mentoring context.

To answer the research questions, I elaborated on some of the transformations that occurred. I acknowledged that self-regulated professionalism and action research are never-ending processes. In the following chapter, I will discuss the Whole Brain® Mentoring Model for the education context.

CHAPTER 6

BEARING FRUIT: THE COMPREHENSIVE WHOLE BRAIN® MENTORING MODEL



Artwork 6: “Mastermind, chakra power, inspiration abstract thought together, world, universe inside your mind” by Ruangvaree Benjavisa (*Benjavisa, 2018*)

6.1 INTRODUCTION

I select Artwork 6, created by the artist and illustrator Ruangvaree Benjavisa, for this “fruit-bearing” chapter. I see this abstract watercolour as an illustration of the Whole Brain® Mentoring process. I share my contribution to the knowledge base in the context of mentoring in the education context in the form of the Comprehensive Whole Brain® Mentoring Model I constructed. The two figures in the painting are facing one another. In the context of mentoring, I see the attention drawn to the facets of connection, gratification, accommodation and reciprocal learning.

The array of colours used in the painting suggest that mentoring is encouraging, constructive and positive. Whole Brain® Thinking featured prominently in the mentoring relationships in my study. The two individuals in the painting are not identically portrayed, which I regard as an indication that when a person understands his or her own thinking preferences and is willing to adapt to accommodate the thinking preferences of another, quality mentoring becomes possible. The painting symbolises growth, since branches and leaves are visible. In the following sections I highlight the characteristics of my Comprehensive Whole Brain® Mentoring Model.

6.2 COMPREHENSIVE WHOLE BRAIN® MENTORING MODEL FOR EDUCATION CONTEXTS

The Comprehensive Whole Brain® Mentoring Model that I constructed is based on the research the participants and I conducted, guided by the Whole Brain® Model (Herrmann, 1995). As I regard Whole Brain® Thinking as essential during mentoring, I developed the Comprehensive Whole Brain® Mentoring Model to focus specifically on mentoring in education contexts.

The Comprehensive Whole Brain® Model (De Boer *et al.*, 2013), which I discussed in Chapter 2, guided my construction of the Comprehensive Whole Brain® Mentoring Model. This Model focuses on the facilitation of learning in a Whole Brain® fashion. I used the structure and outline in a scholarly way while giving credit to Herrmann as the “father” of the construct Whole Brain® Learning and to his seminal work. The Comprehensive Whole Brain® Model displays “the preferences, expectations, struggles and ways of facilitating learning” (De Boer *et al.*, 2015:57) applicable to a learning context. In the Comprehensive Whole Brain® Mentoring Model, the focus is on mentoring preferences and expectations, and on what a person with a preference for a specific quadrant might struggle with during mentoring.

The Whole Brain® Participatory Action Research I conducted together with the participants focused on becoming a self-regulated education professional. The pre-service teachers used Whole Brain® Learning in their teaching practice and the mentor teachers implemented Whole Brain® Mentoring innovatively in their pre-service teacher mentoring practice. During mentoring, the participants and I were focused on nurturing our self-regulated professionalism. The Comprehensive Whole Brain® Mentoring Model (Figure 91) for the education contexts illustrates the notion of mentoring in a Whole Brain® Manner.

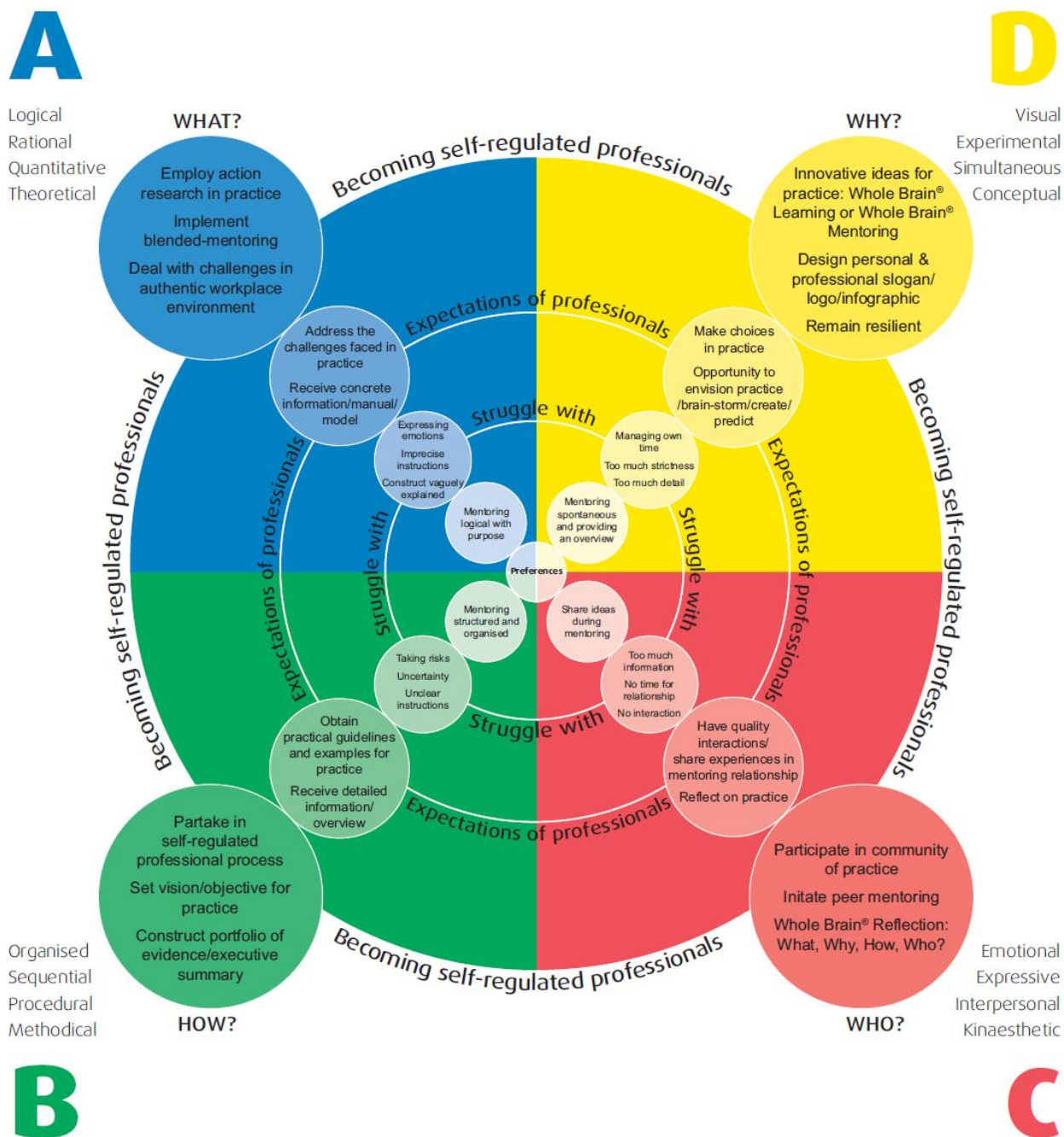


Figure 91: Comprehensive Whole Brain® Mentoring Model for education contexts

The Comprehensive Whole Brain® Mentoring Model (Figure 91) is presented in the form of a circle. I regard the four circular bands or circles as representative of the growth circles located in the trunk of a tree. As shown in Figure 91, the outer circle contains aspects of becoming a self-regulated professional, as in an education context. Next, I describe the expectations individuals have during mentoring with respect to their preferences for a specific quadrant(s). What a person struggles with during mentoring with regard to the quadrant(s) appears in the next circle. In the central circle, divided into the four quadrants, I refer to how a person prefers to mentor or to be mentored. In the following section I will explain the four quadrants that are visually represented in Figure 91.

6.2.1 Quadrant A: Comprehensive Whole Brain® Mentoring Model

In Figure 92, quadrant A of the Comprehensive Whole Brain® Mentoring Model is illustrated. Ideas in terms of inter alia the employment of action research are outlined in the outer circle and illustrate how an education professional with a preference for quadrant A may become a self-regulated professional during mentoring.

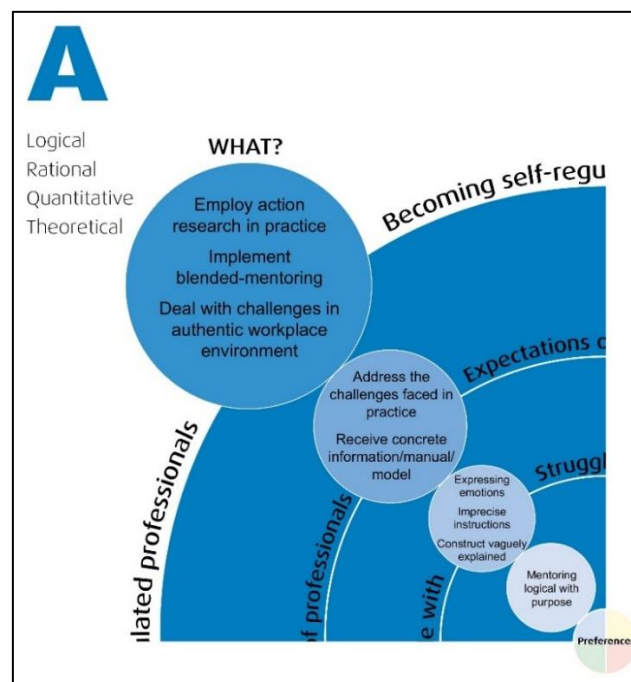


Figure 92: Quadrant A: Comprehensive Whole Brain® Mentoring Model

The expectations of an educational professional having a preference for quadrant A (Figure 92) thinking are illustrated in the second band. Aspects with which an educational professional might struggle are included in the next circle. In the middle circle a mentoring preference that is logical and has a purpose is specified for this quadrant.

6.2.2 Quadrant B: Comprehensive Whole Brain® Mentoring Model

In Figure 93, quadrant B of the Comprehensive Whole Brain® Mentoring Model is represented. The outer circle contains a summary of how an education professional with a preference for quadrant B may become a self-regulated professional. An education professional might prefer to construct an executive summary.

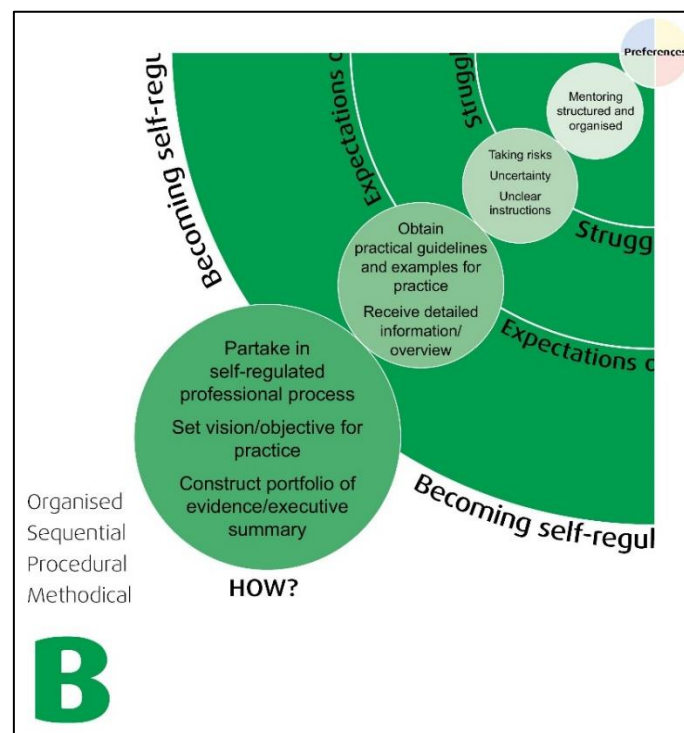


Figure 93: Quadrant B: Comprehensive Whole Brain® Mentoring Model

The expectations of an individual who has a preference for quadrant B (Figure 93) are described in the second circle. What professionals might struggle with are

illustrated in the next circle. Education professionals with a preference for quadrant B would most probably like mentoring to be structured and organised.

6.2.3 Quadrant C: Comprehensive Whole Brain® Mentoring Model

Figure 94 is a representation of quadrant C of the Comprehensive Whole Brain® Mentoring Model. In the outer circle, ideas are shared on how a professional with a preference for quadrant C may become a self-regulated professional during mentoring by, among other things, participating in a community of practice.

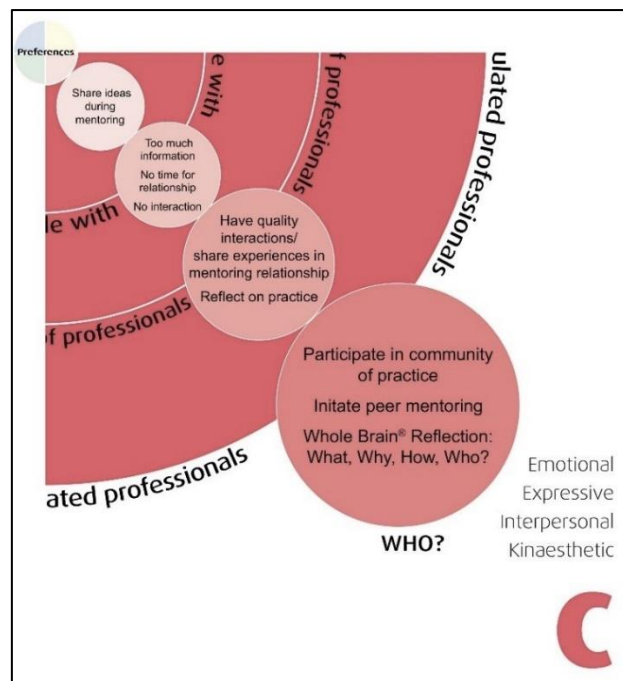


Figure 94: Quadrant C: Comprehensive Whole Brain® Mentoring Model

A preference for C quadrant thinking indicates an individual who may have the mentoring expectations seen in the second circle in Figure 94. Things that education professionals might struggle with are indicated in the following circle. Professionals in the middle circle, who have a preference for quadrant C thinking, would want to share ideas during mentoring.

6.2.4 Quadrant D: Comprehensive Whole Brain® Mentoring Model

In Figure 95, quadrant D of the Comprehensive Whole Brain® Mentoring Model is illustrated. Tasks like designing a professional slogan or infographic are outlined in the outer circle as ideas on how an education professional with a preference for quadrant D may become a self-regulated professional.

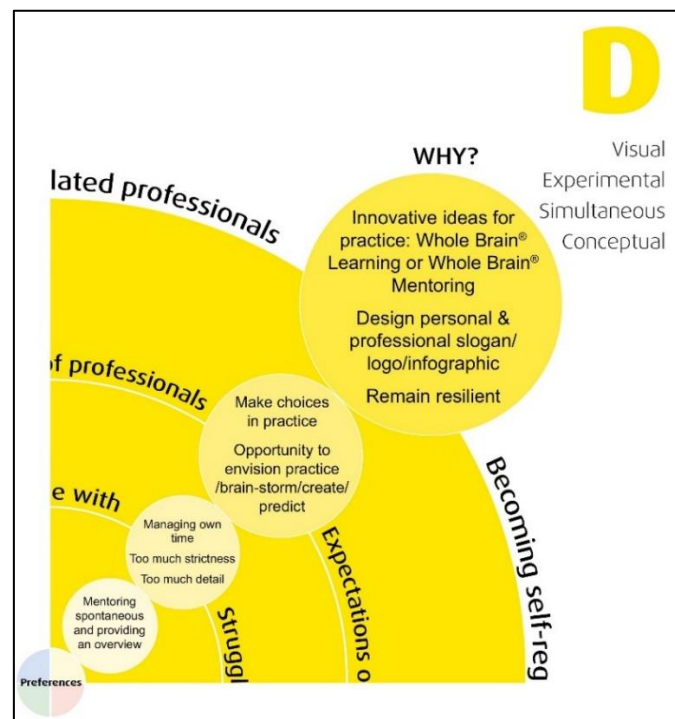


Figure 95: Quadrant D: Comprehensive Whole Brain® Mentoring Model

The expectations of an education professional with a preference for quadrant D (Figure 95) thinking are illustrated in the second circle. In the following circle, the aspects with which an educational professional might struggle in quadrant D are described. The professional might have a preference for a spontaneous approach to mentoring. As seen in the middle circle, an education professional with a preference for quadrant D might prefer to provide an overview of an education practice or the profession.

6.3 ILLUMINATION OF THE HEADERS OF COMPREHENSIVE WHOLE BRAIN® MENTORING MODEL

Owing to the authentic environment in which a mentoring relationship develops, I decided to develop a Whole Brain® Mentoring Model specifically for the education context. I used the constructs mentor and mentee. In the following section I will explain how I identified and developed the aspects that appear under each header in the Comprehensive Whole Brain® Mentoring Model.

6.3.1 Explaining how to become a self-regulated professional

The aspects related to becoming a self-regulated professional in the education context are seen in the outer circle of the Comprehensive Whole Brain® Mentoring Model (Figure 91). In this context I regard the self as a Whole Brain® Professional, a person who attempts to construct his or her education practice in a Whole Brain® Manner. In view of our interaction during the participatory action research process, the participants and I completed the HBDI® and gained a new perspective on the self. We strived to use all four quadrants of the brain in our practice so as to become Whole Brain® Education Professionals. In a Whole Brain® Mentoring relationship, the mentor and mentee acknowledge, accommodate and value one another's thinking preferences. During mentoring, individuals have a joint aim to learn professionally. The focus shifts from the self as a Whole Brain® Education Professional to the we. During the Whole Brain® Participatory Action Research study, the participants and I were involved in mutually nurturing our own and the other person's self-regulated professionalism. The aspects we used to cultivate our self-regulated professionalism according to the four quadrants of the brain are be seen in Figure 96.

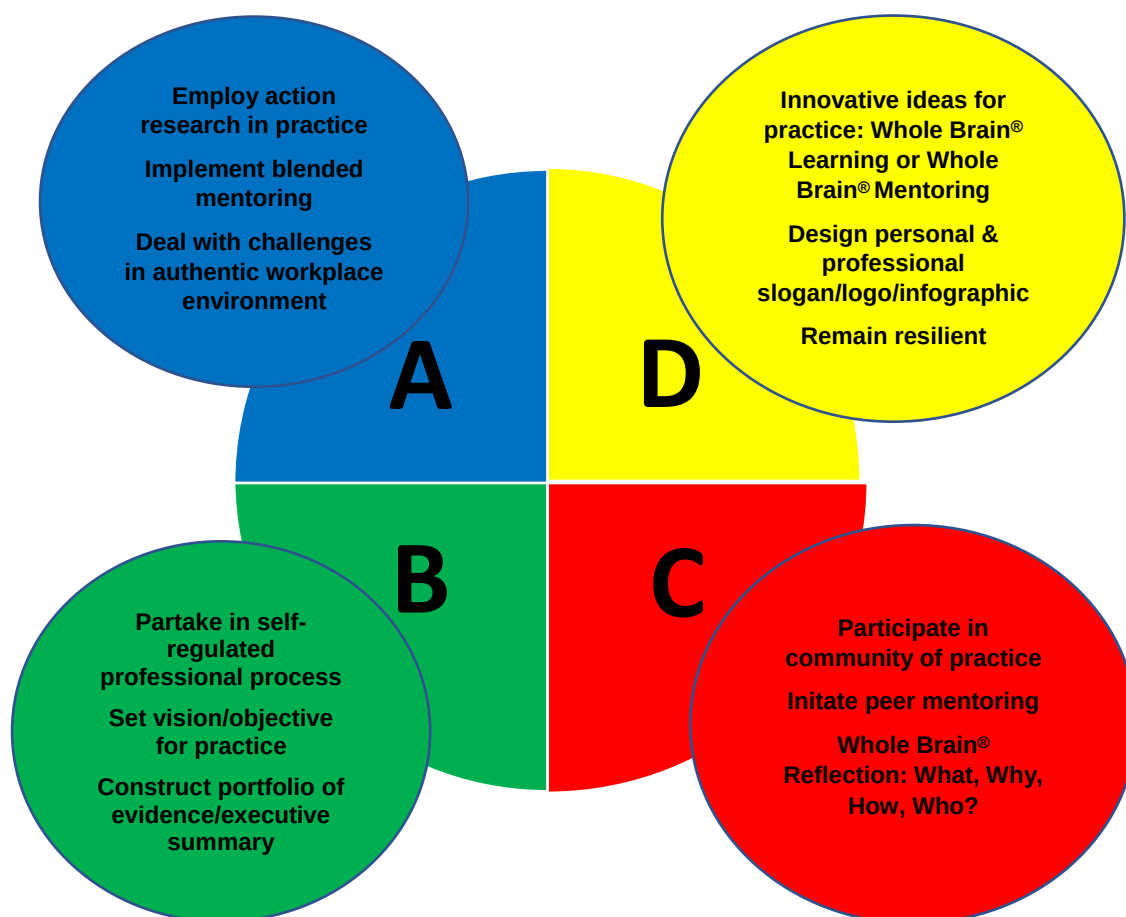


Figure 96: Aspects of becoming a self-regulated professional in education contexts

During mentoring an education professional may transform the self and his or her practice by maintaining a Whole Brain® Practice and being a Whole Brain® Self-regulated Professional. In the context of the Comprehensive Whole Brain® Mentoring Model, practice implies a mentoring practice or an education practice. An education professional who considers him or herself to be a Whole Brain® Self-regulated Professional will understand his or her thinking preferences and will take responsibility for implementing the aspects particular to his or her preferred brain quadrant(s) (Figure 96). The other brain quadrants will be implemented to have a Whole Brain® Approach to professionalism. Individuals with a preference for inter alia quadrant B would prefer to formulate a vision for their practice. They would, however, also choose to implement blended mentoring (quadrant A), participate in a community of practice (quadrant C) and employ Whole Brain® Learning (quadrant D) in his or her practice. In the following section, I share the expectations a mentor or mentee has during mentoring, according to the four brain quadrants.

6.3.2 Outlining expectations of a professional during mentoring

Figure 97 contains a description of the expectations that a mentee and a mentor should, in my opinion, have during the mentoring process, as clarified in terms of the four brain quadrants.

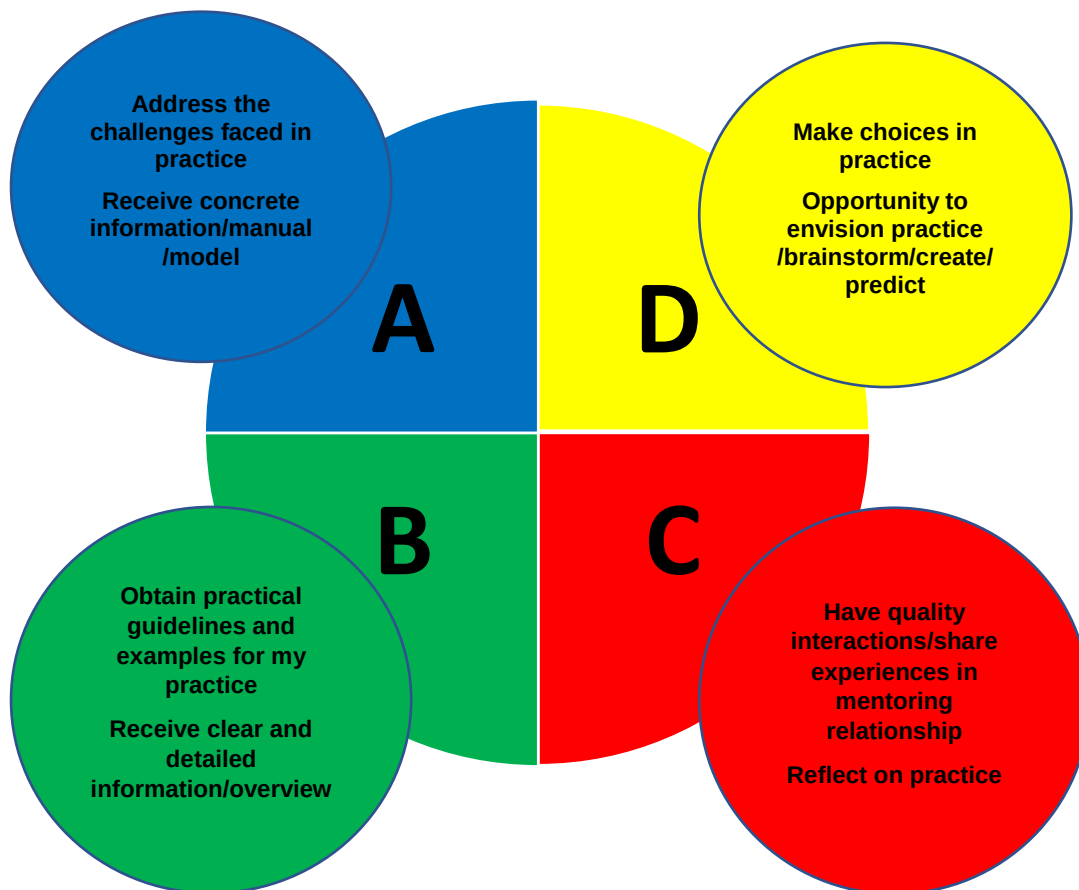


Figure 97: Mentoring expectations of professionals

Education professionals with a preference for quadrant A (Figure 97) anticipate having to address the challenges they face in their education practice. Practitioners working in the field of education who shows a preference for quadrant D thinking would like to visualise their practice and make their own decisions. I argue that if a mentor and mentee understand each other's expectations, it would be easier for both to bear fruit in the mentoring relationship, therefore develop professionally. The "bearing of fruit" would not benefit only the self, an education professional would be able to also transform his or her own practice. Next, I will discuss the aspects with

which an individual might struggle with in a mentoring relationship, as outlined by the four brain quadrants.

6.3.3 Aspects education professionals may struggle with during mentoring

Figure 98 indicates the aspects with which education professionals with preferences for each of the quadrants struggle, as initially seen in the Comprehensive Whole Brain® Mentoring Model.

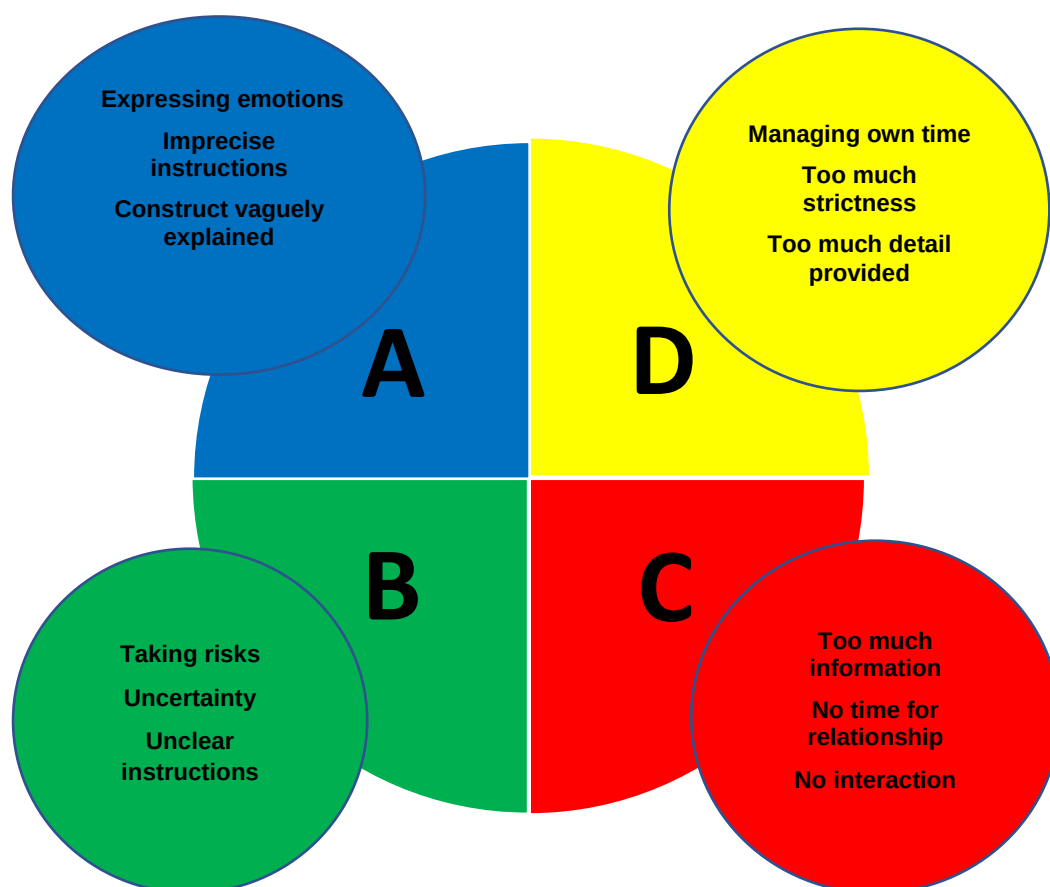


Figure 98: Aspects with which education professionals may struggle during mentoring

During the Whole Brain® Participatory Action Research process I realised that Whole Brain® Mentoring is not easy. An individual may intend to accommodate another person's thinking preferences during mentoring, but may not altogether succeed. During mentoring or in practice, a mentor and mentee need to recognise (Figure 98)

what the other person with a preference for a specific quadrant struggles with. A mentee with a preference for quadrant C thinking may, therefore, struggle when interaction is neglected in a mentoring relationship. A mentor with a preference for A quadrant thinking may struggle to express emotive thinking during mentoring, while a mentee who has a preference for the B quadrant modes of thinking might most probably not feel comfortable about taking risks in a mentoring or educational practice. In the following section I discuss the mentoring preferences an individual displays according to the brain quadrants.

6.3.4 Delineating the preferences of a professional during mentoring according to the four brain quadrants

In the centre of the Comprehensive Whole Brain® Mentoring Model (see Figure 99), the innermost concentric circle outlines the preferences a mentor and mentee might have. This indicates how a mentor with a preference for a specific quadrant wants to mentor, and how a mentee prefers to be mentored.

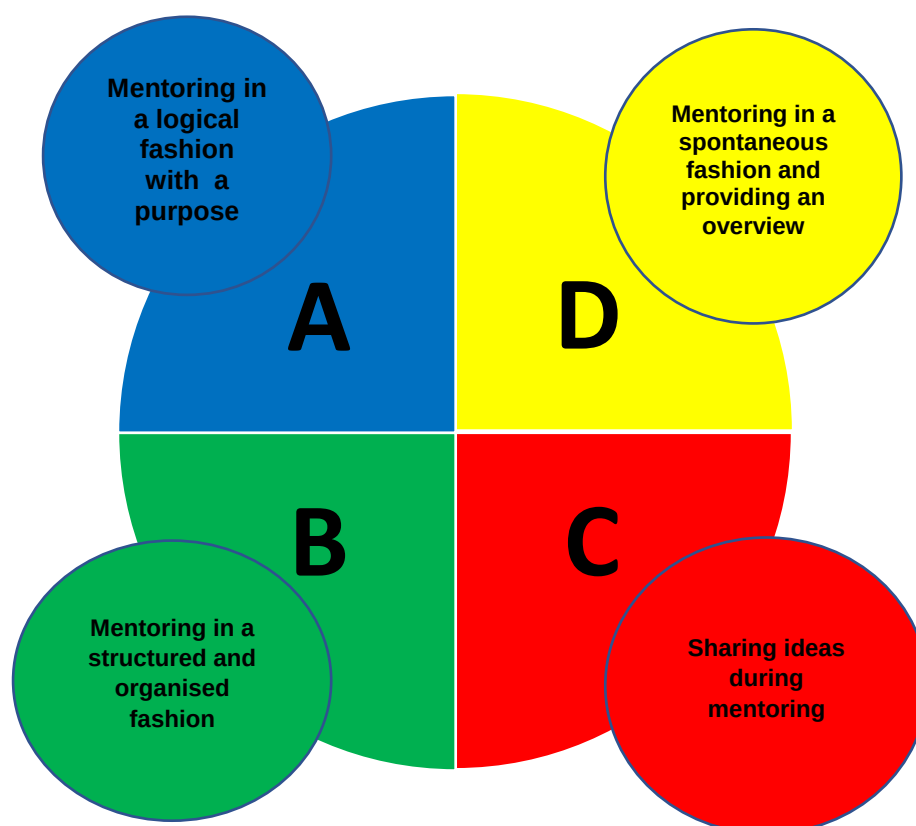


Figure 99: Preferences during mentoring according to ways of thinking

As illustrated in Figure 99, a mentor with a preference for A quadrant thinking might prefer to mentor in a logical manner as he or she will know exactly what needs to be achieved in the mentoring relationship. The B quadrant mentor will probably approach his or her practice in a structured and organised manner. A mentee with a C quadrant preference may prefer to share ideas during mentoring. The D quadrant mentor most probably gives an overall view of issues being discussed during mentoring; the mentoring process then also spontaneous and the mentoring relationship more relaxed and the interactions might not be planned.

6.4 CHAPTER CONCLUSION

In this chapter, I discussed the Comprehensive Whole Brain® Mentoring Model for education contexts. I regard this Model as my contribution to the body of knowledge in the field of mentoring. I explained the development of the aspects in each quadrant and, most importantly, how these aspects should be pragmatically understood and applied during mentoring in education contexts. The following chapter concludes this thesis as I celebrate the self as researcher and practitioner.

CHAPTER 7

RIPENING: CEREBRATING THE SELF AS RESEARCHER AND PRACTITIONER



Artwork 7: “Tree 2” by Catlin Gail (2017)

7.1 INTRODUCTION

I chose the above painting by the South African artist Gail Catlin for the final, meta-reflective chapter of my thesis. I identify with the artist as she defines herself as an innovator. After implementing the notion of self-regulation and using principles of constructivism during Whole Brain® Participatory Action Research, I view myself as an agent of transformation in the pre-service mentoring context. Gail was the first artist in the world to use liquid crystal, a complex scientific material that transforms when it comes into contact with different temperatures and light (Catlin, 2019). The result, as seen in Artwork 7, is a tree that changes in colour, reflectivity and lustre. At the beginning of Chapter 1 I described my research as a journey, a never-ending process, which also implies change.

I choose to use the word “cerebrate”, which refers to using the mind or thinking, in this *ripening* chapter due to its homonymic connection to the word “celebrate”. Gail prefers to paint on glass, on the reverse side, to show the translucent quality of the crystal medium with which she works. I metaphorically visualise myself as represented in the artwork “Tree 2” while I meta-reflect on the research I conducted and my practice in higher education. The meta-reflection in this chapter is a novel idea used in the doctoral theses of Boshoff (2015) and Wolvaardt (2013), as well as

in an article by Du Toit (2018a). I employed the Whole Brain® Participatory Action Research process as a distinct part of my professional make-up as a researcher and a professional in the higher education sector. In this chapter, as part of the process of becoming a self-regulated professional, I meta-reflect on the numerous reflections I did during action research. Part of my meta-reflection is aligned with the work of Schön (1983) about reflecting during and on action, to which Thompson and Thompson (2018) added reflection for action (discussed in Chapter 2). I meta-reflect in a Whole Brain® Manner, therefore at a higher level of thinking or a higher order of reflection.

The Biggs (1985) model used in Chapter 2 illustrates the professional meta-learning process I conducted in my study directed towards self-regulated professionalism. I reflect with a meta-cognitive mindset and regard meta-reflection, as explained by Du Toit (2018a), as a self-regulated act that I executed in my practice and research.

To assist me during this meta-reflection process, I use the Whole Brain® Scholarly Reflection Model that I had developed, as described in Chapter 2. The participants and I used this model during the short courses in our scholarly communities of practice sessions. I meta-reflect that the Whole Brain® Scholarly Reflection Model assisted the mentor teachers, pre-service teachers and myself to structure and focus the reflection process as reflected in a Whole Brain® Manner. I chose to use this model as a tool to assist my meta-level reflection in this chapter.

My practice consists of the research I conducted and also my practice as short course facilitator, curriculum developer and overseeing mentor. Borg *et al.* (2012:11) distinguish between the “personal reflexivity” and “epistemological reflexivity” phases, which can be used in a participatory action research context. To incorporate my practice and research I will, therefore, meta-reflect in two phases. In my scholarly meta-reflection, I do not view these phases as independent as my mentoring, facilitation and research practices were not alienated but interwoven. Whole Brain® Thinking informs my construct frame, as explained in Chapter 1. I altered the phases by Borg *et al.* (2012) for my meta-reflective context. The two phases are described as my Whole Brain® Intrapersonal Meta-reflexivity phase, which focuses mainly on my professional self, and the Whole Brain® Epistemological Meta-reflexivity phase, during which I reflect on the action research I conducted with the participants.

Holistically I meta-reflect in a Whole Brain® Intrapersonal and Epistemological manner on how my beliefs, morals, experiences, living theory, vision, personal and professional identity influenced this Whole Brain® Participatory Action Research, and vice versa. To conclude, I meta-reflect on how the research study transformed the self as a researcher and an individual while I cultivated my own self-regulated professionalism.

7.2 MY WHOLE BRAIN® INTRAPERSONAL META-REFLEXIVITY

Du Toit (2018b) explains the construct intrapersonal reflection as occurring within the self or in the individual mind. In the Whole Brain® Scholarly Reflection Model, I meta-reflect on the questions Who? Why? What? and How? as follows: I contemplated who had impacted my meaning-making process and why meta-reflection was essential for me as a scholar. During my research journey, I frequently asked myself who I was as a scholar and what I was doing. In previous research (De Jager, 2011; Smit & Du Toit, 2016), I shared my HBDI® profile. In my doctoral journey, I also disclose my thinking preferences in Figure 33 (Chapter 4) as it pertains to my way of thinking. I meta-reflect that my HBDI® profiling, as Du Toit (2018a:428) refers to it, is part of my “scholarly make-up”. Next, I meta-reflect on my thinking preferences in terms of my scholarly relationship with my supervisor and how I facilitated the two short courses.

According to my HBDI® I prefer to listen and share ideas with others (C quadrant thinking). I experienced collaboration during postgraduate support sessions organised by the University where I studied, and also during the research cohort sessions organised by my department where I work. I meta-cognitively realised that this had created opportunities for me to receive support, and to give support to scholars conducting research. The scholarly communities of practice sessions I had with the participants in the two short courses furthermore fulfilled “the needs of my emotive self”, as Wolvaardt (2013:352) puts it.

I prefer to receive comprehensive information and also communicate in detail when I facilitate learning or in a supervision session (B quadrant). I meta-reflect that due to my preference for quadrant B, I struggle with taking risks. I differ from my supervisor

as I feel more comfortable with thinking that proceeds in an organised, sequential way. According to my promotor, he grapples with administrative duties ((Du Toit, 2018a), with which I am quite comfortable. Furthermore, he meta-reflects that he does not prefer direct instruction, whereas I prefer supervision structured. On a meta-level, I would say that I struggled with this aspect during our supervision sessions, however this allowed me to take responsibility for my research and my professionalism as a scholar. My supervisor effortlessly implements innovative and creative ideas in practice, which is one of the reasons I enjoy working with him. We both have a preference for working with others, and like to use metaphors and to brainstorm (quadrant D) during communication. I can reflect on a meta-cognitive level that I am sometimes hesitant to implement innovative ideas into my research or practice due to having conformed to the traditional way of conducting research.

Du Toit (2018b:5) refers to the “perfect mismatch” that occurs when the HBDI® profiles of a supervisor and student are opposites. However I do not think, when considering my supervisor’s and my own thinking preferences, that ours is a case of such a mismatch. We both are prone to quadrant C and D thinking, but differ with regard to quadrant B, as I explained. Neither of us prefers quadrant A thinking and struggle, among other things, with a lack of interaction. I therefore regard our thinking preferences not as a “perfect mismatch”, but rather as a match that is busy maturing. We know that we may avoid quadrant A thinking, but have to include it during supervision for Whole Brain® Supervision to occur. As a scholar, and in particular as an up-and-coming supervisor, I meta-reflect that I regard my study promoter as a role model for the development and transformation of my supervision practice.

Next, I meta-reflect on the practice transformation rationale and the ontological rationale mentioned in Chapter 1. During the short courses my “scholarly voice” had as its objective the regulation of the participants’ and my own professionalism. Bennis, Covey and Senge acknowledge in Nieuwenhuis and Smit (2019) that instead of others planning your life, you need to create your own vision. I share the vision of my practice as designed on the Pictochart app in Figure 100.

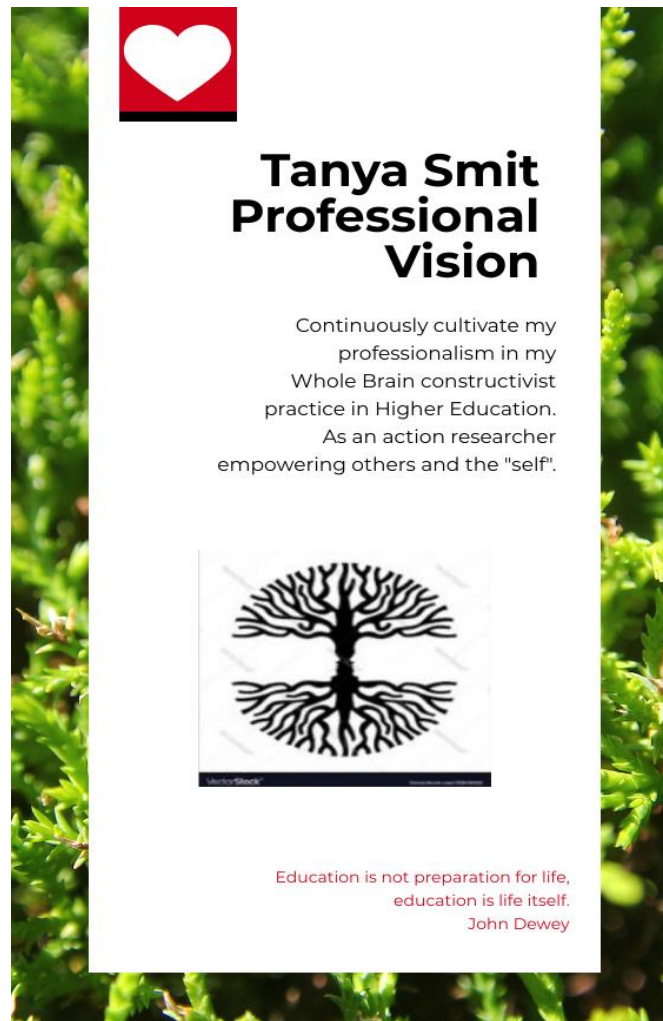


Figure 100: My professional vision

My vision (Figure 100) encompasses my current practice. Senge (1990) regards a vision as the detailing of what you want for the self and others. I used an ambiguous image (the picture of the two trees) to create a multistable perception. At first glance, two trees, of which one is a mirror image of the other, are observed. However, closer inspection reveals two symmetrical human profiles facing one another developing from the trunks of the trees. This picture creates a sense of harmonious proportion and balance. The symbolism of the tree is present throughout my thesis, metaphorically representing the participants' and my own professional growth. The two faces looking at one another signify a mentoring relationship. The image of the trees is round, which for me represents a brain and emphasises the role of Whole Brain® Thinking in my practice and research. I agree with Fullan (1993) and am able to meta-reflect that having a vision gives meaning to what I do in my practice. As a

visionary practitioner, I regard myself as being familiar with the authentic school environment and can therefore reflect in a meta-cognitive way on what happened during the action research trajectory. The heart in Figure 100 metaphorically represents the passion I have for what I do as an education professional. As I have a preference for quadrant C thinking, I meta-reflect that I am fulfilled in terms of my emotive self when I make a contribution to the action research field and to other researchers and practitioners working in mentoring in the education context.

As a scholar, I have a Whole Brain® Perspective on everything I do, which I meta-reflect as embodying my professional anatomy. I acknowledge that although I think of myself as a Whole Brain® Individual, I am still on my professional meta-learning journey and am therefore still developing, which is why in Figure 100 I chose to quote John Dewey: “Education is not preparation for life; education is life itself”.

My professional meta-learning process is focused on the self, in essence I elevate my reflection to a higher level during meta-reflection as I make meaning of my practice in the higher education sector by adopting a meta-ethnographic approach. My meta-reflective ethnographic stance is enriched and I address as stated by Chang, Longman and Franco (2014) connectivity between the self and society. Therefore, next I view the self as part of the higher education society and meta-reflect auto-ethnographically on what I did during this study as a scholar.

The certificate function held on the campus of our Higher Education Institution at the end of the two short courses was attended by school principals, faculty members, our Deputy Dean and the 14 mentor teachers and the pre-service teachers. The news article in Figure 101 was posted about this event in the December 2018 edition of “In-tuition”, the in-house publication of the Faculty of Education where I am employed.



Figure 101: In-house article from "In-tuition", December 2018

As I meta-reflect auto-ethnographically, I acknowledge that during the certificate function (Figure 101) we celebrated and celebrated the transformation of the self and practice in the pre-service mentoring context. At the function, the participants received certificates for successfully completing the short courses.

While conducting the research reported in this thesis, I presented papers at three national research conferences in South Africa. In 2017, I attended the 9th Annual Teaching Practice Symposium held in Vanderbijlpark and hosted by the North-West University, where I did a presentation on the results of the online baseline surveys I

had conducted. The title of the presentation was “Pre-service teachers’ self-regulated professionalism: A Whole Brain® Participatory Action Research driven mentoring approach”. I networked and established cross-programme relations as lessons, obstacles and successes of the teaching practice sector were shared by other researchers in the field.

In January 2018, my supervisor and I presented at the Education Association of South Africa (EASA) conference in Durban, which was hosted by the University of KwaZulu-Natal. The title of the presentation was “Self-regulated professionalism of a novice academic in higher education: An Auto-ethnographic reflection”. We used an auto-ethnographic lens to reflect on our Continuous Professional Development, and Whole Brain® Scholarly reflection to describe the development of our lecturer identities.

In 2018, I received a peer-enhanced scholarship of teaching and learning (SoTL) with colleagues from different cognate disciplines in my faculty. The scholarship aims to advance and innovate practice. I was privileged to work with and learn from, among others, Prof Callaghan, who works in the field of technological innovations in education. Among other things, this grant enabled my supervisor and me to attend the Higher Education Learning and Teaching Association of Southern Africa (HELTASA) conference held in Port Elizabeth, November 2018. The conference was titled “Dancing on the teaching and learning waves of change in Africa”. I presented a conference paper on the establishment of scholarly communities of practice for the self-empowerment of mentor teachers and pre-service teachers. I reported on what the mentor teachers, pre-service teachers and I had done during our scholarly communities of practice sessions. The following article (Figure 102), published in our faculty’s in-house publication “In-tuition” (April, 2019), reported on the conference we attended.

Staff presents HELTASA 2019 Conference

At the 2019 Higher Education Learning and Teaching Association Southern Africa (HELTASA) Conference, held at the Nelson Mandela University in Port Elizabeth, Ms Tanya Smith from the Department of Humanities Education presented a paper titled 'Establishing scholarly communities of practice for the self-empowerment of mentor and pre-service teachers'. She was the principal researcher. Other members of the research team were Prof Pieter du Toit (the project leader), Dr Ronel Callaghan and Dr Eric Eberlein. The project with the same title was awarded a SoTL grant in 2018.

The presentation focused on the mentoring of pre-service teachers. A holistic view was taken in terms of the role of researchers, overseeing mentors and mentor teachers as professionals, and the role of student teachers as up-and-coming professionals.

The general question asked by all involved on an individual level was: How can I become an agent of change in my own practice (the focus on the self)? Collectively, the question that arose was: How can we, as a community of scholarly practice, become

agents of change in our respective practices (the focus on the collective we)? In essence, the presentation revolved around the data gathering process; promoting self-empowerment by means of implementing the principles of self-regulated learning, using a constructivism Whole Brain® Thinking mix as epistemological grounding.

The participatory action research design was therefore enriched by this notion, and the study used a Whole Brain® Participatory Action Research Design (WBPARD). The results of the baseline study in the form of two different cross-sectional electronic surveys distributed to Senior and FET phase pre-service teachers and their mentor teachers in 2017/2018 were also discussed.

Prof du Toit offered a workshop on 'Scholarship of teaching and learning: A Whole Brain® approach to self-enquiry'. The specific focus was on reflective practice is closely related to the project referred to above as the research approach was action research: the idea that action research and Whole Brain® thinking. The construct advocated in both instances as a means of



▲ Prof Pieter du Toit and Ms Tanya Smith in discussion. They are both involved in the HELTASA project

constructing own meaning during action research – contributing to the current body of knowledge. Prof du Toit serves as convener of the Reflective Practitioner SIG of HELTASA.

Figure 102: In-house article from “In-tuition” April 2019

I meta-reflect that during the scholarship of teaching and learning grant period (Figure 102) my professional identity as a scholarly practitioner and action researcher ripened due to the collaborative alliance I had with others in my faculty. The following article (Figure 103) published in the 2018 “Teaching and Learning Review” of the Higher Education Institution where I am employed, was a highlight in terms of my professionalism thus far. I meta-reflect that the article accentuates the scholarly commonality that exists in this research study and therefore in my practice as a scholar.



Figure 103: Article published in “Teaching and Learning Review” 2018.

In conjunction with the development of professionalism during action research, as referred to in Figure 103, I reflect on the attributes of the 21st century (Du Toit, 2017) discussed in Chapter 2. As part of my professional learning, I want to address all the attributes and meta-reflect in this part of the chapter on those I think I have developed well, and also on those I want to develop further. I meta-reflect on the reflections I did as part of my action research spiral. One of the 21st century attributes I want to develop is to acknowledge the knowledge economy. During my reflections, I initially had a vision of producing knowledge based on my own and others' intellectual capital, the meaning we made in our practice. I meta-reflect that mentor teachers are vital role players in the pre-service teacher mentoring context, endorsing the eventual delivery of up-and-coming quality teachers into the profession. I do, however, recognise that pre-service teachers have to regulate their professionalism and contribute to the education profession. Furthermore, I initiated the process of generating a third stream of income for the Higher Education

Institution where I work when I developed the two short courses accredited by SACE. I would like to develop this attribute further and design more short courses.

The scholarly community of practice discussions influenced my understanding of the real-life mentoring practice faced by pre-service teachers and mentor teachers. In 2019, as a final celebration of the participatory nature of this study, I decided to present a research paper together with Elize, one of the participating mentor teachers who is currently working towards her master's degree. We co-presented a conference paper at the "Teaching and Learning Colloquium" hosted by the Institution of Higher Education in which I am employed. The theme was: "Theories of teaching and teaching theories". Innovations, interventions and examples of student support were shared by national and international education experts. The title of our paper was: "Self-regulated professionalism initiated during pre-service teacher mentoring: A Whole Brain® Participatory Action Research and scholarly communities of practice approach". Elize and I shared the research we conducted and the meaning constructed. In the next section, I meta-reflect on my study in a Whole Brain® Epistemological fashion.

7.3 MY WHOLE BRAIN® EPISTEMOLOGICAL META-REFLEXIVITY

Epistemologically I acknowledge that during action research I constructed a deep level of reflection. In this section, I progress to Whole Brain® Meta-reflect on the action research the participants and I conducted in a Whole Brain® Manner. As stated in Chapter 1, participatory action research has socio-constructivism as epistemology. In this chapter, I meta-reflect on the different steps of reflection that formed part of my action research spiral. I elevate my thinking to a higher level, referring to meta socio-constructivist epistemology to describe how I meta-cognitively made meaning during the Whole Brain® Participatory Action Research.

First, I meta-reflect on why I chose this novel research design. The construct resilience features in the findings and in Afrikaans, my mother tongue it is translated as "veerkragtigheid", which suggests the idea of jumping back, as seen in a spring or spiral. My action research process is in the form of a spiral, which I regard as being metaphorically symbolic in terms of how I adjusted and had been flexible in my action research cycles to innovate and transform practice. I regard my research as

innovative in terms of the research design, Whole Brain® Participatory Action Research, as well as in terms of the construct frame and construct analysis as used for the first time in this context. My thinking preferences, discussed earlier in this chapter, made me realise why I had chosen to conduct participatory action research. I prefer working with others (quadrant C), have a preference for visually illustrating research (quadrant D), and I prefer working in a step-by-step manner as used in an action research cycle (quadrant B).

Next, I reflect on my meta-contemplation about the methodology and participatory action research process. The participants and I approached our practice from a constructivist, meaning-making perspective. As a collective we asked, as part of the epistemological rationale: “How can we develop and empower ourselves professionally?” Thus, the focus was on how meaning was constructed collectively in our practice. Our transformative action research process started with a vision. After we completed the short courses, the mentor teachers, pre-service teachers and I acknowledged that the action research process was ongoing. Based on the participants’ feedback and reflections, I meta-reflect that these action research principles will be implemented again in their practice as self-regulated professionals.

Whole Brain® Participatory Action Research contributes to the scholarship of the current understanding of what action research entails. To date, no scholar has yet used this research design in the context of pre-service teacher education. In my opinion, the epistemological value of my chosen research design is that the participants and I used action research in our practice to make meaning, which is a liberating socio-constructivist process of transforming practice. As I have a preference for quadrant C thinking, I valued the contributions made to this action research study by the participants as co-constructors.

During this participatory action research process I meta-reflect that I was a Whole Brain® Visionary Researcher and life-long learner. During this Whole Brain® Scholarly Journey I matured into a self-regulated professional in the higher education context and am looking forward to initiating further research.

7.4 CONCLUSION

On this Whole Brain® and self-regulated journey undertaken by the participants and myself, I celebrated all our different selves and the we throughout the Whole Brain® Participatory Action Research process. The journey of writing about the participants' and my own meaning-making process is, to some degree, finishing. However, I regard the ripening phase not as the end, but rather as the beginning of sprouting into a new scholarly and professional journey. The mentor teachers contributed to the body of knowledge, as self-regulated professionals. The life-long professional learning process, part of the participants and my own professional development.

In this chapter, I intrapersonally and epistemologically meta-reflected in a Whole Brain® Scholarly Manner as I progressed on the self-regulated journey on which I had embarked. In Chapter 1, I metaphorically described the scholarly journey the participants and I had undertaken when I referred to Artwork 1 by Laurie Pace. I acknowledged that although we did not know where the journey would take us, we steadfastly pursued our vision of transforming the selves and our practice (see Chapters 2 and 3). We were sometimes disheartened on the journey, but in Chapters 4, 5 and 6 I shared the patches of meaning and knowledge that emerged. In this chapter, I celebrated the self, acknowledged the authenticity of the situations I dealt with and shared the meta-reflective meaning that emerged from the action research process. In essence, I reflected in a meta-reflective scholarly manner as I viewed the self from different angles. I revealed my glowing transformation and celebrated by doing a Whole Brain® Scholarly Meta-reflection as I considered my ultimate ripening as a scholar, a higher education practitioner and an action researcher.

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QUESTIONNAIRE: MENTOR TEACHERS

This questionnaire is part of a PhD study exploring the mentoring experiences of mentor teachers. It also examines the best possible approaches to be used during mentoring. Kindly complete the following questionnaire by reflecting on your own experience during the mentoring of student teachers in your school. Please complete it truthfully; your answers are confidential and only the researcher and her promoter will have access to the results. Please indicate the applicable answer(s):

1. Gender

Indicate your gender:

Female	1
Male	2
Other	3

2. Home language

Specify your home language:

Afrikaans	1
English	2
IsiSwazi	3
IsiXhosa	4
IsiZulu	5
Ndebele	6
Northern Sotho	7
Sesotho	8
Tswana	9
Venda	10
XiTsonga	11
Other	12

3. Post level

What is your current position at the school?

Principal	1
Deputy-principal	2
Head of Department	3
Level 1 teacher	4

4. Teaching experience

How many years have you been in the teaching profession?

0-5	1
6-10	2
11-20	3
21-30	4
31-40	5

5. Mentoring experience

How many years have you been mentoring student teachers?

0-5	1
6-10	2
11-20	3
21-30	4
31-40	5

Appendix A: Online exploratory baseline survey: Mentor teachers

6. Mentoring experience

Rate your most recent experience regarding the mentoring of student teachers:

Negative	1	Somewhat negative	2	Somewhat positive	3	Positive	4

7. Student teacher preparation for the teaching profession

Rate how well prepared the student teacher whom you mentored was for the teaching profession:

Not at all prepared	1	Slightly prepared	2	Agreeably prepared	3	Exceptionally prepared	4

8. Mentor teacher equipped to mentor

Rate your capability to mentor student teachers:

Not at all competent	1	Slightly competent	2	Agreeably competent	3	Exceptionally competent	4

9. Mentoring approach

What mentoring approach(es) do you think should be used during student teacher mentoring? Select one or two answers:

An approach where the mentor teacher tends to instruct the student what to do.	1
An approach which is self-regulated and where the mentor permits the student to learn through observation, reflection and action.	2
An approach which is interactive and the mentor teacher and student influence one another.	3

10. Partnering

Choose the best way(s) you propose for partnering a mentor teacher and student teacher: Select one or two answers:

By matching subjects	1
By matching class grades (Grade 1,2,3, etc.)	2
According to similar ways of thinking	3
According to different ways of thinking	4
The school management partners a mentor teacher and student teacher	5
The University partners a mentor teacher and student teacher	6
The mentor teacher chooses a student teacher	7
The student teacher chooses a mentor teacher	8

11. Mentor selection

Select teacher(s) who would be the most competent to mentor student teachers in your opinion: Select one or two answers:

Any teacher in a school	1
A teacher who has been in the profession ten years or more	2
A teacher who has been in the profession less than ten years	3
A teacher who is a subject specialist	4
A teacher who is part of the school management	5
A teacher trained in mentoring approaches	6
A teacher who reflects on his or her mentoring practice	7
A teacher who regularly reflects on his or her teaching practice	8
A teacher who has a post-graduate qualification	9
A teacher improving his or her professional development	10

12. Mentor teacher roles

From your experience as a mentor teacher, what are the most important role(s) a mentor fulfils during mentoring? Select one or two answers:

Assessor of a student's teacher practice	1
Expert in field	2
Friend to student teacher	3
Protector of student teacher	4
Reflector on own mentoring practice	5

Appendix A: Online exploratory baseline survey: Mentor teachers

Role model to student teacher	6
Coach or leader to student teacher	7
Encourager during mentoring	8
Facilitator, who encourages the student to learn through observation, reflection and action	9

13. Student teacher roles
What are the most significant role(s) a student teacher realises during the mentoring process? Select one or two answers:

Equal partner in mentoring relationship	1
Student taking responsibility for own learning	2
Observer of mentor teacher	3
Subordinate to mentor	4
Reflector on own teaching practice	5

14. Benefits of mentoring student teachers
Select the most significant advantage(s) your school or you as mentor teacher obtained from mentoring a student teacher: Select one or two answers:

Opportunities for recruitment	1
Motivation of staff	2
Extra assistance to staff	3
Reflecting on own teaching practice	4
Developing educational technology and multimedia skills	5
Obtaining current subject knowledge	6
Learning about the most current teaching methods	7
Developing professionally	8
Developing personally	9
Opportunity to develop future teachers	10
No significant advantage	11

15. Challenges during the mentoring of student teachers
What was the biggest problem(s) your school or you as mentor teacher experienced during this mentoring process? Select one or two answers:

Insufficient funding to initiate a mentoring programme in school	1
Insufficient funding for mentor teacher training	2
Extra burden added to the current workload of teachers	3
Mentor teacher not having confidence in mentoring role	4
Not getting support from the University	5
Student teacher not prepared for the realities of the profession	6
Mentor teacher struggling to work with student teacher	7
No challenge	8

16. Educator roles
In what role(s) do you feel student teachers need more mentoring before entering the profession? Select one or two answers:

Facilitation of quality instruction and learning	1
Interpretation and implementation of learning programmes and instructional media	2
Handling of administrative duties	3
Classroom management	4
Addressing their professional development	5
Being a researcher	6
Developing a community, citizenship and pastoral role	7
Designing and managing the assessment of learners	8
Being a subject specialist	9

Being a phase specialist	10

17. Teaching and learning: Lesson presentations
Identify instruction and learning aspect(s) or criteria you believe student teachers need more mentoring in:
Select one or two answers:

Learner engagement	1
Subject knowledge	2
Innovative and creative ideas and activities	3
Pedagogical content knowledge	4
Teaching strategies	5
Classroom management skills	6
Resources(LTSM) and media usage	7
Relevance of lessons to the learners' world	8
Questioning technique	9
Lesson progression	10
Verbal communication	11
Time management during lessons	12
Non-verbal communication	13
Setting of lesson outcomes	14
Assessment of learners	15
Research for lessons	16
Lesson planning	17
Reflection on teaching practice	18

17. Teacher professionalism
Identify instruction and learning aspect(s) you feel student teachers need more mentoring in: Select one or two answers:

Personal time management	1
Coordination of extra-mural activities	2
Proficient management of their social media platforms	3
Sound relations with the learners	4
Sound relations with the parents	5
Sound relations with the school staff	6
Sound relations with the community	7
Exhibiting a professional dress code	8
Exhibiting professional classroom behaviour	9
Chalkboard or whiteboard writing skills	10
Overhead projector usage	11
Educational technology and multimedia usage(PowerPoint, smartboard)	12
Teaching a virtual classroom	13
Other	14

Thank you for your time

QUESTIONNAIRE: STUDENT TEACHERS
STUDENT TEACHERS' MENTORING EXPERIENCES

This questionnaire is part of a PhD study exploring the mentoring experiences of student teachers. It also examines the best possible approaches to be used during mentoring. Kindly complete the following questionnaire by reflecting on your own experience during the teaching practice period. Please complete it truthfully. Your answers will not influence your marks and are strictly confidential. Only the researcher and her promoter will have access to the results. Please indicate the applicable answer(s).

1. Gender

Indicate your gender:

Female	1
Male	2

2. Home language

Specify your home language:

Afrikaans	1
English	2
IsiSwazi	3
IsiXhosa	4
IsiZulu	5
Ndebele	6
Northern Sotho	7
Sesotho	8
Tswana	9
Venda	10
XiTsonga	11
Other	12

3. Teacher identity

Choose one option to indicate who had the most significant influence on the development of your identity as a teacher:

My teachers when I was still a learner at school	1
Mentor teachers while doing teaching practice	2
Lecturers in general	3
Mentor lecturers	4
Peers(other student teachers)	5
My parents or guardians	6
My family	7
The learners whom I taught during teaching practice	8

4. Mentoring experience

Rate your most recent mentoring experience:

Negative	1	Somewhat negative	2	Somewhat positive	3	Positive	4

5. Student teacher preparedness for the teaching profession

Rate how prepared you consider yourself for the teaching profession:

Not at all prepared	1	Slightly prepared	2	Agreeably prepared	3	Exceptionally prepared	4

6. Mentor teacher's capability to mentor

Rate your mentor teacher's capability to mentor you:

Not at all competent	1	Slightly competent	2	Agreeably competent	3	Exceptionally competent	4

7. Mentoring approach

If you had a choice, what approach(es) would you prefer when being mentored? Select one or two answers:

An approach where the mentor teacher tends to instruct the student what to do.	1
An approach which is self-regulated and where the mentor permits the student to learn through observation, reflection and action.	2
An approach which is interactive and the mentor teacher and student influence each other.	3

8. Partnering

Choose the best way(s) you prefer a mentor teacher and student teacher to be partnered: Select one or two answers:

By matching subjects	1
By matching class grades (Grade 1, 2, 3, etc.)	2
According to similar ways of thinking	3
According to different ways of thinking	4
The school management partners a mentor teacher and student teacher	5
The University partners a mentor teacher and student teacher	6
The mentor teacher chooses a student teacher	7
The student teacher chooses a mentor teacher	8

9. The ideal mentor teacher

Select the mentor teacher(s) you would prefer to mentor you: Select one or two answers:

Any teacher in a school	1
A teacher who has been in the profession ten years or more	2
A teacher who has been in the profession less than ten years	3
A teacher who is a subject specialist	4
A teacher who is part of the school management	5
A teacher trained in mentoring approaches	6
A teacher who reflects on his or her mentoring practice	7
A teacher who regularly reflects on his or her teaching practice	8
A teacher who has a post-graduate qualification	9
A teacher improving his or her professional development	10

10. Mentor teacher roles

Select the most significant role(s) you think a mentor teacher fulfils during the mentoring process: Select one or two answers:

Assessor of a student teacher's practice	1
Expert in his or her field	2
Friend to student teacher	3
Protector of student teacher	4
Reflector on own mentoring practice	5
Role model to student teacher	6
Coach or leader to student teacher	7
Encourager during mentoring	8
Facilitator, who encourages the student to learn through observation, reflection and action	9

11. Student teacher roles

What is the most significant role(s) a student teacher realises during the mentoring process? Select one or two answers:

Equal partner in mentoring relationship	1
Student taking responsibility for own learning	2
Observer of mentor teacher	3
Subordinate to mentor	4

Reflector on own teaching practice	5

12. Benefits of being mentored
What was the most significant assistance you received from your mentor teacher? Select one or two answers:

To be prepared for the teaching profession	1
Subject specialisation	2
Emotional support	3
Personal development	4
Professional development	5
Improvement of teaching strategies	6
Classroom management skills	7
No significant assistance received	8

13. Challenges during the teaching practice period
What was/were the biggest problem(s) you experienced during your teaching practice period? Select one or two answers:

Learner behaviour	1
Not being supported by the school	2
Relationship with mentor teacher	3
Assessment of lessons by mentor teacher	4
Not being prepared for the reality of the profession	5
Workload	6
The communication between the University and the school	7
Unfamiliar policies, practices or procedures at the school	8
No challenges	9

14. Educator role
In what role(s) do you feel you need more mentoring before entering the profession? Select one or two answers:

Facilitation of quality instruction and learning	1
Interpretation and implementation of learning programmes and instructional media	2
Handling of administrative duties	3
Classroom management	4
Addressing own professional development	5
Being a researcher	6
Developing a community, citizenship and pastoral role	7
Design and management of learner assessment	8
Being a subject specialist	9
Being a phase specialist	10

15. Instruction and learning: Lesson presentations
Identify instruction and learning aspect(s) or criteria you feel you need more mentoring in: Select one or two answers:

Learner engagement	1
Subject knowledge	2
Innovative and creative ideas and activities	3
Pedagogical content knowledge	4
Teaching strategies	5
Classroom management skills	6
Resources(LTSM) and media usage	7
Relevance of lesson to the learners' world	8

Appendix B: Online exploratory baseline survey: Pre-service teachers

Questioning technique	9
Lesson progression	10
Verbal communication	11
Time management during lesson	12
Non-verbal communication	13
Setting of lesson outcomes	14
Assessment of learners	15
Research for lesson	16
Lesson planning	17
Reflection on own teaching practice	18

16. Teacher professionalism

Identify the professional aspect(s) you need more mentoring in: Select one or two answers:

Personal time management	1
Coordination of extra-mural activities	2
Proficient management of own social media platforms	3
Sound relations with the learners	4
Sound relations with the parents	5
Sound relations with the school staff	6
Sound relations with the community	7
Following a professional dress code	8
Exhibiting professional classroom behaviour	9
Chalkboard or whiteboard writing skills	10
Overhead projector usage	11
Educational technology and multimedia usage (PowerPoint, smartboard)	12
Teaching a virtual classroom	13
Other.....	14

Thank you for your time

MENTOR PROFESSIONAL DEVELOPMENT: SELF-EMPOWERMENT IN A COMMUNITY OF PRACTICE



The mentor and pre-service relationship

Mentor teacher course material

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TERMINOLOGY

Pre-service teacher	Student in his/her final year of enrolment for a teaching degree but who is not a qualified teacher yet.
Mentor teacher	Cooperating, school-based teacher whose role in teacher preparation is essential ¹² .
Community of Practice	Collective learning where a group of people share a concern or passion for something they do and learn to do better as they interact regularly ³ .
Self-empowered professional	A professional taking responsibility for his or her own development. It is a voyage of discovery where one discovers who one is, what one is capable of, and what meaning this has for one's life as a professional ⁴ .
Whole Brain® Thinking	An account of how people think and learn. The brain is designed to be whole ⁵ and this type of thinking requires a balance of its four core modes of thinking(based on the four quadrants of the brain) ⁶⁷ .
Mentoring	Mutual and collaborative professional learning between two individuals ⁸ .
Herrmann Brain® Dominance Instrument(HBDI)	The Herrmann Brain Dominance Instrument (HBDI®) is a questionnaire consisting of 120 items that quantify thinking preferences. The results of the questionnaire are a visual plot of the thinking preferences of the individual. A HBDI® profile provides scientifically validated information to understand one's own learning, strengths and learning avoidances ⁹ .
Thinking preferences	Thinking preferences are not fixed personality traits, but are predominantly seen as learned patterns of behaviour ¹⁰ .
Action learning	Being an active participant in one's own learning to ensure goals are realised ¹¹ .
Peer-mentoring	A mentoring relationship that is collaborative and interactive.

¹Clark, S.K. & Byrnes, D. (2012). Through the eyes of the novice teacher. *Teacher Development*, 16(1): 43-54.

²Ambrosetti, A., Knight, B.A. & Dekkers, J. (2014). Maximizing the potential of mentoring: A framework for pre-service teacher education. *Mentoring and Tutoring: Partnership in Learning*, 22(3): 224-239.

³Wenger, E. (2011). *Communities of practice: A brief introduction*.

<https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/11736/A%20brief%20introduction%20to%20CoP.pdf?sequence>

⁴Hugo, J.F.M., Slabbert, J., Louw, J.M., Marcus, T.S., Bac, M., Du Toit, P.H. & Sandars, J.E. (2012). The clinical associate curriculum – the learning theory underpinning the BCMP programme at the University of Pretoria. *African Journal of Health Professions Education*, 4(2):128-131.

⁵Hughes, M., Hughes, P. & Hodgkinson, I.R. (2016). In pursuit of a 'whole-brain' approach to undergraduate teaching: Implications of the Herrmann brain dominance model. *Studies in Higher Education*, 42(12): 1-17.

⁶Herrmann, N. (1989). *The creative brain*. North Carolina: The Ned Herrmann Group.

⁷ Herrmann, N. (1990). *The creative brain*. Lake Lure, NC: Herrmann International.

⁸Zachary, L. (2005). *Creating a mentoring culture: The organization's guide*. San Francisco: Jossey-Bass.

⁹Herrmann, N. (Ed.) (1995). *The creative brain*, (2nd edition). USA: Quebecor Printing Book Group.

¹⁰Coffield F, Moseley D, Hall, E. & Ecclestone, K. (2004). *Learning styles and pedagogy in post 16-learning: A systematic and critical review*. London: Learning and Skills Research Centre. Available at <http://sxills.nl/lerenlerennu/bronnen/Learning%20styles%20by%20Coffield%20e.a.pdf>.

¹¹Hugo, J.F.M., Slabbert, J., Louw, J.M., Marcus, T.S., Bac, M., Du Toit, P.H. & Sandars, J.E. (2012). The clinical associate curriculum – the learning theory underpinning the BCMP programme at the University of Pretoria. *African Journal of Health Professions Education*, 4(2): 128-131.

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1. INTRODUCTION

1.1 Welcome

J.R.R. Tolkien once said: “Not all who wander are lost.” I invite you to join me on a journey of self-empowerment¹². The focus of this programme is to rediscover and develop your potential as a mentor.

As an educator and mentor teacher you are regarded as having a central role in the transformation of education¹³ in South Africa. The question is: *How do I become an agent of change and where would this journey begin?* Any endeavor would start with taking responsibility for your professional development. This is your opportunity to be self-exploratory. In this programme we start with the *self* – the *self* as a person and the *self* within a community of practice¹³ and in the mentoring relationship with your mentee.

Mentoring across education, business and medicine was observed and it was affirmed that “poor mentoring is worse than no mentoring”¹⁴; hence the importance of mentor professional development. There are various benefits to mentoring: over 70 % of the Fortune 500 companies use mentoring to attract, develop and retain employees¹⁵. It is regarded as important for mentors’ career advancement, professional and personal development. For a school or organisation the benefits include reduced turnover, increased productivity and creating a resilient workforce¹⁶.

¹²Smit, T. & Du Toit, P.H. (2016). Transforming beginner teacher mentoring interventions for social reform. *South African Journal of Education*, 36(3): 1-12.

¹³Engelbrecht, J. & Harding, A. (2008). The impact of the transition to outcomes-based teaching on university preparedness in Mathematics in South Africa. *Mathematics Education Research Journal*, 20(2): 57-70.

¹⁴Ehrich, L., Hansford, B. & Ehrich, J.F. (2011). Mentoring across the professions: Some issues and challenges. In J. Millwater & D. Deutal (Eds.). *Practical experiences in professional education: A transdisciplinary approach*. Brisbane: Post pressed.

¹⁵Bynum, Y.P. (2015). The power of informal mentoring. *Education*, 136(6): 69-73.

¹⁶Aora, R. & Rangnekar, S. (2014). Workplace mentoring and career resilience: An empirical test. *The Psychologist-Manager Journal*, 17(3): 205-220.

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1.2 Purpose statement

The aim of this programme is to empower mentors professionally with a view to becoming innovative and reflective in their mentoring practice. It focuses on Whole Brain® Thinking, action learning, a community of practice and mentoring practices.

1.3 Critical cross-field outcomes

The critical cross-field outcomes encapsulate the skills, knowledge and values that contribute to personal success as well as to your community, practice and nation. They are broad, generic cross-curricular outcomes, contextualised for your mentoring practice.

You should be able to do the following:

- 1 Identify and solve problems in your mentoring practice and make decisions using critical and creative thinking;
- 2 work effectively with other members of a community of practice;
- 3 organise and manage yourself and your mentoring activities responsibly and effectively;
- 4 use action learning in your own mentoring practice;
- 5 communicate effectively in the community of practice and your mentoring practice using visual, symbolic and/or language skills in various modes;
- 6 use technology effectively in the context of mentoring and critically show responsibility towards your and others' professional learning.

In order to contribute to the full personal development of yourself, your mentee, your school and social and economic development, this programme makes you aware of the importance of the developmental outcomes that expect you to do the following:

- 1 Reflect on and explore a variety of strategies to learn more effectively as a professional;
- 2 participate responsibly in a community of practice and mentoring relationship;
- 3 be culturally and aesthetically sensitive across a range of social contexts.

These critical cross-field and developmental outcomes and programme intentions are directly linked to the following attributes of 21st century education and are applied in the programme being discussed.

1.4 Attributes of the 21st century

Currently unprecedented demands are made on the education sector regarding, for example, advances in information and communication technologies¹⁷. We are living in a world that is more interconnected than ever before. As educators we have to consider the following characteristics of 21st century education as seen in table 1, for our own teaching and mentoring practices:

Table 1: Attributes of 21st century education¹⁸

Identifying, analysing real-life problems with a view to solving them in a creative fashion	Being able to communicate by verbal and visual means	Reflecting on one's execution of tasks and finding ways to become more effective	Developing professionalism
Managing change	Using technology	Becoming a visionary practitioner	Enacting leadership skills
Organising and managing self	Developing people skills with a view to developing others	Being able to contribute as a member of a community of practice	Demonstrating quality citizenship attributes
Being a lifelong learner	Acting as a role-model	Becoming a reflexive practitioner who builds professionalism through a process of self-enquiry	Being action-orientated
Integrating information and information technology		Developing entrepreneurial capabilities	Developing an appreciation and an understanding of the "knowledge economy"

¹⁷Guo, L. (2014). Preparing teachers to educate for 21st century global citizenship: Envisioning and enacting. *Journal of global citizenship & equity education*, 4(1): 1-23.

¹⁸Du Toit, P.H. (2017). *Innovative mentoring in Higher Education*. Workshop, 19 September. University of Pretoria.

As citizens and educators in the 21st century we are required to reflect critically on the attributes listed in Table 1 for our own development. In this programme you will be in collaborative relationships during the community of practice sessions and within your mentoring relationship with the mentee.

1.5 Specific outcomes

This mentorship programme invites you to do the following:

- Cultivate your professional development as an educator, mentor and independent lifelong learner;
- use action learning to become a self-empowered professional;
- explore and understand Whole Brain[®], peer and e-mentoring in order to apply the principles in your mentoring practice;
- become an active member of a community of practice;
- execute a SWOT analysis for observation, reflection and action in your mentoring practice.

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1.6 Programme schedule

Table 2: Programme schedule

Session	Theme	Involvement	Duration and place	Time and date	Facilitator
1: Preparation for mentoring	Mentorship programme: Introduction. Execution of initial SWOT analysis. Expectations of the programme. Establishment of a community of practice.	Community of practice	120 minutes University of Pretoria: Groenkloof Aldoel Building Room 2-87	Before commencement of teaching practice period	Ms. T. Smit
2: Pre-mentoring	Herrmann Brain® Dominance Instrument(HBDI) Whole Brain® Thinking Innovation into practice: Mentoring styles	Individual completion Community of practice	180 minutes University of Pretoria: Groenkloof: Aldoel Building Room 2-87	On the Internet: In own time Commencement of teaching practice period	Herrmann Institute Prof. P.H. du Toit and Ms. T. Smit
3: Mentoring	Action learning Self-empowerment process for mentoring	Community of practice	180 minutes University of Pretoria: Groenkloof LLITUP laboratory	During teaching practice period	Ms. T. Smit Dr. Callaghan
4: Post-mentoring	Portfolio of evidence Critical reflection Evaluation Execute final SWOT analysis	Community of practice	1200 minutes Groenkloof University of Pretoria: Aldoel Building Room 2-87	During or after teaching practice period	Ms. T. Smit

In this programme you are expected to complete questionnaires, respond to questions or work online prior to each session. It will be sent electronically. After each community of practice session or as decided by the group, you will apply the principles of best mentoring practice. These principles are included in the outcomes you have to achieve.

The schedule for the mentor teacher programme is based on the following self-empowerment process for mentoring outlined in figure 1. The process is explained in table 3.

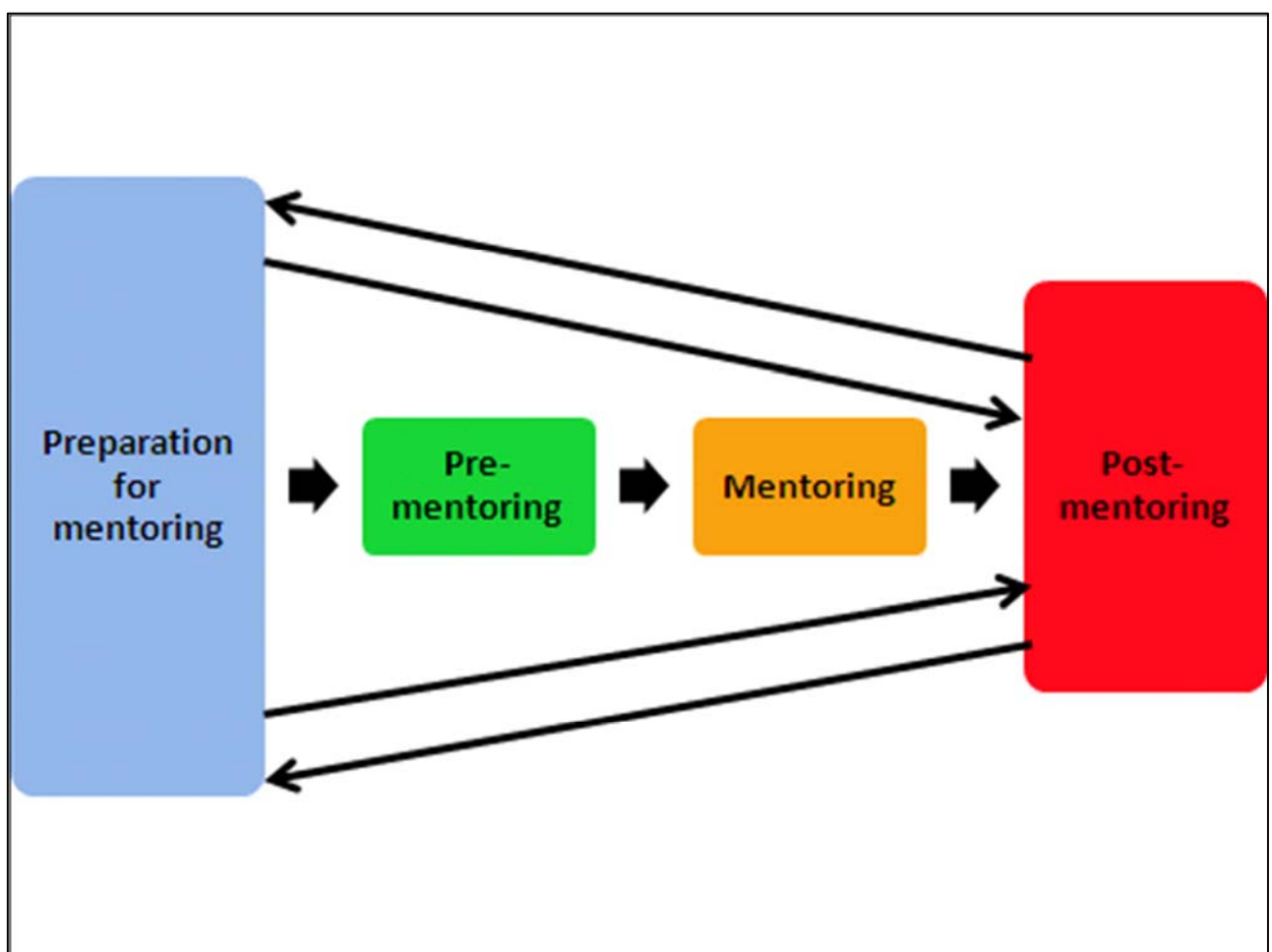


Figure 1: Mentor teacher self-empowerment mentoring process

Table 3: Phases in the self-empowerment mentoring process

Preparation for mentoring	In this phase we lay the foundation for your mentoring practice as a collective. It is the first phase of your professional self-empowerment process and entails a task analysis and consideration of your viewpoints and goals before mentoring starts. A community of practice is established with other mentor teachers. In this phase we as a group contemplate the expectations, goals, roles and communicative processes of our mentoring practices. We challenge viewpoints, explore quality mentoring and consider the “self” in the community of practice.
Pre-mentoring	In this phase we consider your thinking preference and develop the “self” as a brand. Innovations into practice are explored and the first action learning process is conducted in your own mentoring practice.
Mentoring	Your role during mentoring and in your professional development is challenged. We consider the how and why of our own empowerment. Who is responsible and what is needed? The challenges mentees face is also considered and the second action learning process takes places.
Post-mentoring	The last phase of the self-empowerment process entails self-reflection about your professional development and mentoring practice are done. In the mentoring relationship and in the community of practice it focuses on redefining goals and visions or assessing the progress made.

The phases illustrated in table 2^{19,20} will be used during the community of practice sessions. They will inform your mentoring approach regarding the pre-service teacher allocated to you. During the mentoring of the pre-service teachers certain goals need to be achieved. It is important to reflect on these with the pre-service teacher. For your own self-empowering professional development these phases need to be regarded as a process, not an event. It is a framework to be used in your own mentoring practice.

¹⁹Ambrosetti, A., Knight, B.A. & Dekkers, J. (2014). Maximizing the potential of mentoring: A framework for pre-service teacher education. *Mentoring and Tutoring: Partnership in Learning*, 22(3): 224-239.

²⁰Biggs, J.B. (1985). The role of metalearning in study processes. *British Journal of Educational Psychology*, 55: 185-212.

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2. SELF-EMPOWERING PROFESSIONAL DEVELOPMENT

Most teachers in South Africa do not have access to continuous quality professional development opportunities²¹. Professional development programmes are considered necessary for both novice and experienced teachers. In 2012 The Bill and Melinda Gates Foundation found that teachers consider effective, meaningful professional development to be critical in their practice²². The more traditional approaches used include short workshops or conferences that are less effective in reaching one's goals. In this programme the challenging and transformational self-empowerment approach to professional development is highlighted²³. It is graphically illustrated in figure 2.

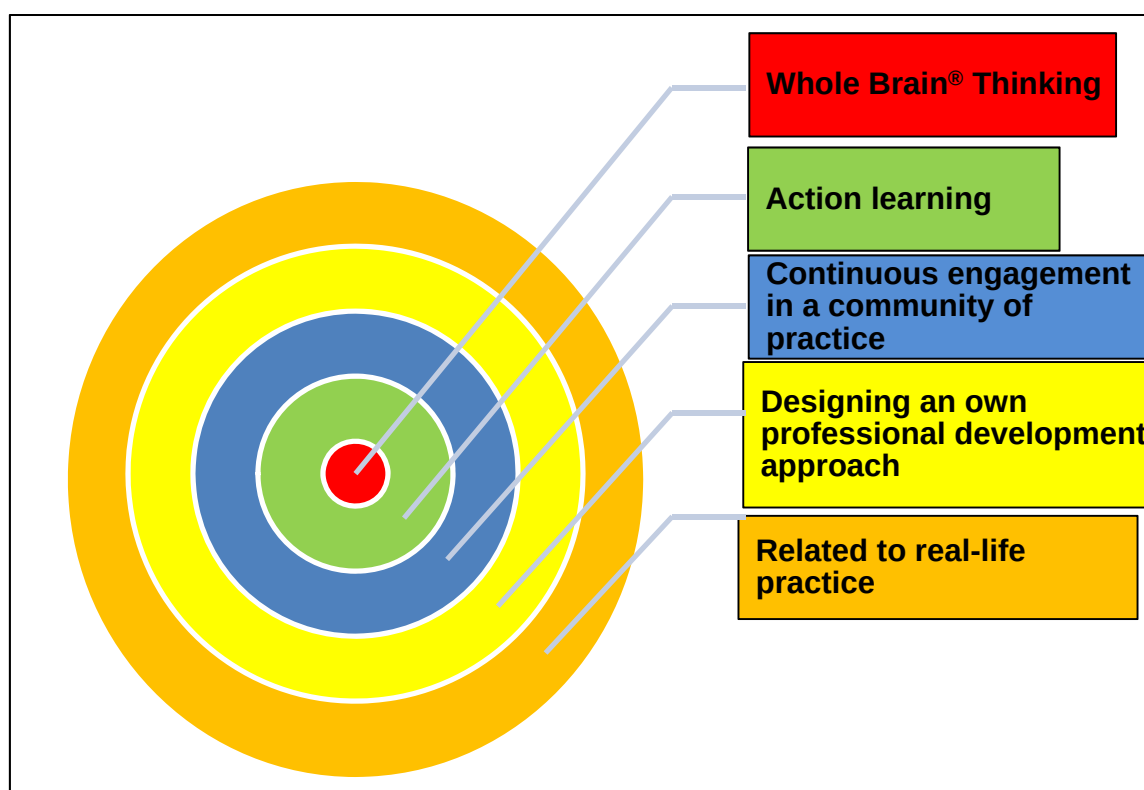


Figure 2: Mentor teacher approach to self-empowering professional development

²¹Department of Basic Education. (2015). *Professional Learning Communities: A guideline for South African Schools*: GDE

²²www.scholastic.com/primarysources/pdfs/Gates2012_full.pdf

²³ Starkey, L., Yates, A., Meyer, L.H., Hall, C., Taylor, M., Stevens, S.&Toia, R. (2009). Professional development design: Embedding educational reform in New Zealand. *Teaching and Teacher Education*, 25: 181-189. DOI: 10.1016/j.tate.2008.08.007

The approaches used in your professional development in this programme have Whole Brain® Thinking at their core²⁴. The focus is on becoming innovative in terms of your thinking, knowledge, skills and approaches to mentoring. You will have the opportunity to set goals, celebrate your efforts, reflect on and challenge your problems in our community of practice. The design and direction of these sessions will be determined by you and the other mentor teachers.

To ensure that this self-empowering professional development approach is effective and authentic, it must focus on your own practice²⁵. You will therefore be offered the opportunity to interact with other mentor teachers during community of practice sessions. This will be done in the form of peer-mentoring where we will challenge and support one another. We will engage in discussions on how to become innovative and address problems in your mentoring practice. You will be required to prepare for each session. Afterwards you will be expected to take responsibility for your own development by implementing action learning in your own mentoring practice. As an integral part of action learning you will need to reflect critically.

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²⁴De Boer, A-L., Du Toit, P.H. & Bothma, T. (2015). Activating whole brain® innovation: A means of nourishing multiple intelligence in higher education. *The Journal for Transdisciplinary Research in Southern Africa*: Special edition: Re-enchantment, 11(2): 55-72.

²⁵Friden, K., Hanegan, N. & Nelson, C.R. (2009). Authentic and simulated professional development: Teachers reflect what is modeled. *School Science and Mathematics*, 109(2): 79-94.

2.1 Whole Brain® Thinking



Ned Herrmann, Founder of Herrmann International

A proven system to help people think better

www.herrmannsolutions.com

Whole Brain® Thinking focuses on using one's whole brain, not just the parts one might feel most comfortable with. What one feels most comfortable with is labelled our brain dominance. It is expressed in the way in which we learn, understand, solve problems, express ourselves, teach, mentor, etc²⁶.

The Herrmann Whole Brain® Model (figure 3) illustrates the four quadrants of the brain that show the thinking preferences of individuals. These preferences have an impact on nearly everything we do and encompass all human behaviour²⁷. Understanding your thinking style preferences provides the following:

- A new perspective of yourself and the people you deal with on a daily basis (in the context of your mentoring the focus is on pre-service teachers)²⁸.
- an account of how we think, it values diversity and argues for mutual understanding²⁹;

²⁶Hughes, M., Hughes, P. & Hodgkinson, I.R. (2016). In pursuit of a 'whole-brain' approach to undergraduate teaching: Implications of the Herrmann brain dominance model. *Studies in Higher Education*, 42(12): 1-17.

²⁷Herrmann, N. (1995). *The creative brain* (2nd edition). USA: Quebecor Printing Book Group.

²⁸Herrmann, N. (2000). *Herrmann Brain Dominance Instrument thinking styles assessment*. Pretoria: HBDI.

²⁹De Jager, T. (2011). *Beginner-teacher professional development: An action research approach to mentoring*. M.Ed. dissertation, University of Pretoria.

- the ability to get better results when leveraging your own thinking preferences and stretching to the other quadrants of the brain when necessary, in order to be a whole brain thinker and mentor.

The human brain is fascinating and considered one of the wonders of the world. The following are a few facts about this organ and its development:

Table 4: Facts about the human brain³⁰

1.4 kg of unlimited potential	Contains 2 trillion neurons	In the last twenty years knowledge progressed more than in the last twenty centuries

The Herrmann Brain® Dominance Instrument (HBDI®) as seen in Figure 3 was developed for people to become aware of their own thinking preferences to be used in one's personal and professional life³⁰. Profiles are considered as neither good nor bad, right or wrong³¹. Differences in thinking preferences might be both a blessing and a curse during mentoring and in communities of practice. The awareness of our own and others' thinking preferences may promote harmony, tolerance and effective communication³².

³⁰Herrmann, N. (2000). *Herrmann Brain Dominance Instrument Thinking Styles Assessment*. Pretoria: HBDI

³¹ Herrmann, N. (1995). *The creative brain*. (2nd edition). USA: Quebecor Printing Book Group.

³²Greyling, W.J. & Du Toit, P.H. (2008). Pursuing a constructivist approach to mentoring in the higher education sector. *South African Journal of Higher Education*, 22(5): 957-980.

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Mentoring, like other activities in our daily lives, requires a balance between all four quadrants of the brain. To be able to mentor a mentee holistically, you need to adapt to the preferences of the mentee. This will improve your mentoring practice and will contribute to your becoming a self-empowered professional. The following Herrmann Whole Brain® Dominance Instrument (figure 3) is used to enhance your understanding of how you think and learn:

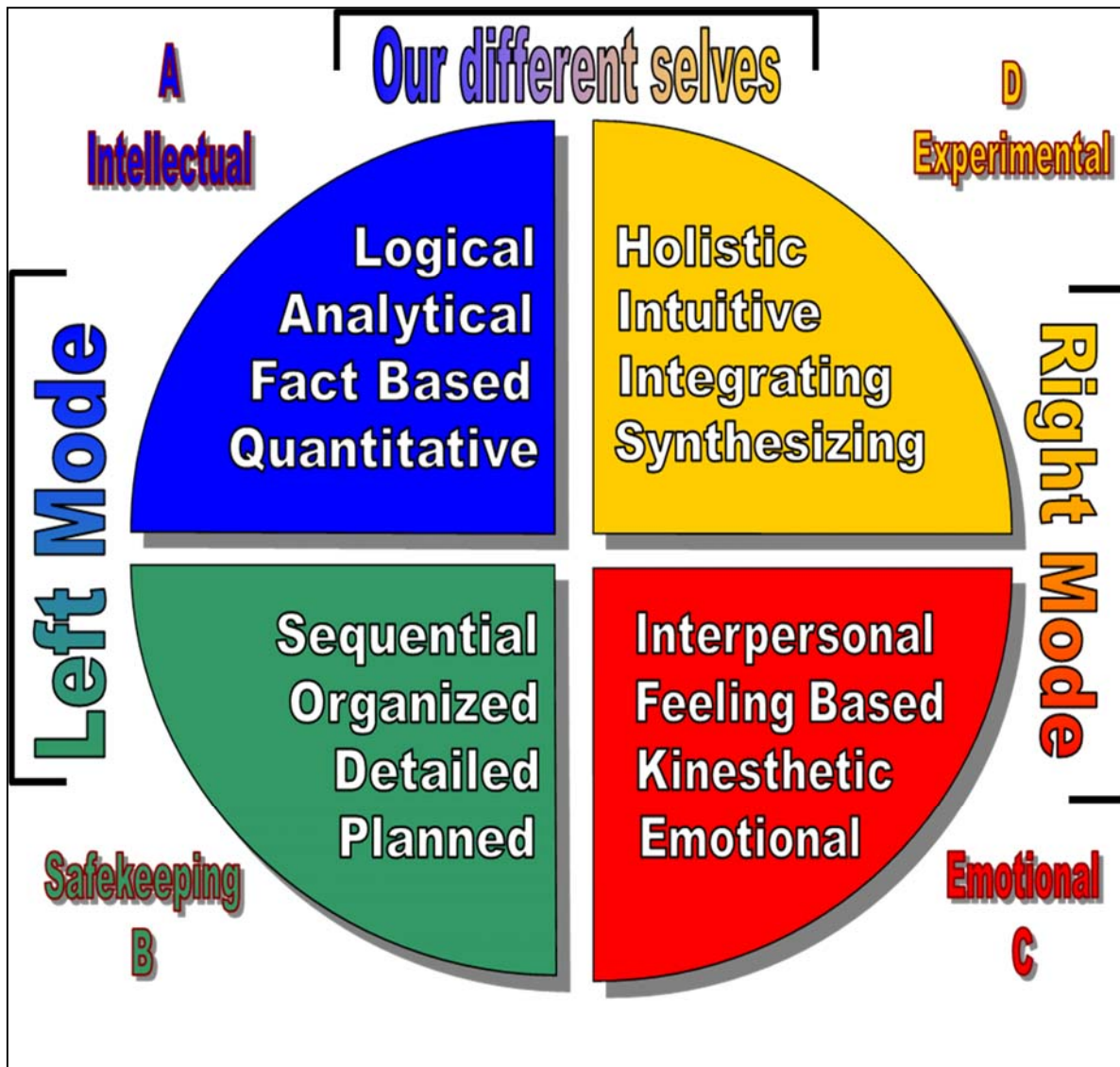


Figure 3: Herrmann's Whole Brain® model³³

³³Herrmann, N. (1996). *The whole brain business book*. New York: McGraw Hill.

The comprehensive whole brain model³⁴ (figure 4) is an extension of the Herrmann Whole Brain® Model. It indicates the four different quadrants (A, B, C and D) and entails that when an individual displays a preference for a specific quadrant, there might be an avoidance of another. This usually becomes apparent in tasks a learner struggles with when not using part of his or her preferred mode of thinking. In each quadrant the model elaborates on the preferences, expectations, struggles and preferable ways of facilitating learning. In the context of this mentoring programme it is considered from a mentoring perspective. Instead of referring to facilitating learning, reference is made to mentoring. As this programme focuses on innovative ways of mentoring, the term *facilitative mentoring*³⁵ is used. Instead of referring to students, reference is made to mentees.

NOTES

³⁴De Boer, A-L., Du Toit, P.H., Scheepers, M.D. & Bothma, T.J. (2013). *Whole Brain Learning in higher education: Evidence-based practice*. Oxford: Chandos Publishing.

³⁵Du Toit, P.H. (2017). *Innovative Mentoring in Higher Education*. Workshop, 19 September. University of Pretoria.

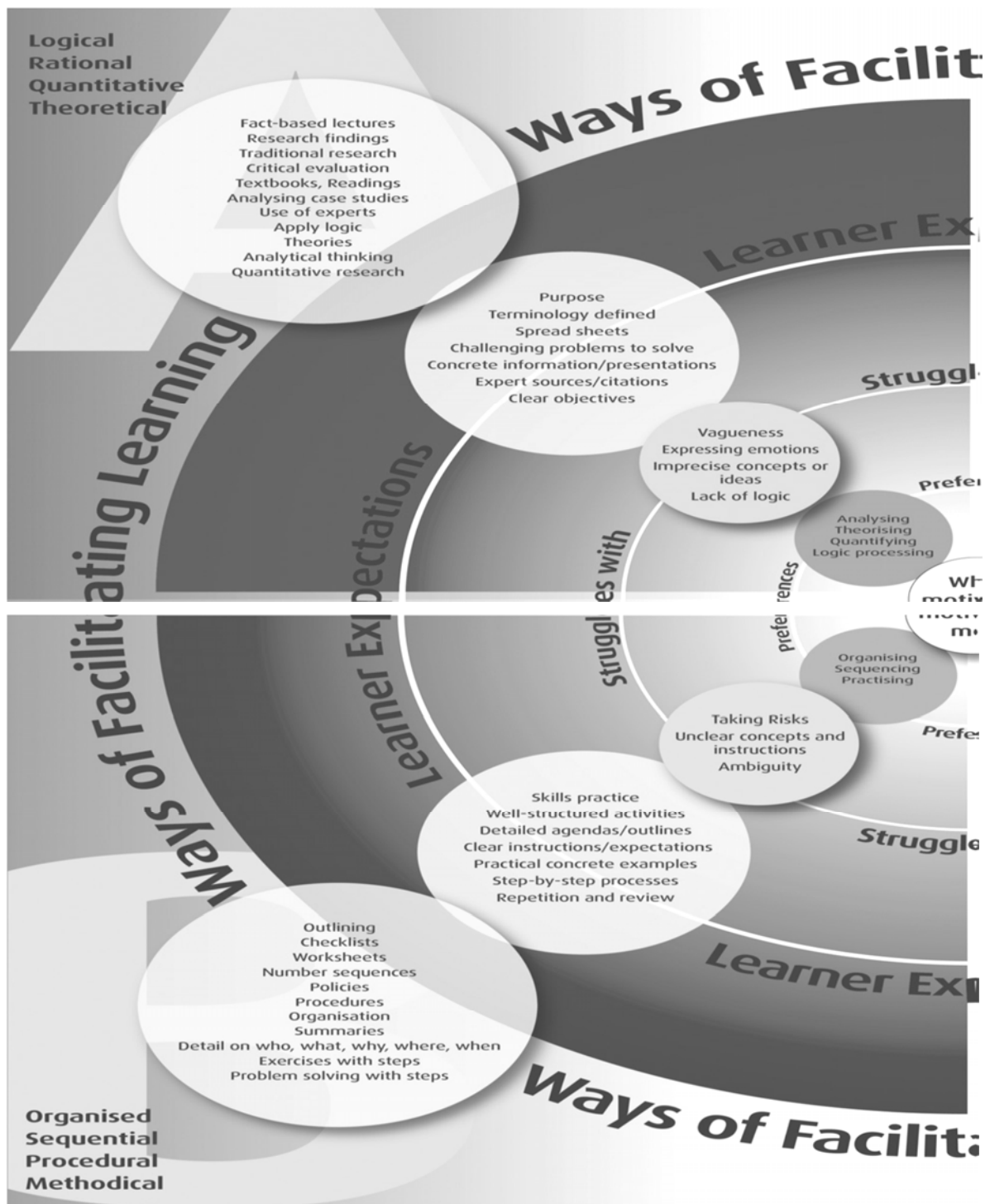


Figure 4: Comprehensive whole brain model³⁶ quadrants A and B

³⁶De Boer, A-L., Du Toit, P.H., Scheepers, M.D. & Bothma, T.J. (2013). *Whole Brain Learning in Higher Education: Evidence-based practice*. Oxford: Chandos Publishing.

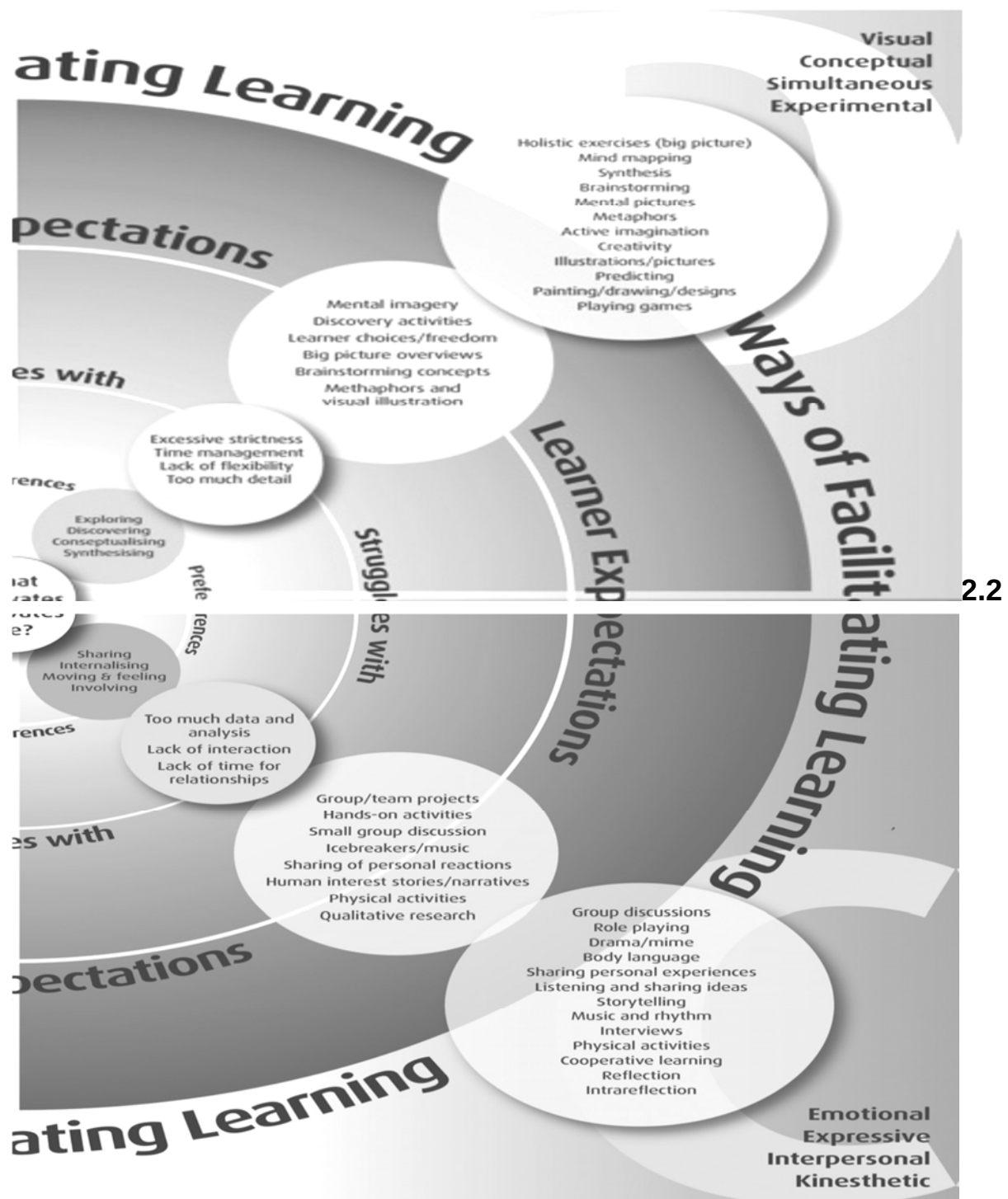
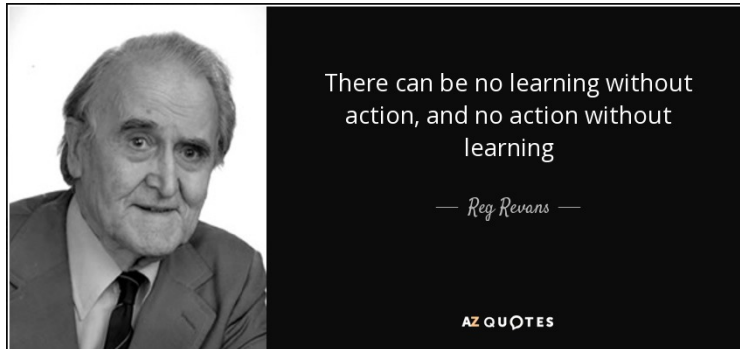


Figure 5: Comprehensive whole brain model quadrants D and C

2.2 Action learning



The mentoring of pre-service teachers is a key factor in preparing them for the profession. It undeniably impacts the rest of their career. The three models of mentoring in table 5 are considered in the literature: Cloning, Nurturing and Friendship³⁷.

Table 5: Mentoring models

Cloning	Mentor seeks control Produces a duplicate of him- or herself
Nurturing	Mentor takes the role of a parent figure
Friendship	Collaborative, reciprocal and co-constructed. The mentor and mentee are viewed as peers.

These models are considered a good guideline for mentoring but do not take into account the participants' thinking preferences and specific mentoring practices. It is imperative that we reflect on how pre-service teachers prefer to be mentored and then reflect on our approaches to mentoring through the use of action learning. A baseline study was conducted in 2017 when questionnaires were distributed to 280 University of

³⁷ Buell, C. (2004). Models of mentoring in communication. *Communication Education*, 53:1.

Pretoria pre-service teachers. E-mails with a questionnaire attached were sent to the mentor teachers. It was interesting to note that none of the mentor teachers classified themselves as unfit to mentor. However, 26% of the pre-service teachers did not regard themselves as capable. Two factors might have influenced their viewpoint: The first is the mentoring approach used by the mentor; the second was what they considered the role of a mentor and pre-service teacher to be. There was an overwhelming belief by the participating pre-service teachers that a more interactive approach was needed when they were mentored to prepare them for the profession. As many as 50% revealed: They wanted a mentor who was a facilitator, who enacted the action learning process illustrated in figure 6 below.

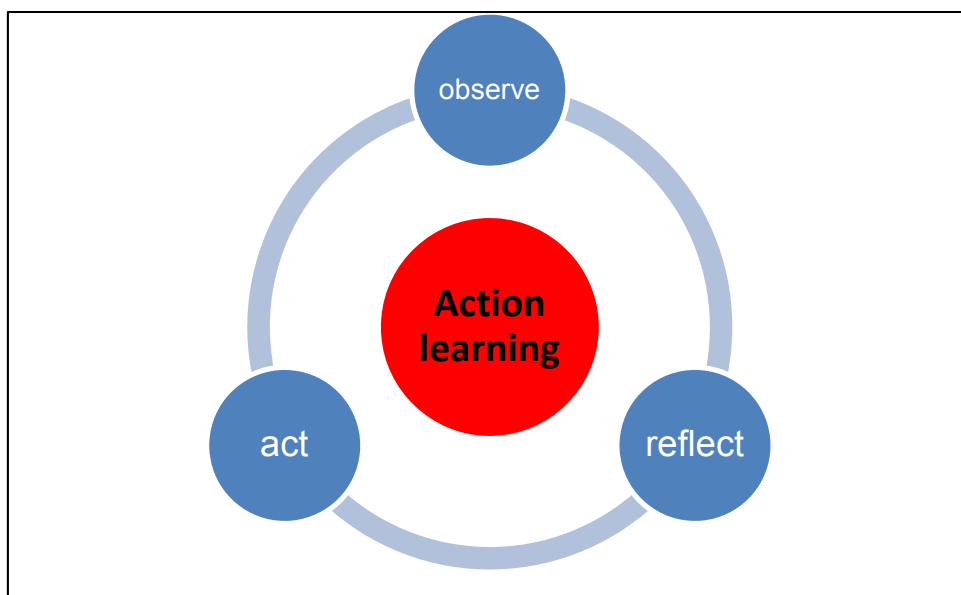


Figure 6: The action learning process

As illustrated in figure 6, action learning refers to learning through action. You will therefore, for example, observe your mentoring practice and take action after self-reflection or reflection in order to improve³⁸. It combines “self-development with action for change”³⁹. This process is ongoing and illustrated as a cycle. The following aspects are important during the action learning process⁴⁰ in this programme: We work

³⁸Du Toit, P.H. (2009). *Reader for postgraduate studies in professional development, facilitating learning and assessment*. Pretoria: University of Pretoria. Department of Humanities Education.

³⁹Pedler, M. & Burgoyne, J. (2008). Action learning. In Reason, P. & Bradbury, H. (Eds.). *The handbook of action research*. SAGE Publications Ltd.

collaboratively taking action on real problems in our mentoring practices by using questioning as the main technique to help us solve our problems. A facilitator or overseeing mentor is used during the process.

The transition from pre-service to beginner teacher is an important, but difficult segment of teachers' careers, as they are expected to perform successfully and assume full teaching responsibilities from the first day on the job⁴⁰. In figure 7 the majority of the participants in the study responded by indicating that they believed pre-service teachers should take responsibility for their own learning and that they needed to be reflective in terms of their own practices. The reality of the situation is that if you as the mentor do not model the same approach and reflect on your professional development, it will be difficult to cultivate these capabilities in a mentee⁴¹.

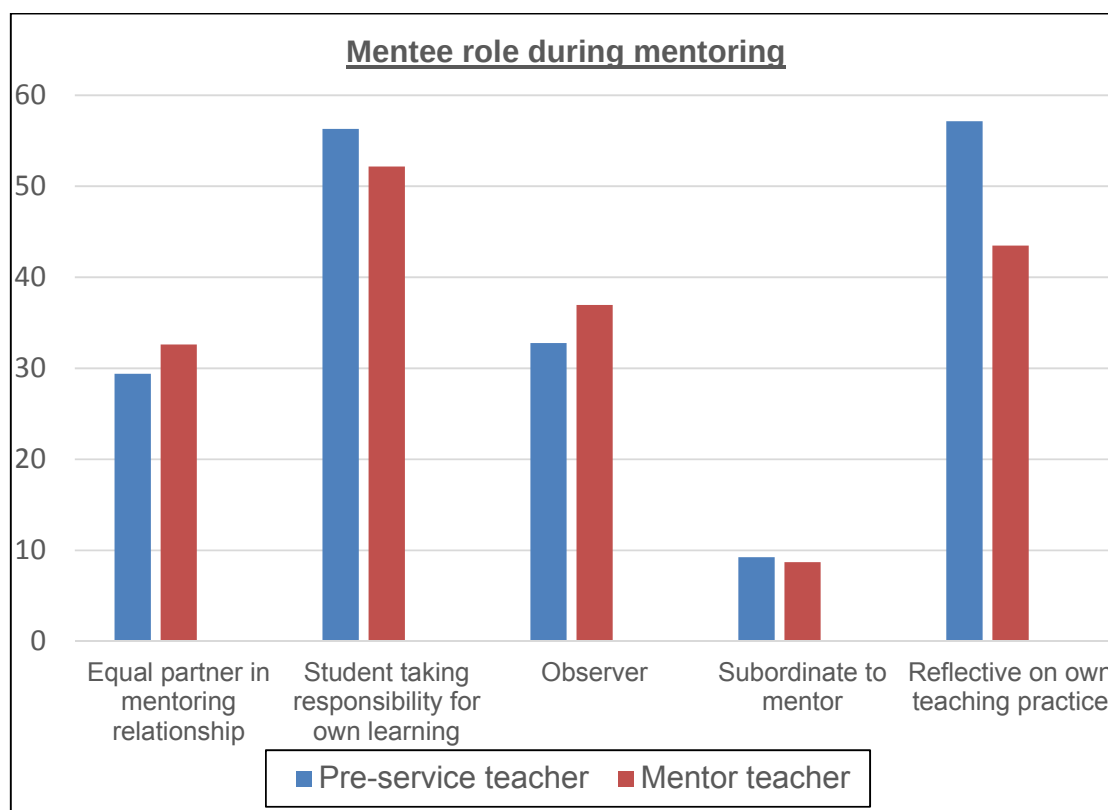


Figure 7: Mentee role during mentoring

⁴⁰Eby, L., Rhodes, J. & Allen, T. (2010). Definition and evolution of mentoring. In Allen, T.D. & Eby, L.T. (Eds.). *The Blackwell handbook of mentoring*. Malden: Blackwell Publishing Ltd.

⁴¹Kramarski, B. & Michalsky, T. (2009). Investigating pre-service teachers' professional growth in self-regulated environments. *Journal of Educational Psychology*, 101(1): 161-175.

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⁴⁴Artino, A.R. (2008). Promoting academic motivation and self-regulation: Practical guidelines for online instructors. *TechTrends*, 52(3): 37-45.

In order to be action-orientated, you have to develop and deepen your mentor identity by exploring your role as mentor and your approach to mentoring. Teacher identity is at the core of the profession and is related to the *self*. Identity development is an active and reflective process. Paulo Freire once said “Reflection – true reflection – leads to action”. It is, however not a spontaneous activity. We therefore need to dedicate time and effort to it⁴⁵. You should scrutinise and reflect on your mentoring practice in order to improve, transform and innovate it. However, action learning is not a process of finding things, but finding yourself and therefore it is an ongoing process⁴⁶. The emphasis in terms of your professional development as well as your mentoring practice should not be the destination, but the journey.

During your mentoring of the pre-service teacher you need to consider the following approach: conducting action learning and mentoring in an interactive and a facilitative fashion. Such an approach will contribute to developing the mentees’ ability to reflect on their individual practices and taking responsibility for their own learning. A facilitative approach to mentoring includes the following:

- As a mentor you need to know when to intervene and when to allow the mentee to solve problems independently.
- Using action learning to empower yourself and your mentee entails letting mentees create their own goals, conceptualise their problems or ideas, design the ways in which they will be addressed and construct professional development from their own interest⁴⁷.
- Finding ways to improve your own mentoring practice and explaining why and how you have done it⁴⁸.

⁴⁵ Gelter, H. (2003). Why is reflective thinking uncommon? *Reflective practice*: 4 (3), 337-344.

⁴⁶ De Jager, T. (2011). *Beginner-Teacher Professional Development: An Action Research Approach to Mentoring*, M.Ed. dissertation, University of Pretoria.

⁴⁷ Kramarski, B. & Michalsky, T. (2009). Investigating Preservice Teachers’ Professional Growth in Self-Regulated Environments. *Journal of Educational Psychology*, 101(1): 161-175

⁴⁸ McNiff, J. (2010). *Action research for professional development: Concise advice for new and experienced action researchers*. Dorset, England: September Books.

NOTES

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

The action learning process as represented in figure 8 is proposed with a view to answering the question, *How can I improve my mentoring practice?*

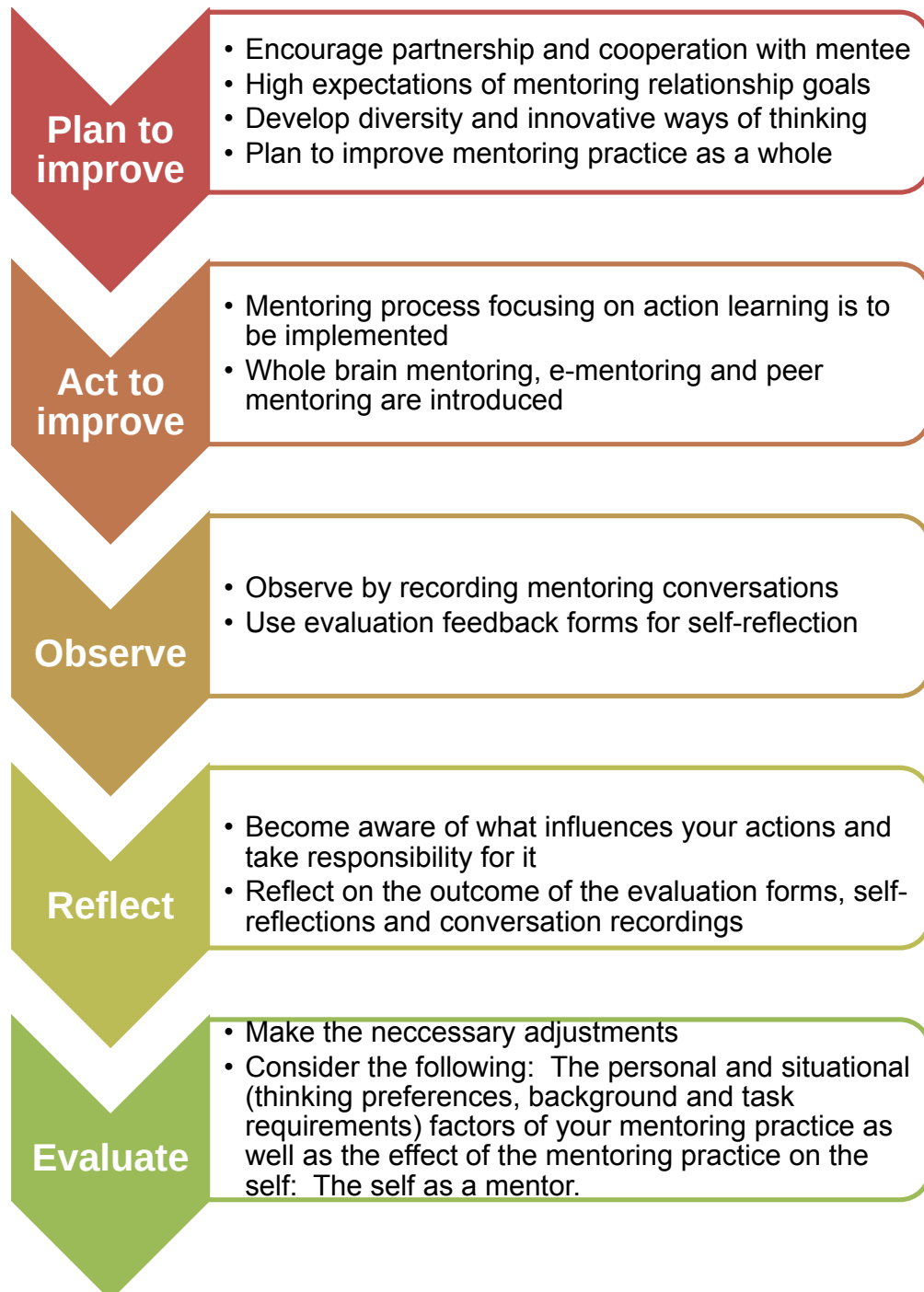


Figure 8: Action learning approach to mentorship

NOTES

[illegible]

2.3 Community of practice and peer-mentoring

The most powerful professional development occurs within a learning community⁴⁹.

The National Department of Education values the use of Professional Learning Communities (PLCs) as stated in the *Strategic Planning Framework for Teacher Education and Development in South Africa, 2011-2015* (ISPFTED). A PLC focuses on student needs to accomplish school improvement. The assumption is “none of us is as smart as all of us⁵⁰.” Analogue to school improvement, the context of mentoring university students requires mentors to improve what they do and how they do it and enhance the quality of their mentorship, their own professional development and the professional development of mentees.

In this programme the introduction of a learning community is directed at your own professional development. We therefore use the term communities of practice where we share our domain of interest in mentoring pre-service teachers while considering our own professional empowerment. Peer-mentoring, e-mentoring, action learning and a consideration of our thinking preferences form an integral part of a community of practice.

Peer-mentoring, which will be used in the community of practice and in the mentoring relationship, is regarded as an essential component of becoming an instrument for transformation⁵¹. It deals with challenging old assumptions, beliefs and practices. We therefore share information, give collegial support and engage in critical reflection⁵¹ by interacting regularly and considering our mentoring practices. We reflect on the results of the baseline study conducted, especially the challenges pre-service teachers face and the mentoring they require as depicted in figures 9 and 10.

⁴⁹ Ioannidou-Koutselini, M. & Patsalidou, F. (2015). Engaging school teachers and school principals in an action research in-service development as a means of pedagogical self-awareness. *Educational Action Research*, 23(2): 124-139.

⁵⁰ Hugo, J.F.M., Slabbert, J., Louw, J.M., Marcus, T.S., Bac, M., Du Toit, P.H. & Sandars, J.E. (2012). The clinical associate curriculum – the learning theory underpinning the BCMP programme at the University of Pretoria. *African Journal of Health Professions Education*, 4(2): 128-131.

⁵¹ Du Toit, P.H. (2012). Using action research as process for sustaining knowledge production: A case study of a higher education qualification for academics. *South African Journal of Higher Education*, 26(6):1216-1233.

In one question, the results of which are illustrated in figure 9, the participants had to reflect on the educator roles they supposed pre-service teachers needed more mentoring in before entering the profession.

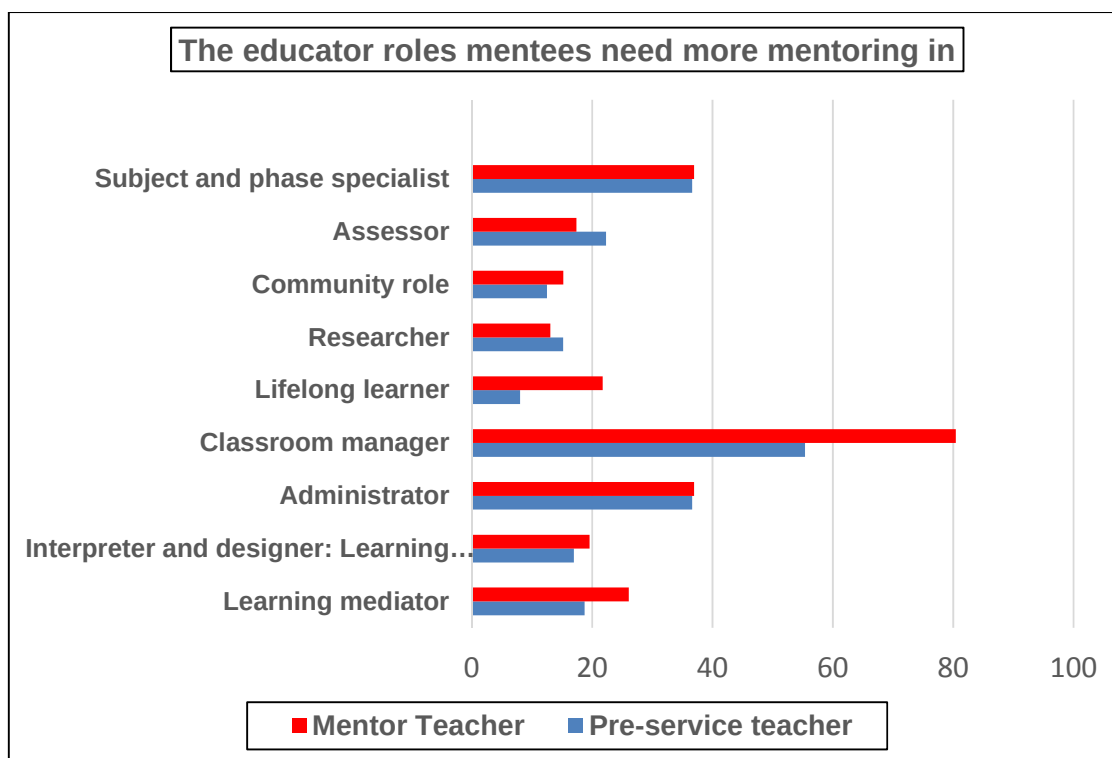


Figure 9: Educator roles mentees need more mentoring in

These educator roles are depicted in the 1999 *Norms and Standards for Educators*.

The role that predominantly needs the most support, is that of classroom manager. The majority of the pre-service teachers experienced this as their greatest challenge in teaching practice.

The mentor teachers indicated that pre-service teachers need more guidance in managing their personal time (see figure 10). This aspect and the coordination of extra-mural activities were labelled challenging by the pre-service teachers.

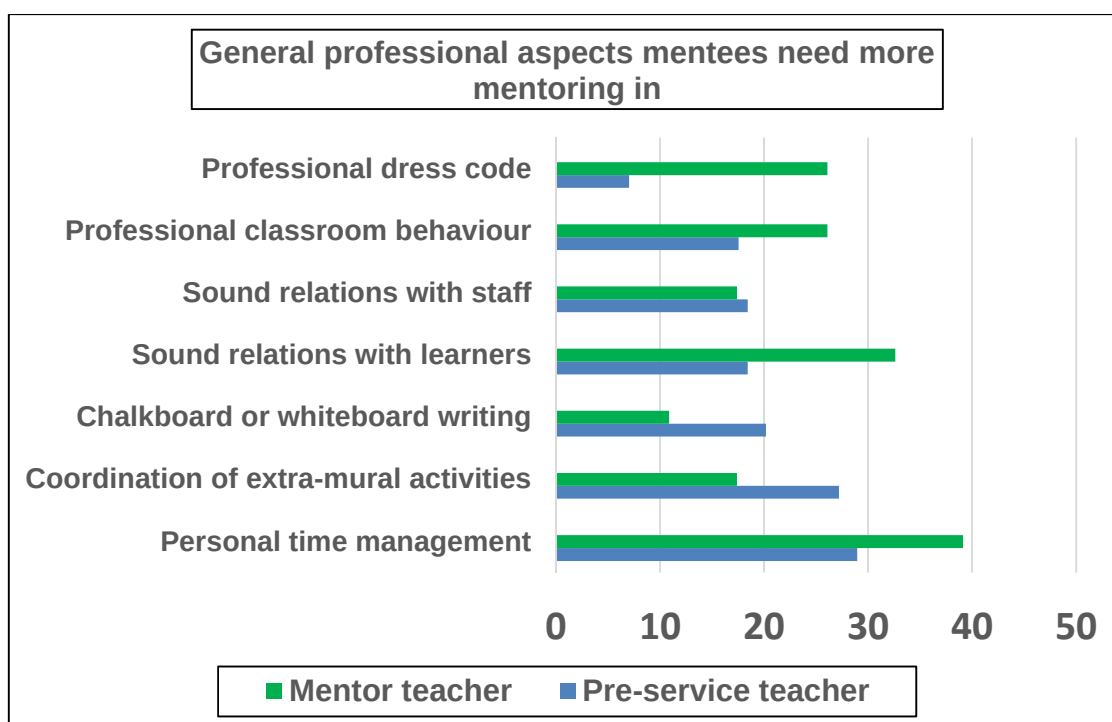


Figure 10: General professional aspects mentees need more mentoring in

It is interesting to note that only 7 % of the students (figure 10) considered a professional dress code as something they needed assistance with, while 26 % of the mentor teachers regarded it as one of the critical aspects. It is evident that the students did not consider their chalk- or whiteboard writing skills as adequate.

Interaction in the form of discussions, analysis and problem solving,⁵² resulting in our professional self-empowerment will take place throughout this programme. As a member of our peer-mentoring community of practice you need to be committed and willing to share your competence. The aim of this professional cooperative learning opportunity⁵³ is learning with and from one another.

To have an enriching experience you need to reflect not only on your mentoring practice but also on the peer-mentoring occurring in the community of practice. We will employ

⁵²MacPhail, A., Patton, K., Parker, M. & Tannehill, D. (2014). Leading by example: Teacher educators' professional learning through communities of practice. *Quest*, 66(1): 39-56.

⁵³Du Toit, P.H. (2013). Social transformation starts with the self: An autobiographical perspective on the thinking style preferences of an educator. *South African Journal of Education*, 33(4): 1-12.

3. Mentoring



Mentoring is an ancient archetype that originated 3000 years ago in Greek mythology. Mentor is a figure in Homer's *Odyssey*, portrayed in the myth as a wise and faithful advisor entrusted to protect Odysseus' son, Telemachus during the Trojan War. In the changing workplace mentoring has shifted in the last 50 years⁵⁵ from the traditional viewpoint to a more experienced person assisting the younger one on his or her journey.

Everyone think she or she knows what mentoring is and has an intuitive belief that it works. The general perception that mentoring always succeeds is questioned since there is an established 30 to 50% drop-out rate of educators in England within the first five years⁵⁶. In South Africa it has been found that teachers under the age of 30 tend to resign in significant numbers in comparison to older teachers⁵⁷.

There are various approaches and models for mentoring pre-service teachers. Mentoring in America is considered to be directive, focusing on sponsorship, networking

⁵⁵Feiman-Nemser, S. (2012). Beyond solo teaching. *Supporting beginning teachers*, 69(8): 10-16.

⁵⁶Burghes, D., Howson, J., Marencon, J., O'Leary, J. & Woodmead, C. (2009). *Teachers matter: Recruitment, employment and retention at home and abroad*. London: Politeia.

⁵⁷ELRC (Education Labour Relations Council). (2005). *Educator attrition and mortality in South Africa: A study into gross educator attrition rates and trends, including analysis of the causes of these by age and gender, in the public schools system in South Africa*. Cape Town: HSRC Press.

or career outcomes⁵⁸. Western perceptions of concepts of mentoring that focus on community and connectedness⁵⁹⁶⁰ may not be acceptable in African or Indian cultures.

One of the most important aspects we need to consider for our own mentoring practice is evident in the feedback received in 2017 when 280 pre-service teachers from the University of Pretoria indicated the following regarding their teacher identity development (See figure 11):

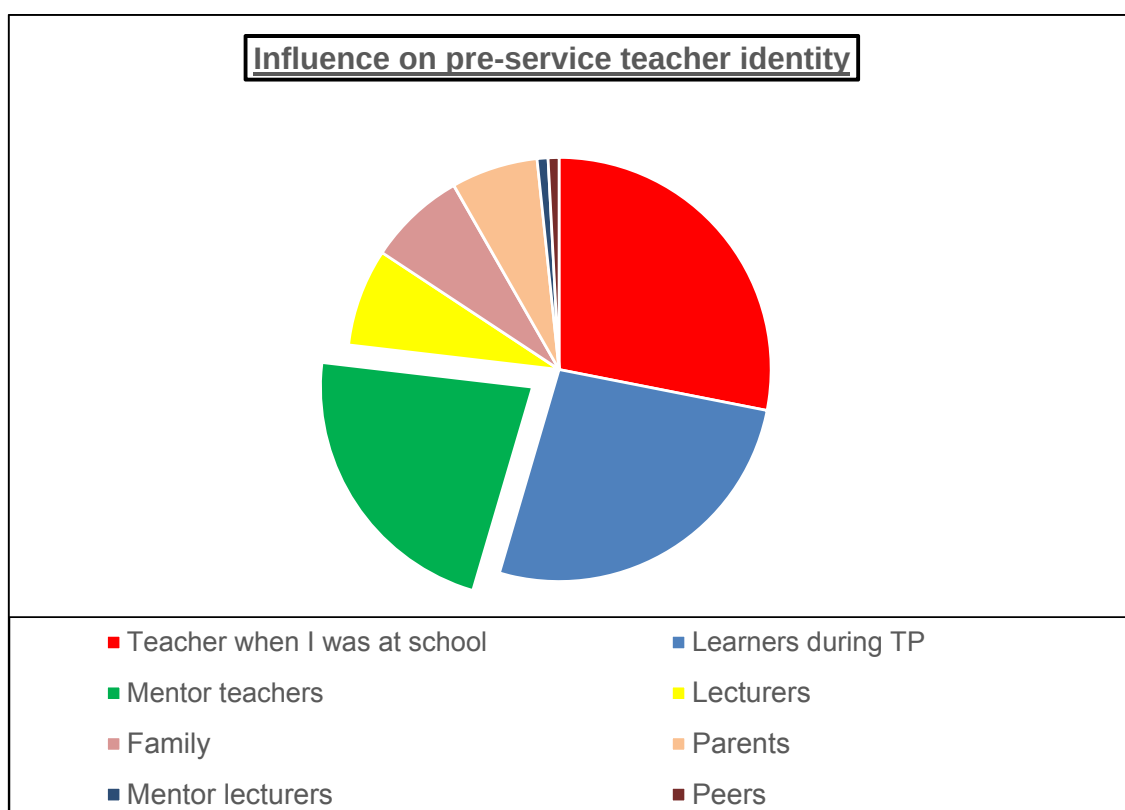


Figure 11: Influence on pre-service teacher identity

The value of mentoring in the school context was emphasised as can be seen in Figure 10 where the student teachers indicated that the teachers they had at school, as well as

⁵⁸Clutterbuck, D. (2007). An international perspective on mentoring. In Ragins, B.R. & Kram, K.E. (Eds.). *The handbook of mentoring at work: Theory, research and practice*. Los Angeles: SAGE.

⁵⁹Geber, H. & Nyanjom, J. (2009). Mentor development in higher education in Botswana: How important is reflective practice? *South African Journal of Higher Education*, 23(5): 894-911.

⁶⁰Banerjee, M. (2009). *Subordinate perception of leadership style and power: A cross-cultural investigation*, D.Ed. thesis, University of Akron.

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Every mentoring relationship is unique and the mentoring of a pre-service teacher is challenging in the following ways⁶¹:

- There are special timelines for when certain things need to happen.
- It is done in accordance with the specifications of the pre-service teacher's higher education institution.
- Mentees are placed to work alongside a mentor in the experienced teacher's classroom.
- The school or classroom culture is different from what is familiar to the pre-service teacher.
- Learners are usually present in the classroom while mentoring is taking place.
- Two individuals who have different thinking preferences have to work together.
- The mentor and mentee are in different phases of their careers.

In order to reflect on this unique mentoring relationship you need to consider the following:

- Who should be chosen to be a mentor? How should a mentor and mentee be partnered?
- Literature indicates that mentors are unsure of how they mentor. Do you lack confidence in your mentoring abilities or do you feel unprepared for the task?
- How can the uncertainties of pre-service teachers be addressed, since they are unsure of their role and responsibilities during mentoring?⁶².

⁶¹Ambrosetti, A., Knight, B.A. & Dekkers, J. (2014). Maximizing the Potential of Mentoring: A Framework for Pre-service Teacher Education. *Mentoring & Tutoring: Partnership in Learning*, 22:3, 224-239.

⁶²Ambrosetti, A. (2012). *Reconceptualising mentoring using triads in pre-serviceteacher education professional placements*, Ph.D.thesis. Central Queensland University, Rockhampton, Queensland.

The following table provides a summary of the types of mentoring that are proposed in this programme:

Table 6: Mentoring types

What	How
Peer-mentoring ⁶³	Reciprocal, accommodating, interactive and collaborative mentoring focused on professional development. Valuing your and others' development through critical reflection ⁶⁴ .
Whole Brain Mentoring ⁶⁵	Shared vision between mentor and mentee. Relationship of trust, commitment and understanding. Acknowledge and accommodate each other's thinking preferences. Adapting one's thinking preferences: Both mentor and mentee develop attributes of Whole Brain® Thinking.
E-mentoring ⁶⁶	E-mail, text and social networking are used to supplement face-to-face mentoring, promote interaction and collective actions. Tools and resources to regulate, control and evaluate own development and challenges in the real-life setting ⁶⁷ . Advantages: More frequent communication, reduced time of personal meetings and development of relationships in less formal settings.

These mentoring types are introduced innovatively in this programme since they focus on the mentor and mentee's professional learning or development. They have a natural overlap with action learning⁶⁸, since opportunities for growth are created. We therefore

⁶³Smit, T. & Du Toit, P.H. (2016). Transforming beginner teacher mentoring interventions for social reform. *South African Journal of Education*, 36(3): 1-12

⁶⁴Le Cornu, R. (2005). Peer mentoring: engaging pre-service teachers in mentoring one another. *Mentoring & Tutoring: Partnership in Learning*, 13(3): 355-366.

⁶⁵Greyling, W.J. & Du Toit, P.H., (2008). Pursuing a constructivist approach to mentoring in the higher education sector, *South African Journal of Higher Education*, 22(5): 957-980.

⁶⁶Fletcher, S. & Mullen, C. (2012). *The Sage Handbook of Mentoring and Coaching in Education*, Thousand Oaks: Sage Publications.

⁶⁷Kramarski, B. & Michalsky, T. (2015). Investigating Preservice Teachers' Professional Growth in Self-Regulated Learning Environments. *Journal of Educational Psychology*, 101(1): 161-175.

⁶⁸Schunk, D.H. & Mullen, C.A. (2013). Toward a Conceptual Model of Mentoring Research: Integration with Self-Regulated Learning. *Educational Psychology Review*: 25:361-389.

consider the *self* and what we want to develop, how to develop it and when to alter our practices or address aspects of our professionalism.

The reality of being alone in a classroom is a challenging and hard truth for a beginner teacher. It is in direct contrast to the safe, nurturing environment most pre-service teachers experience during their teaching practice period. We as mentors have the responsibility of preparing them for the authentic working environment they will encounter by enhancing our mentoring practices.

5. Conclusion

The South African school system is unique, since it includes different races, perspectives, cultures and languages. Our country has a complicated political history and faces specific critical challenges in education. How can a mentor teacher and a mentee become self-empowered with a view to transforming education? It is of note that the same expectations or features mentees struggle with are true for mentors finding themselves in other contexts⁶⁹. We need to accommodate the age, sexual orientation, religion, gender, disability, economic class⁷⁰ and thinking preferences of both the mentor teacher and the mentee.

A reform in mentoring is introduced and implemented in this programme where we are moving away from the traditional mentoring approach. It is action-orientated with a view to self-empowerment. In quality mentoring action learning plays a prominent role before, during and after mentor-mentee interactions⁷¹. Quality mentoring will enable you to challenge others, but also the *self* while creating an environment of innovation in practice⁷².

⁶⁹Smit, T. & Du Toit, P.H. (2016). Transforming beginner teacher mentoring interventions for social reform. *South African Journal of Education*, 36(3): 1-12.

⁷⁰Ragins, B. R. (2007). Diversity and workplace mentoring relationships: a review and positive social capital approach. In T. D. Allen & L. T. Eby (Eds.), *The Blackwell handbook of mentoring: a multiple perspectives approach*, Malden: Blackwell.

⁷¹Schunk, D.H. & Mullen, C.A. (2013). Toward a Conceptual Model of Mentoring Research: Integration with Self-Regulated Learning, *Educational Psychology Review*: 25:361-389.

⁷²Aderibigbe, S., Colucci-Gray, L. & Gray, D.S. (2016). Conceptions and Expectations of Mentoring Relationships in a Teacher Education Reform Context. *Mentoring & Tutoring: Partnership in Learning*, 24 (1): 8-29.

MENTOR PROFESSIONAL DEVELOPMENT: SELF-EMPOWERMENT IN A COMMUNITY OF PRACTICE



The mentor and pre-service relationship

Mentor teacher course manual

Compiled by:
Ms. Tanya Smit

Facilitator:
Ms. Tanya Smit

Programme leader:
Prof. P.H. du Toit

Appendix D: Mentor teacher short course manual

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1. GENERAL PREMISE AND EDUCATIONAL APPROACH

1.1 General description of course	"Mentor professional development: Self-empowerment in a community of practice" focuses on your professional development as a mentor. You will reflect on your own mentoring practice, your professional development and the "self". Self-regulated professionalism forms the basis of this short course.
1.2 Purpose of programme	The aim is to empower mentors professionally with a view to becoming innovative and reflective in their mentoring practice. It focuses on Whole Brain® Thinking, action learning, a community of practice and mentoring practices.
1.3 Course outcomes	This mentorship programme invites you to do the following: • Cultivate your professional development as an educator, mentor and independent lifelong learner; • use action learning to become a self-empowered professional; • explore and understand Whole Brain®, peer- and e-mentoring in order to apply the principles in your mentoring practice; • become an active member of a community of practice; • execute a SWOT analysis for observation, reflection and action in your mentoring practice.
1.4 Additional resources for further reading	Kindly consider the references in the footnotes of the course material.
1.5 Using the course material and – manual	The course material provides a challenging and transformational self-empowerment approach to professional development. In the course manual the assessment activities are discussed. During the community of practice sessions peer-mentoring will be used in order to develop professionally.
1.6 Learning presumed to be in place	As an educator you should be familiar with IQMS policies and the CPTD requirements of SACE. If you are not familiar with these, kindly consult the following documents: http://www.sace.gov.za/CRMCPTDSelfService/CPTDDocuments.asp http://wced.pgwc.gov.za/circulars/minutes04/ehrd43.pdf http://wced.pgwc.gov.za/circulars/minutes04/ehrd43.pdf

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2. ADMINISTRATIVE INFORMATION

2.1 Contact details

<i>Role</i>	<i>Name and surname</i>	<i>Room nr. and building</i>	<i>Telephone number and e-mail address</i>
Programme leader	Prof. P.H. du Toit	University of Pretoria: Groenkloof campus: Aldoel : 3-62	(012) 420 2817 pieter.dutoit@up.ac.za
Facilitator	Mrs. T. Smit	University of Pretoria : Groenkloof campus: Aldoel: 3-58	(012) 420 5544 tanya.smit@up.ac.za

2.2 Course credit map

Contact sessions	Individual professional development	Work integrated development	Final assessment
Community of practice	Activities: E-mentoring worksheets.	Whole Brain action learning in own mentoring practice	Professional portfolio of evidence
10 hours	25 hours	40 hours	25 hours

Total hours: $100\text{h}/10 = 10$ credits for this course

2.3 Community of practice sessions

We would have the community of practice sessions as arranged by the participants. This course carries a weighting of 10 credits; this means that you should devote an average of 100 hours of study- and practical time to this course. The study time is made up of the sessions, e-mentoring worksheets and action learning in your own mentoring practice.

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Session	Theme	Involvement	Duration and place	Time and date	Facilitator
1: Preparation for mentoring	Mentorship programme: Introduction. Execution of initial SWOT analysis. Expectations of the programme. Establishment of a community of practice.	Community of practice	120 minutes University of Pretoria: Groenkloof Aldoel building Room 2-87	Before commencement of teaching practice period	Ms. T. Smit
2: Pre-mentoring	Herrmann Brain® Dominance Instrument(HBDI)	Individual completion	180 minutes University of Pretoria: Groenkloof: Aldoel building Room 2-87	On the Internet: In own time	Herrmann Institute
	Whole Brain® Thinking	Community of practice		Commencement of teaching practice period	Prof. P.H. du Toit and Ms. T. Smit
	Innovation into practice: Mentoring styles				
3: Mentoring	Action learning	Community of practice	180 minutes University of Pretoria: LLITUP laboratory: Maths, science and technology building	During teaching practice period	Ms. T. Smit
	Self-empowerment process for mentoring				Dr. Callaghan
4: Post-mentoring	Portfolio of evidence Critical reflection Evaluation Execute final SWOT analysis	Community of practice	120 minutes Groenkloof University of Pretoria: Aldoel building Room 2-87	During or after teaching practice period	Ms. T. Smit

3.Assessment

3.1Assessment programme

Online worksheets: Self-assessment rubric

Action learning mentoring sessions: Collaborative peer-assessment checklist

Participation in community of practice: Collaborative group-assessment rubric

Professional portfolio of evidence: Mentor professional development: Checklist

Appendix D: Mentor teacher short course manual

<i>Date</i>	<i>Evaluation</i>	<i>Weighting</i>		
Continuous	E-mentoring worksheets	20%	Continuous self- and group-assessment	Course mark for CPTD points
	Action learning mentoring sessions	20 %		
	Participation in community of practice	10%		
Summative	Professional portfolio of evidence	50%	Final submission	

3.2 Administration

Kindly submit electronically. The dates for the continuous assessment will be communicated. The professional portfolio of evidence has to be handed as discussed.

3.3 Assessment criteria

SO 1:

Conduct a task analysis and consideration of your viewpoints during reflection of your mentoring practice while being actively engaged in a community of practice.

Consider own and others' thinking preferences while engaging during community of practice activities and during the mentor relationship.

Critical self-assessment of own mentoring practice and professional development.

SO 2:

Provide quality proof of claims made during the action learning process by redefining mentoring goals or assessing the progress made while being involved in activities of the community of practice and in your mentoring process during the respective cycles and phases of your action learning process.

SO 3:

Innovative application of relevant principles of mentoring.

SO 4:

Participate, contribute, challenge, support, communicate, collaborate, learn and fulfil a leadership role during the community of practice and during the mentoring relationship with the mentee(s)

SO 5:

Demonstrate the skill to execute a SWOT analysis for personal, professional and organisational use.

3.4 Assessment opportunities and tools

Assessment opportunities	Assessment tool
E-mentoring worksheets	Self-assessment rubric
Action learning mentoring sessions and worksheets	Self-reflection, evaluation forms and feedback questionnaires used during assessment opportunity. Collaborative peer-assessment checklist
Participation in community of practice	Collaborative group-assessment: Rubric
Professional Portfolio of evidence	Checklist



Figure 1: Developing the self: The mentor professional development framework

SWOT ANALYSIS

You will conduct various SWOT analyses during this programme: Keep the following in mind:

Strengths and weaknesses are internal factors you need to consider.

The opportunities and threats are external factors influencing for e.g. your mentoring practice.

The aim is to use this tool to change weaknesses into strengths and threats into opportunities.

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3.4.1 E-mentoring worksheets

** To be completed at the end of this programme by yourself*

Self-assessment rubric: E-mentoring worksheets

Criteria	Novice (0-1 marks)	Moderate(2-3 marks)	Excellent(4-5 marks)
Worksheets completion	I did not complete more than 40- 50 % of all the worksheets	I completed 50- 70 % of all the worksheets	I completed 70 % or more of the worksheets
Valuable insight and critical reflection	I did not give valuable insight into my practice or reflected critically	I gave insight on my practice, but did not reflect critically for it to be of value for my future practice	I gave valuable insight on my own practice and reflected critically
Application and innovation of the course material into mentoring practice.	I did not apply the course material to my mentoring practice with the mentee	I applied the course material, but lacked knowledge to be innovative in order to improve my practice	I applied the course material in my mentoring practice by being innovative
Evidence of developing and incorporating technology into my mentoring practice or for my own professional development	I did not develop technology or incorporate it into my own practices	I incorporated technology or used technology to some extent during this programme	I developed and incorporated one or more types of technology into my mentoring practice or for my own professional development

TOTAL: _____ /20

3.4.2 Action learning sessions: Mentoring practice:

**To be completed by the mentor and mentee at the end of the mentoring programme. It should be done together.*

Collaborative peer-assessment checklist: Action learning in mentoring practice

Criteria	Mark	Mark allocated
We took responsibility for our own learning or development in order to improve it	5	
E-mentoring or more than one type of technology was introduced in the mentoring relationship.	2	
We considered our own and the other's thinking preferences during mentoring. Whole brain mentoring was therefore evident.	4	
Peer-mentoring was used during the mentoring sessions in order to reflect and attain our goals during the mentoring period.	3	
An action learning process was conducted in this mentoring practice. Going through the process of planning to improve, acting to improve, observing, reflecting and taking action. As mentor and mentee we reflected on our own practices.	6	
TOTAL	20	

Total: _____ / 20

Appendix D: Mentor teacher short course manual

3.4.3 Participation in the community of practice

** To be completed by the group at the end of the programme*

Collaborative group-assessment

Criteria	Novice (0-1 marks)	Moderate(2-3 marks)	Excellent(4-5 marks)
Community of practice expectations, goals, roles, communication processes contemplated and determined	We struggled to develop our group identify by identifying our group expectations, goals and roles. We did not communicate in a productive peer-mentoring manner.	We did develop our group identify by identifying our group expectations, goals and roles. We however struggled to establish successful communicative peer-mentoring processes throughout the programme.	We developed our group identify by identifying our group expectations, goals and roles. We established successful communicative peer-mentoring processes throughout the programme.
Consideration of own and others' thinking preferences	We did not consider our own and others' thinking preferences during the community of practice sessions	We mainly considered our own but not really the other community of practice members' thinking preferences	We progressively considered our own and other members' thinking preferences throughout the programme.
We challenged old assumptions, beliefs and practices of mentoring to consider innovative mentoring types and practices	We did not challenge old assumptions, beliefs and practices of mentoring and did not consider innovative mentoring types and practices	We challenged old assumptions, beliefs and practices of mentoring, but struggled to incorporate innovative mentoring types and practices in the majority of our practices	We challenged old assumptions, beliefs and practices of mentoring. We considered innovative mentoring types and practices. We incorporated it all into our own practices.
We shared information, gave collegial support and engaged in critical reflections to redefine our goals and assess the progress made.	We did not successfully share information, gave collegial support or engaged in critical reflections. We did not redefine our goals or assess the progress made.	We successfully shared information, gave collegial support and engaged in critical reflections. We struggled to redefine our goals and critically assess the progress made.	We shared information, gave collegial support and engaged in critical reflections during this programme. We also redefined our community of practice goals and assessed the progress made through group reflection.

TOTAL: _____/20

_____ / 2= _____ /10

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3.4.4 Professional portfolio of evidence

For the final assessment of this short course, you are required to hand in a professional portfolio of evidence.

Your portfolio should include the following:

Title: "Mentor professional development: My self-empowerment in a community of practice".

You would complete e-mentoring worksheets before a community of practice session for your critical reflection. At the end of the programme you would compile everything together in an e-professional portfolio and send it to the facilitator electronically. Add the action learning session's forms.

Kindly consider the brief notes included in the checklist of what will be considered when marking are done.

Table of contents:

1. Introduction
2. My vision statement and personal professional slogan
3. Whole Brain® Thinking
 - 3.1 My HBDI® profile
 - 3.2 Reflection of my own thinking preference
4. Evidence of e-mentoring worksheets and action learning sessions
 - 4.1 Preparation for mentoring
 - 4.2 Pre-mentoring
 - 4.3 Mentoring
 - 4.4 Post-mentoring
5. Critical reflection
 - 5.1 Executive summary: Reflection own mentoring practice and professional development
6. Conclusion

<i>Consider the rubric as guideline to compile your professional portfolio of evidence.</i>

Appendix D: Mentor teacher short course manual

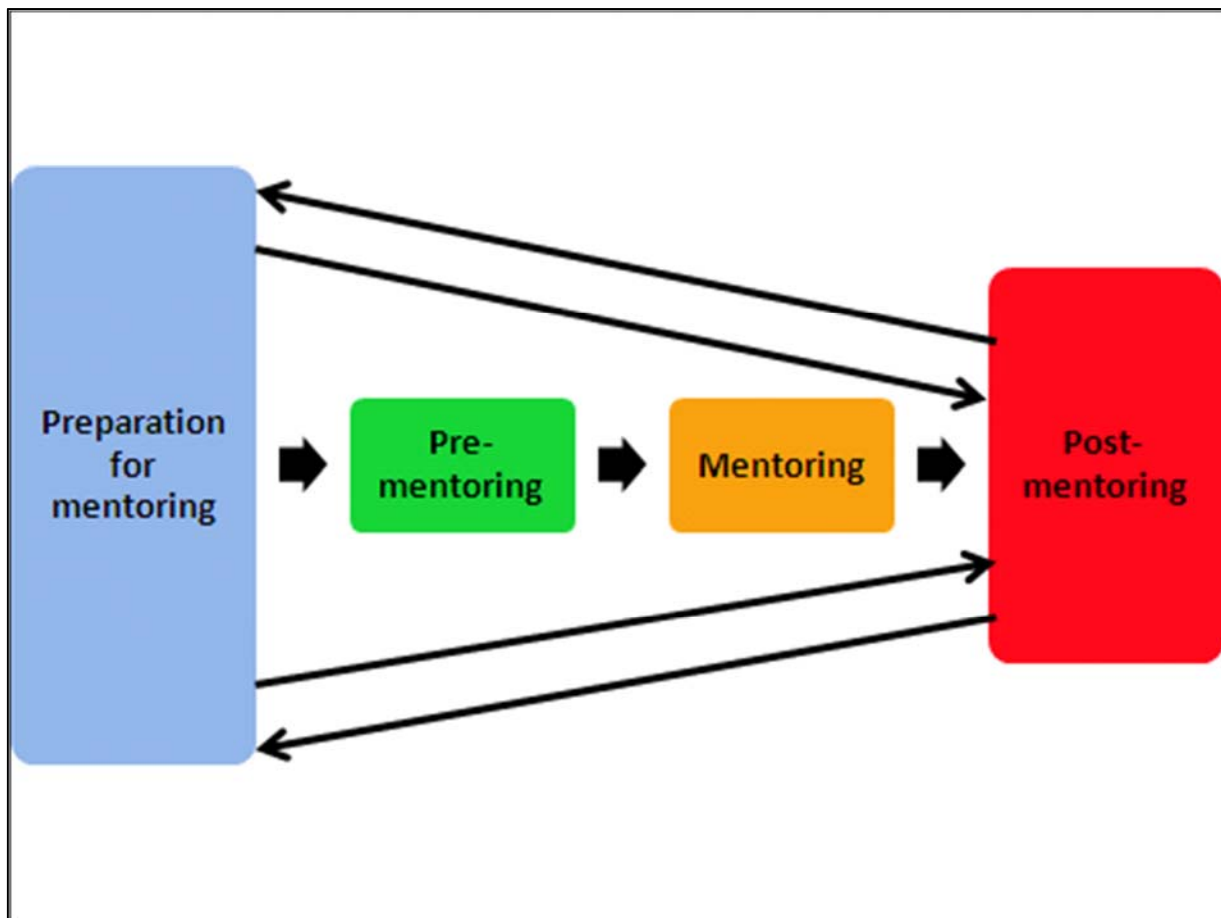
Checklist: Professional Portfolio of Evidence

Criteria	Mark	Mark allocated
1. Introduction <i>* Summary of what you included in the portfolio</i> <i>* Background: The years service you have as a teacher, your position in the school, years mentoring experience</i>	3	
2. Vision statement and personal slogan <i>* Your vision for your professional development (Mentoring, teaching, etc.). Consideration of your whole practice holistically. The logo and slogan you designed in e-mentoring worksheet 1 should be added here.</i>	5	
3. Whole Brain® Thinking 3.1 My HBDI® profile <i>* Include your profile</i> 3.2 Reflection of thinking preference <i>* Write one paragraph about your thinking preference. Reflect on its influence on your mentoring and teaching practices.</i>	5	
4. Evidence of e-mentoring and action learning opportunity worksheets 4.1 Preparation for mentoring(only the action learning worksheet) 4.2 Pre-mentoring 4.3 Mentoring 4.4 Post-mentoring <i>* All the worksheets to be completed and added.</i>	20	
5. Critical reflection 5.1 Executive summary: Reflection: Own mentoring practice and professional development	10	
6.Conclusion <i>* Write a short paragraph indicating what you included in this portfolio.</i> <i>* Also write a paragraph to indicate your own professional development during</i>	4	
<i>Finalisation of professional portfolio</i> <i>E-mailed or electronically sent to overseeing mentor/facilitator on time.</i> <i>Everything is included in the professional portfolio</i>	3	
TOTAL	50	

4. THE MENTORING PROCESS

The activities in this course are scheduled according to the following process:

Figure 2: Mentor and teacher self-empowerment mentoring process



Simultaneously you will conduct action learning in your own mentoring practice. Consider the following framework:

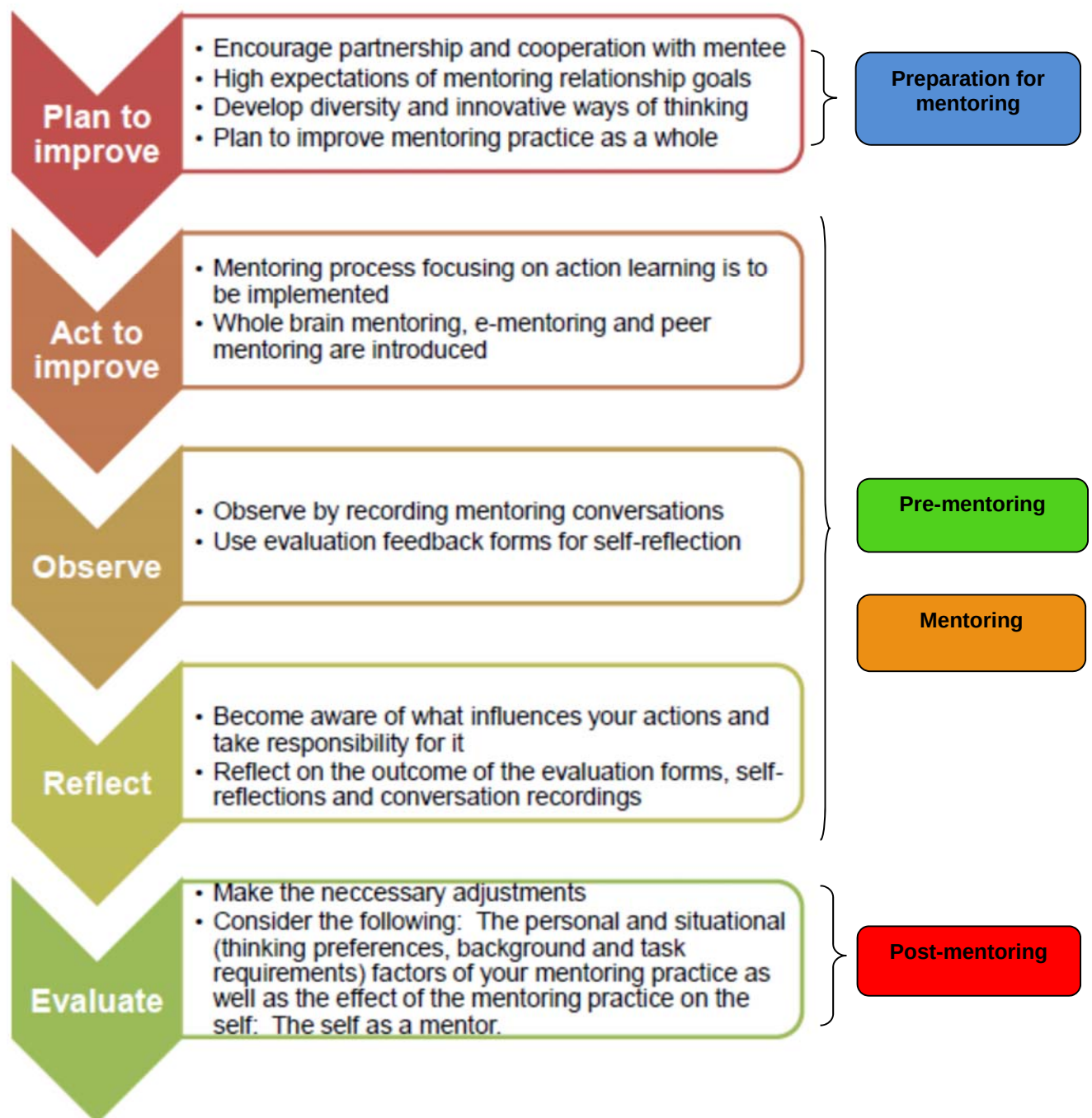


Figure 3: Action learning process

Appendix D: Mentor teacher short course manual

5. PHASE 1: PREPARATION FOR MENTORING

5.1 E-mentoring worksheet number 1 *(To be completed before the first session)*

Mentor self-empowerment mentoring process: Phase 1: Preparation for mentoring

Date	

Kindly complete the following questions for the first phase in this programme: Preparation for mentoring.

5.1.1 Personal reflection:

How do I want to be remembered?		
What are my personal goals for the next five years?		
What are my professional goals for the next five years?		
What is the most vital characteristic I have that makes me a quality mentor?		
What is my expectation of the community of practice I am part of?		
What is my expectation of my mentee?		
What do you consider as the most important role you have to fulfill during mentoring?		
Consider the 21 st century attributes on page 9 in the course material. What are the attributes you need to consider? What two attributes do you consider yourself to be an expert in?	Two attributes in need of professional development	Two attributes you are an expert in

Appendix D: Mentor teacher short course manual

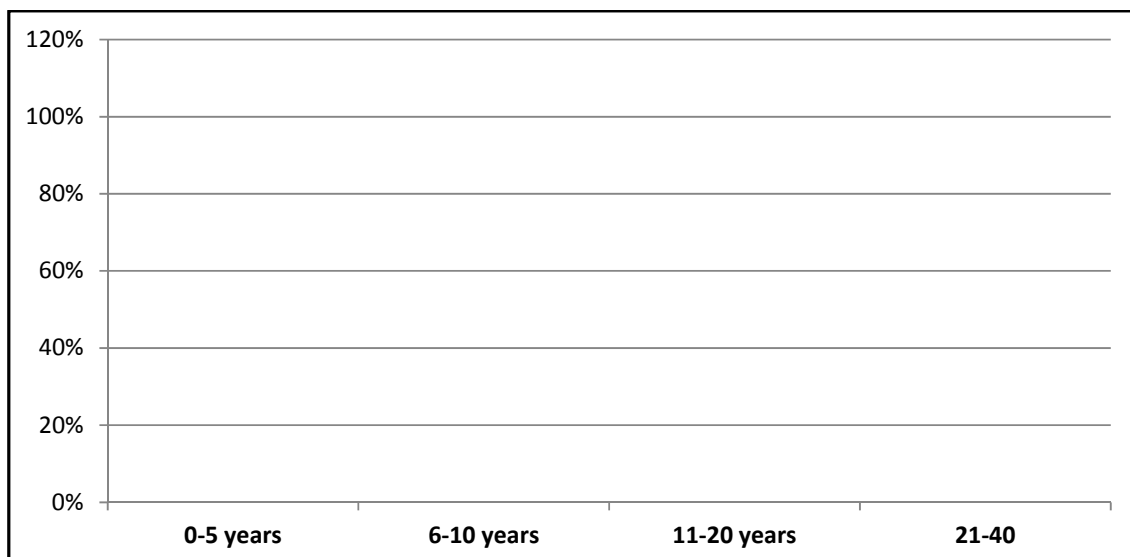
5.1.2 Personal SWOT analysis: Personal professional development

Kindly complete the following individually before the first session:

Personal SWOT analysis of my overall personal professional development and current practice:

My strengths (INTERNAL) 	My weaknesses (INTERNAL)
Opportunities in my professional development (EXTERNAL) 	Threats to my professional development (EXTERNAL)

5.1.3 Draw a line chart reflecting on how you developed professionally throughout your career:



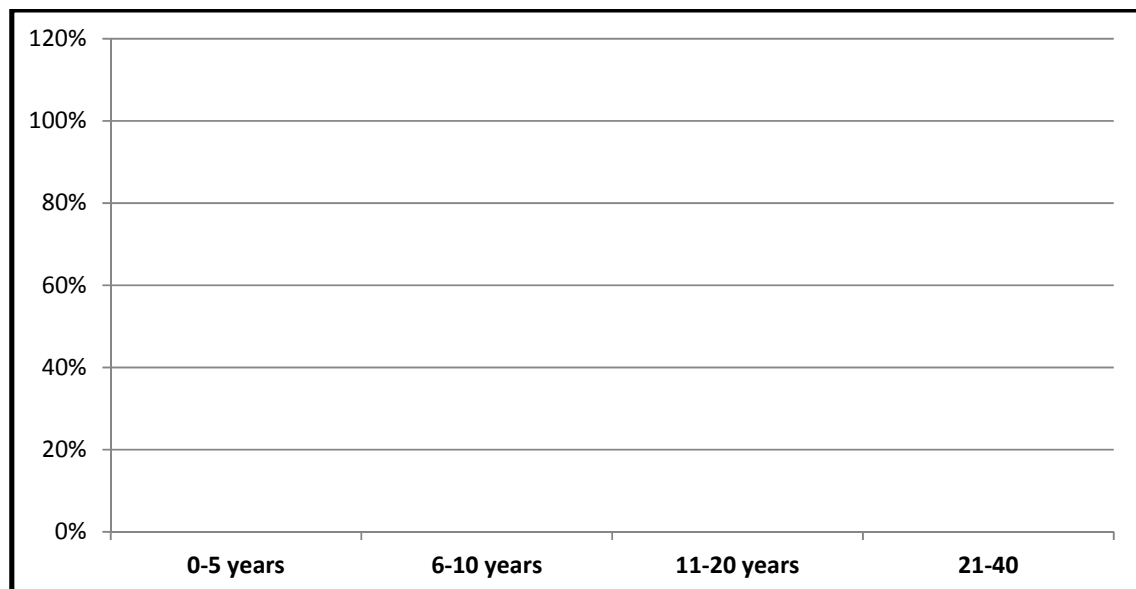
Appendix D: Mentor teacher short course manual

5.1.4 Personal SWOT analysis: Own mentoring practice:

The strengths of my mentoring practice 	The weaknesses in my mentoring practice
Opportunities in my mentoring practice 	Threats to my mentoring practice

5.1.5 Quality of own mentoring practice

Draw a line chart reflecting on the quality of your own mentoring practice throughout your career.



Appendix D: Mentor teacher short course manual

5.2 Community of practice session 1 *(To be completed in the first session by the group)*

Date	

5.2.1 Whole Brain group reflection and discussion: Community of practice: Mentoring practices

What? What are our expectations of this programme and the community of practice? What old assumptions, beliefs and current practices should be challenged when mentoring pre-service teachers? What are our goals in the community of practice? What challenges do we face in our own mentoring practices and how can it be overcome? What are the rules and communicative practices within our community of practice?	Why? Why should we consider our own and the other group members' way of thinking and doing? Why should we be innovative during mentoring?
How? How can we achieve quality mentoring to address the current challenges pre-service teachers face when entering the profession? Are they prepared for the profession? How can mentoring be more effective and easier to manage?	Who? Do you think mentor teachers should receive incentives for mentoring? Elaborate Do you think it is essential for mentor teachers to develop professionally? Elaborate How can we benefit more from mentoring pre-service teachers?

Appendix D: Mentor teacher short course manual

5.3 Action learning mentoring session 1 *(To be completed in the first session with your pre-service teacher)*

Phase 1: Preparation for mentoring

Complete the following when having a meeting with your mentee:

Date	

Share and discuss the following with your mentee:

5.3.1 Personal: Use one word to describe yourself in one word: (Consider your current practice and feelings)

Mentor	
Mentee	

5.3.2 Preparation for our mentoring relationship: Task analysis

Our expectations for this mentoring relationship and the programme:	Mentor	Mentee
What is our vision for the mentoring relationship: (Consider how you can empower yourselves during this process)		
The goals of the pre-service teacher during this teaching practice period in his/her own teaching practice:		
The goals of the mentor teacher for the mentoring process and his/her own professional development:		

5.3.3 SWOT analysis of our mentoring relationship in the beginning of this programme:

The strengths(internal)	The weaknesses(internal)
Opportunities (external)	Threats (external)

Appendix D: Mentor teacher short course manual

6. PHASE 2: PRE-MENTORING *(*To be completed individually before the next session)*

6.1 E-mentoring worksheet number 2

(You do not have to add this e-mentoring worksheet into the portfolio of evidence). Add 6.1.1 (Your profile under nr. 3 in the portfolio and the slogan and vision can be included in nr.2).

Mentor self-empowerment mentoring process: Phase 2: Pre-mentoring

Date	

Kindly complete the following questions for the second phase in this programme:

6.1.1 The Herrmann Brain Dominance Instrument®

Complete it online when the link is e-mailed to you.

6.1.2 Vision statement

Write down your vision statement: Kindly consider your professional development, mentoring- and overall teaching practice	

6.1.3 Personal professional slogan and logo

Design and develop your own personal slogan. You have to design a logo and add your slogan on a template in the "canva" website([canva.com](https://www.canva.com)) or do it in their app. Kindly then share it in electronic format on whatsapp with the rest of the group.

Kindly keep the following in mind: The slogan should be simple and short in length. Consider who you are, your professional practice (your overall teaching practice, your position in the school, the subject you are teaching and your mentoring practice). Also consider what your specialty is, what you want to achieve and why you are the best in your field. Remember that you are your own "brand".

My slogan: _____



Microsoft
Your potential. Our passion.

www.pinterest.com

www.pinterest.com.au

Appendix D: Mentor teacher short course manual

6.2 Community of practice session 2**To be completed during in the community of practice*

Date	

6.2.1 Whole Brain group reflection in our community of practice: Innovative mentoring

What is innovation during mentoring? What innovations can be introduced?	Why are innovation during mentoring important?
How can innovations be introduced into our practices in order to improve it? Also consider e.g. peer-mentoring, e-mentoring and whole brain mentoring?	Who would benefit? Who is responsible for innovation in a mentoring relationship or practice?

6.2.2 Community of Practice SWOT analysis: Thinking preferences

Consider the effect of knowing your own and the other members of the community of practice thinking preferences:

The strengths	The weaknesses
Opportunities	Threats

Appendix D: Mentor teacher short course manual

6.3 Action learning mentoring session 2

Phase 2: Pre-mentoring

** Record this session on audio and take photo evidence to use for your own self-reflection. Complete the following when having a short 15-30 minute meeting with your mentee:*

Date	

6.3.1 Personal:

Share your HBDI® profiles and discuss your thinking preferences

6.3.2 SWOT analysis: Thinking preferences in our mentor relationship

Considering the effect of considering our thinking preferences in the mentoring relationship:

The strengths	The weaknesses
Opportunities	Threats

Appendix D: Mentor teacher short course manual

6.3.3 Innovation into our own practices: Reflect on what you will introduce into your respective practices to make it more innovative and ensure quality:

Mentor: Own mentoring practice	Mentee: Own teaching practice

6.3.4 After recording the session: Reflect on your own mentoring practice by completing the following self-reflection form:

Appendix D: Mentor teacher short course manual

6.4 Mentor self-reflection form: Action learning during pre-mentoring phase

Observation Sheet: Use the recording and listen to the second mentoring session you had with your mentee. Replay it and mark in the column as instructed:

MENTORING MODELS

6.4.1 Make a mark in the columns indicating the model used during that period in the meeting. Also indicate who was doing the talking at that stage: (*Consider page 24 in course material*)

TIME	CLONING (instruct what to do)		NURTURING (parent role)		FRIENDSHIP (collaborative, reciprocal)		SELF-REGULATED (learn through observation, reflection and action: taking responsibility for learning)	
	Mentor	Mentee	Mentor	Mentor	Mentee	Mentee	Mentor	Mentee
0-5 minutes								
6-10 minutes								
10-15 minutes								
15-20 minutes								
21-25 minutes								
26-30 minutes								

MENTORING STYLES

6.4.2 Indicate with a mark how frequently you implemented or discussed the following during the meeting and mark when certain quadrant(s) were possibly activated during the relationship: (*Consider page 40 in the course material*)

TIME	Peer-mentoring	E-mentoring	Whole Brain mentoring	QUADRANT A	QUADRANT B	QUADRANT C	QUADRANT D
0-5 minutes							
6-10 minutes							
10-15 minutes							
15-20 minutes							
21-25 minutes							
26-30 minutes							

Appendix D: Mentor teacher short course manual

6.4.3 Reflection after the action learning session 2:

Reflect and answer the following questions in order to improve your own mentoring practice:

6.4.3.1 Mentoring model: What model did I mainly employ?

6.4.3.2 How can my pre-service teacher take more responsibility for their own learning?

6.4.3.3 Mentoring style: What mentoring style did I use for the most part?

6.4.3.4 What quadrant(s) were activated the most during the mentoring session?

6.4.3.5 How can whole brain mentoring be achieved (consider the comprehensive whole brain model – course material page 22)?

Appendix D: Mentor teacher short course manual

6.5 Evaluation and feedback questionnaire: Mentoring practice

The pre-service teacher will complete the following questions with regards to your mentoring relationship:

FEEDBACK QUESTIONNAIRE: PRE-SERVICE TEACHERS PHASE: PRE-MENTORING

Kindly complete the following feedback questionnaire by reflecting on your own mentoring experience during the teaching practice period thus far. Please complete it truthfully. Your answers will not influence your marks and are strictly confidential. Only the researcher will have access to the results. The data will be used by mentor teachers for reflection. Please indicate the applicable answer with an X.

1. PERSONAL DETAILS

1.1 Gender

Indicate your gender:

Female	Male

1.2 Home language

Specify your home language:

Afrikaans	English	IsiSwazi	IsiXhosa
IsiZulu	Ndebele	Northern Sotho	Sesotho
Tswana	Venda	XiTsonga	Other

2. MENTEE EXPERIENCE

2.1 Rate your mentoring experience thus far:

Negative	Somewhat negative	Somewhat positive	Positive

3. PREPAREDNESS FOR THE PROFESSION

3.1 Rate how prepared you consider yourself at this moment for the teaching profession:

Not at all prepared	Slightly prepared	Agreeably prepared	Exceptionally prepared

4. MENTORING MODEL

4.1 Select the mentoring model currently mainly used in your mentoring relationship:

Cloning (Mentor instruct me)	Nurturing (Mentor takes the role of a parent figure)	Friendship (A collaborative, reciprocal and co-constructed relationship. We are considered as peers)	Self-regulated (I am encouraged to take responsibility for my own learning and reflect)

5. MENTORING STYLES

5.1 Whole brain mentoring

5.1.1 Rate how often your mentor teacher is acknowledging and accommodating your thinking preference during mentoring:

Hardly ever	Few	Regularly	Almost always

5.1.2 Rate how frequently you are acknowledging and accommodating the thinking preference of your mentor teacher during mentoring:

Hardly ever	Few	Regularly	Almost always

Appendix D: Mentor teacher short course manual

5.1.3 To what extent do you agree that there is a shared vision between you and your mentor?

Strongly disagree	Disagree	Agree	Strongly agree

5.2 Peer-mentoring

5.2.1 Do you recognise that your mentoring relationship is interactive, accommodating and collaborative?

Strongly disagree	Disagree	Agree	Strongly agree

5.2.2 Rate to what extent you concur that you and your mentor teacher are valuing each others' development through critical reflection:

Strongly disagree	Disagree	Agree	Strongly agree

5.3 E-mentoring

5.3.1 To that extent do you agree that e-mentoring tools and resources are introduced in the mentoring process to supplement face-to-face mentoring? This might include for example e-mail, text, social media, etc.

Strongly disagree	Disagree	Agree	Strongly agree

6. RESPONSIBILITY FOR OWN LEARNING OR DEVELOPMENT

6.1 Consider the extent to which you are currently taking responsibility for your own learning during this teaching practice period:

Not taking responsibility	Taking slight responsibility	Taking an agreeable responsibility	Taking exceptional responsibility

6.2 What can you do to take more responsibility for your own learning?

Create and work to attain my own goals	Conceptualise my problems or ideas	Design ways to address my problems or ideas	Construct my own professionalism

6.3 Rate the extent to which your mentor teacher is currently taking responsibility for his or her own professional development during this teaching practice period by reflecting on their own practice and partaking in this programme.

Not taking responsibility	Taking slight responsibility	Taking agreeable responsibility	Taking exceptional responsibility

6.4 How can I contribute to improve this mentoring relationship?

Thank you for your time.

Appendix D: Mentor teacher short course manual

7. PHASE 3: MENTORING

7.1 E-mentoring worksheet number 3

Mentor self-empowerment mentoring process: Phase 3: Mentoring

Date	

Kindly complete the following questions for the third phase in this programme: Mentoring.

7.1.1 Personal reflection:

How can I take responsibility for my own professional development?	
My mentor identity: What do I consider in this phase of the programme as the mentoring model I should use during mentoring?	

7.1.2 Whole brain personal reflection: The use of action learning in my mentoring practice

Reflect on your previous mentoring practice or on the pre-mentoring phase's observation and reflection process you conducted in your own practice:

What should I improve?	Why improve my practice?
How can I improve my mentoring practice?	Who do I need to consider when improving my mentoring practice or who will be influenced or empowered?

Appendix D: Mentor teacher short course manual

7.2 Community of Practice session 3

Date	

7.2.1 Whole brain group reflection: Mentoring for the authentic teaching environment

What? What type of mentoring is necessary to prepare pre-service teacher for the realities of the profession?	Why? Why are some beginner teachers not prepared for the profession?
How? How should a mentor teacher and student be partnered?	Who? Who should be chosen to be a mentor teacher in order to prepare them for the authentic work environment?

7.2.2 SWOT analysis: Community of practice: The use of action learning for observation, reflection and action in our mentoring practices:

The strengths	The weaknesses
Opportunities	Threats

7.2.3 How can the weaknesses be changed to strengths?

7.2.4 How can the threats be changes to opportunities?

Appendix D: Mentor teacher short course manual

7.3 Action learning mentoring session 3

Phase 3: Mentoring – **Record this meeting and reflect on the observation sheet and self-reflection form attached.*

Complete when having a meeting with your mentee:

Date	

Share and discuss the following:

7.3.1 Reflection in practice: Mentee

7.3.1.1 Teacher roles

Discuss what role(s) do you as mentee feel you need to consider before entering the profession? Select one or two answers:

Facilitation of quality instruction and learning	
Interpretation and implementation of learning programmes and instructional media	
Handling of administrative duties	
Classroom management	
Addressing own professional development	
Being a researcher	
Developing a community, citizenship and pastoral role	
Design and management of learner assessment	
Being a subject specialist	
Being a phase specialist	

7.3.1.2 Instruction and learning: Lesson presentations

Identify instruction and learning aspect(s) or criteria you feel you need to consider: Select one or two answers:

Learner engagement	
Subject knowledge	
Innovative and creative ideas and activities	
Pedagogical content knowledge	
Teaching strategies	
Classroom management skills	
Resources(LTSM) and media usage	
Relevance of lesson to the learners' world	
Questioning technique	
Lesson progression	
Verbal communication	
Time management during lesson	
Non-verbal communication	
Setting of lesson outcomes	
Assessment of learners	
Research for lesson	
Lesson planning	
Reflection on own teaching practice	

Appendix D: Mentor teacher short course manual

7.3.1.3 Teacher professionalism

Identify the professional aspect(s) you need give attention to: Select one or two answers:

Personal time management	
Coordination of extra-mural activities	
Proficient management of own social media platforms	
Sound relations with the learners	
Sound relations with the parents	
Sound relations with the school staff	
Sound relations with the community	
Following a professional dress code	
Exhibiting professional classroom behavior	
Chalkboard or whiteboard writing skills	
Overhead projector usage	
Educational technology and multimedia usage (PowerPoint, smartboard)	
Teaching a virtual classroom	
Other.....	

7.3.2 Reflection in practice discussion in mentor relationship: Mentoring practice

7.3.2.1 Mentor: Consider the areas you want to improve in your own mentoring practice:

7.3.2.2 Consider the areas you want to address in your professional development

7.3.3 Whole brain reflection: Mentor and mentee: Responsibility for own development or learning:

What is needed for us to take responsibility for our own development or learning?	Why is it important to take responsibility for our own development or learning?
How can we take responsibility for or own development or learning?	Who should take responsibility for the challenges in our practices? Who would benefit from taking responsibility of our learning or professional development?

Appendix D: Mentor teacher short course manual

7.4 Mentor self-reflection form: Action learning during mentoring phase

Observation Sheet: Use the recording and listen to the third mentoring session you had with your mentee. Replay it and mark in the column as instructed:

MENTORING MODELS

7.4.1 Make a mark in the columns indicating the model used during that period in the meeting. Also indicate who was doing the talking at that stage: (Consider page 24 in course material)

TIME	CLONING (instruct what to do)		NURTURING (parent role)		FRIENDSHIP (collaborative, reciprocal)		SELF-REGULATED (learn through observation, reflection and action: taking responsibility for learning)	
	Mentor	Mentee	Mentor	Mentor	Mentee	Mentee	Mentor	Mentee
0-5 minutes								
6-10 minutes								
10-15 minutes								
15-20 minutes								
21-25 minutes								
26-30 minutes								

MENTORING STYLES

7.4.2 Indicate with a mark how frequently you implemented or discussed the following during the meeting and mark when certain quadrant(s) were possibly activated during the relationship: (Consider page 40 in the course material)

TIME	Peer-mentoring	E-mentoring	Whole Brain mentoring	QUADRANT A	QUADRANT B	QUADRANT C	QUADRANT D
0-5 minutes							
6-10 minutes							
10-15 minutes							
15-20 minutes							
21-25 minutes							
26-30 minutes							

Appendix D: Mentor teacher short course manual

7.4.3 Reflection after the action learning session 3:

Reflect and answer the following questions in order to improve your mentoring practice:

Mentoring model: What model did I mainly employ in this action learning session?

7.4.3.1 How can my pre-service teacher take more responsibility for their own learning?

7.4.3.2 Mentoring style: What mentoring style did I mostly use?

7.4.3.3 Was whole brain mentoring achieved? Were all the quadrant activated? Elaborate:

7.4.3.4 What mentoring styles were introduced into your practice in this session in order to improve it?

Appendix D: Mentor teacher short course manual

7.5 Evaluation and feedback questionnaire: Mentoring practice

The pre-service teacher will complete the following questions with regards to your mentoring relationship:

FEEDBACK QUESTIONNAIRE: PRE-SERVICE TEACHERS PHASE: MENTORING

Kindly complete the following feedback questionnaire by reflecting on your mentoring experience during the teaching practice period. Please complete it truthfully. Your answers will not influence your marks and are strictly confidential. Only the researcher will have access to the results. The data will be used by mentor teachers for reflection. Please indicate the applicable answer with an X.

1. PERSONAL DETAILS

1.1 Gender

Indicate your gender:

Female	Male

1.2 Home language

Specify your home language:

Afrikaans	English	IsiSwazi	IsiXhosa
IsiZulu	Ndebele	Northern Sotho	Sesotho
Tswana	Venda	XiTsonga	Other

2. MENTEE EXPERIENCE

2.1 Rate your mentoring experience thus far:

Negative	Somewhat negative	Somewhat positive	Positive

3. PREPAREDNESS FOR THE PROFESSION

3.1 Rate how prepared you consider yourself at this moment for the teaching profession:

Not at all prepared	Slightly prepared	Agreeably prepared	Exceptionally prepared

4. MENTORING MODEL

4.1 Select the mentoring model currently mainly used in your mentoring relationship:

Cloning (Mentor instruct me)	Nurturing (Mentor takes the role of a parent figure)	Friendship (A collaborative, reciprocal and co-constructed relationship. We are considered as peers)	Self-regulated (I am encouraged to take responsibility for my own learning and reflect)

5. MENTORING STYLES

5.1 Whole brain mentoring

5.1.1 Rate how often your facilitator is acknowledging and accommodating your thinking preference during mentoring:

Hardly ever	Few	Regularly	Almost always

Appendix D: Mentor teacher short course manual

5.1.2 Rate how frequently you are acknowledging and accommodating the thinking preference of your mentor teacher during mentoring:

Hardly ever	Few	Regularly	Almost always

5.1.3 To what extent do you agree that there is a shared vision between you and your mentor?

Strongly disagree	Disagree	Agree	Strongly agree

5.2 Peer-mentoring

5.2.1 Do you recognise that your mentoring relationship is interactive, accommodating and collaborative?

Strongly disagree	Disagree	Agree	Strongly agree

5.2.2 Rate to what extent you concur that you and your mentor teacher are valuing each other's development through critical reflection:

Strongly disagree	Disagree	Agree	Strongly agree

5.3 E-mentoring

5.3.1 To that extent do you agree that tools and resources are introduced in the mentoring process to supplement face-to-face mentoring? This might include for example e-mail, text, social media, etc.

Strongly disagree	Disagree	Agree	Strongly agree

6. RESPONSIBILITY FOR OWN LEARNING OR DEVELOPMENT

6.1 Consider the extent to which you are currently taking responsibility for your own learning during this teaching practice period:

Not taking responsibility	Taking slight responsibility	Taking an agreeable responsibility	Taking exceptional responsibility

6.2 What can you do to take more responsibility for your own learning?

Create and work to attain my own goals	Conceptualise my problems or ideas	Design ways to address my problems or ideas	Construct my own professionalism

6.3 Rate the extent to which your mentor teacher is currently taking responsibility for his or her own professional development during this teaching practice period by reflecting on their own practice and partaking in this programme.

Not taking responsibility	Taking slight responsibility	Taking agreeable responsibility	Taking exceptional responsibility

6.4 How can I contribute to improve this mentoring relationship?

Thank you for your time.

Appendix D: Mentor teacher short course manual

8.Phase 4: Post-mentoring

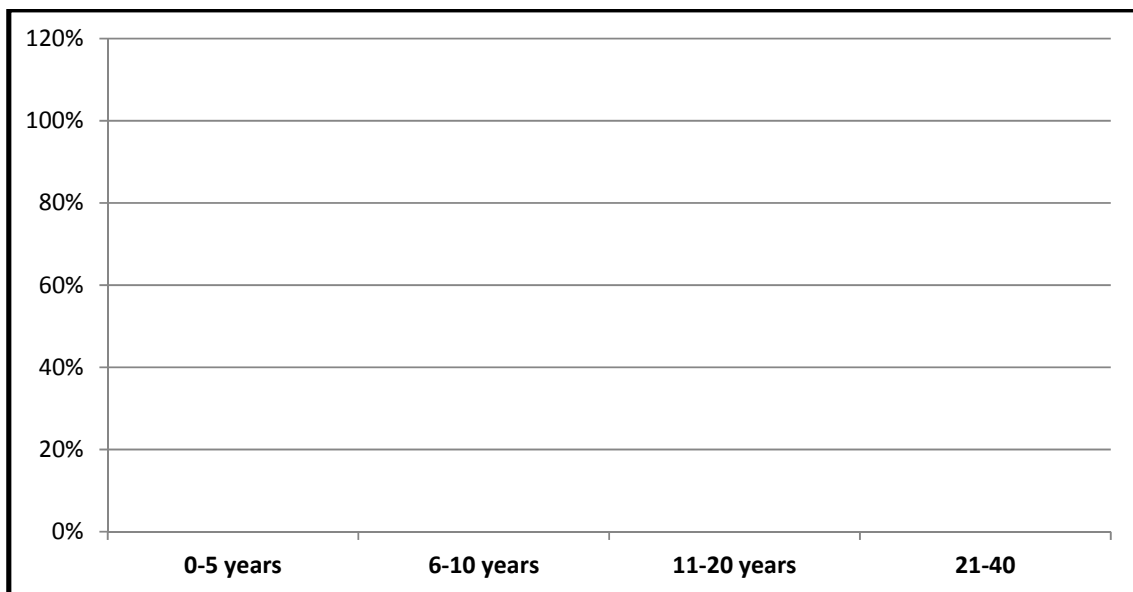
Mentor self-empowerment mentoring process: Phase 4: Post-mentoring

8.1 E-mentoring worksheet number 4

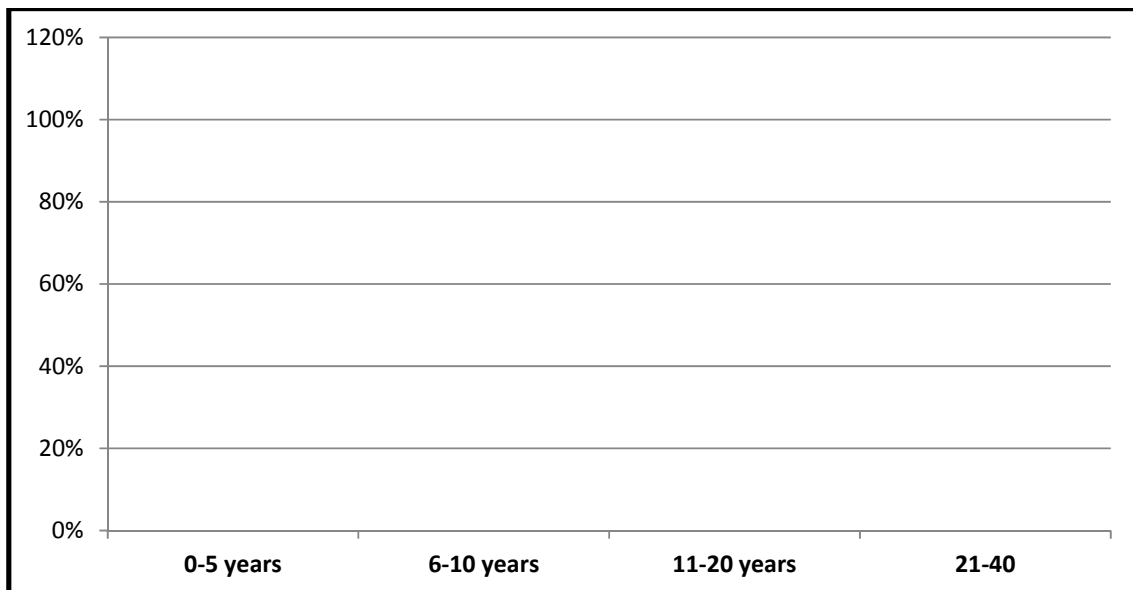
Date	

Kindly complete the following questions for the third phase in this programme: Post-mentoring.

8.1.1 Draw a line chart reflecting on how you developed professionally throughout your career to your current situation after this programme:



8.1.2 Draw a line chart reflecting on the quality of your mentoring practice throughout your career to where you currently are after this programme:



8.1.3 Whole brain reflection on own professional development and practice

What influence did this programme have on my self-empowerment and mentoring practice?	Why did it have this influence?
How will it influence my practice now or in the future?	Who will benefit/not benefit??

8.1.4 Reflect on the SWOT analyses you did on pages 16 and 17 in this manual in e-mentoring worksheet 1.

8.1.4.1 How can or did the stated weaknesses to your professional development change to strengths?

8.1.4.2 How can or did the stated threats to your professional development change to opportunities?

8.1.4.3 How can or did the stated weaknesses to your mentoring practice change to strengths?

8.1.4.4 How can or did the threats to you mentoring practice change to strengths?

8.2 Which of the attributes you wanted to consider as stated in the e-mentoring worksheet 1, did you address during this programme?

8.3 Complete the e-mentoring self-assessment rubric on page 9 in the manual individually for your professional portfolio of evidence.

8.2 Community of practice session 4: Post-mentoring

Date	

8.2.1 Whole brain group reflection: Community of practice

What? What was the influence of being part of the COP on our professional development and mentoring practice?	Why? Why is or is it not important to be part of a COP ?
How? How will our practices be influenced now or in the future?	Who? Who is/was or might still be affected?

8.2.2 Community of Practice SWOT analysis: Mentor teacher professional development programme

The strengths	The weaknesses
Opportunities	Threats

8.2.3 How would you recommend can the weaknesses be changed to strengths?

8.2.4 How can the threats to this programme be altered into opportunities?

8.2.5 Complete the group self-assessment rubric on page 10 in the course manual together as a group.

Appendix D: Mentor teacher short course manual

8.3 Action learning mentoring session 4: Phase 4: Post- mentoring

Complete the following when having a meeting with your mentee:

Date	

Share and discuss the following with your mentee:

8.3.1 Personal: At the end of this programme describe yourself in one word: Consider your self-empowerment journey:

Mentor	
Mentee	

8.3.2 Post-mentoring: Task analysis

Was our expectations met for of this mentoring relationship and programme met? Elaborate	Mentor	Mentee
What are our respective visions for our future practices after this programme?	Mentor: Professional development	Mentee: Professionalism
	Mentor: Mentoring practice	Mentee: Teaching practice
Did the pre-service teacher achieve his/her goals during the teaching practice period in his/her own teaching practice? Elaborate		
Did the mentor teacher realise his/her goals for the mentoring process and for his/her own professional development? Elaborate		

8.3.3 SWOT analysis of our mentoring relationship at the end of this programme

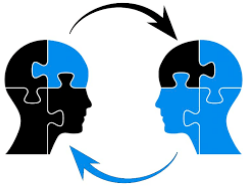
The strengths(internal)	The weaknesses(internal)
Opportunities (external)	Threats (external)

8.3.4 Complete the peer self-assessment checklist together on page 9 of the course manual.

9. REFLECTION: OWN MENTORING PRACTICE

9.1 Executive summary

Kindly complete the following headings explained in the following executive summary. Design your own in Word or in PowerPoint to reflect on the action learning process you introduced into your practice. Kindly only use one page or one slide. You can change the font, format, pictures, etc. as you prefer.

Executive summary: Mentoring practice and professional development: Name _____	
Mentoring types introduction into my practice Peer mentoring: Whole Brain Mentoring: E-mentoring:	Action learning in own mentoring practice: <i>Self-reflection paragraph</i> - Action learning session 2: Pre-Mentoring - Action learning session 3: Post-mentoring
 www.acornhouse.school	Responsibility for own development How did I take responsibility for my own professional development?
Innovation Possible other innovative ideas I incorporated into my mentoring practice or:	Community of practice Influence of participation on my professional development

PRE-SERVICE TEACHER SELF-REGULATED PROFESSIONALISM



Mentor and pre-service teacher relationship

Pre-service teacher course material

Compiled by:

Ms. Tanya Smit

Facilitator:

Ms. Tanya Smit

Programme leader:

Prof. P.H. du Toit

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Learning brings about change. Change means growth, and growth is a continuous process – for as long as we live. Sometimes learning is intentional, sometimes incidental.
**De Boer, Du Toit and Bothma
 2015**

TERMINOLOGY

Pre-service teacher	Student in his/her final year of enrolment for a teaching degree but who is not a qualified teacher yet.
Mentor teacher	Cooperating, school-based teacher whose role in teacher preparation is essential ¹² .
Community of Practice	Collective learning where a group of people share a concern or passion for something they do and learn to do better as they interact regularly ³ .
Self-empowered professional	A professional taking responsibility for his or her own development. It is a voyage of discovery where one discovers who one is, what one is capable of, and what meaning this has for one's life as a professional ⁴ .
Whole Brain® Thinking	An account of how people think and learn. The brain is designed to be whole ⁵ and this type of thinking requires a balance of its four core modes of thinking (based on the four quadrants of the brain) ⁶⁷ .
Mentoring	Mutual and collaborative professional learning between two individuals ⁸ .
Herrmann Brain® Dominance Instrument (HBDI)	The Herrmann Brain Dominance Instrument (HBDI®) is a questionnaire consisting of 120 items that quantify thinking preferences. The results of the questionnaire are a visual design of the person's thinking preferences. A HBDI® profile provides scientifically validated information to understand one's own learning, strengths and learning avoidances ⁹ .
Thinking preferences	Thinking preferences are not fixed personality traits, but are predominantly seen as learned patterns of behaviour ¹⁰ .
Action learning	Being an active participant in one's own learning to ensure goals are realised ¹¹ .
Peer-mentoring	A mentoring relationship that is collaborative and interactive.
Self-regulated professionalism	It combines professional development and self-regulated learning. The latter is self-regulated thoughts, views and actions ¹² . It is therefore proactive and about empowering ourselves. It is a process, not an occurrence ¹³ .

¹Clark, S.K. & Byrnes, D. (2012). Through the eyes of the novice teacher. *Teacher Development*, 16(1): 43-54.

²Ambrosetti, A., Knight, B.A. & Dekkers, J. (2014). Maximizing the potential of mentoring: A framework for pre-service teacher education. *Mentoring and Tutoring: Partnership in Learning*, 22(3): 224-239.

³Wenger, E. (2011). *Communities of practice: A brief introduction*.

<https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/11736/A%20brief%20introduction%20to%20CoP.pdf?sequence>

⁴Hugo, J.F.M., Slabbert, J., Louw, J.M., Marcus, T.S., Bac, M., Du Toit, P.H. & Sandars, J.E. (2012). The clinical associate curriculum – the learning theory underpinning the BCMP programme at the University of Pretoria. *African Journal of Health Professions Education*, 4(2):128-131.

⁵Hughes, M., Hughes, P. & Hodgkinson, I.R. (2016). In pursuit of a 'whole-brain' approach to undergraduate teaching: Implications of the Herrmann brain dominance model. *Studies in Higher Education*, 42(12): 1-17.

⁶Herrmann, N. (1989). *The creative brain*. North Carolina: The Ned Herrmann Group.

⁷Herrmann, N. (1990). *The creative brain*. Lake Lure, NC: Herrmann International.

⁸Zachary, L. (2005). *Creating a mentoring culture: The organization's guide*. San Francisco: Jossey-Bass.

⁹Herrmann, N. (Ed.) (1995). *The creative brain*, (2nd edition). USA: Quebecor Printing Book Group.

¹⁰Coffield F, Moseley D, Hall, E. & Ecclestone, K. (2004). *Learning styles and pedagogy in post 16-learning: A systematic and critical review*. London: Learning and Skills Research Centre. Available at <http://skills.nl/lerenleren/bronnen/Learning%20styles%20by%20Coffield%20e.a.pdf>.

¹¹Hugo, J.F.M., Slabbert, J., Louw, J.M., Marcus, T.S., Bac, M., Du Toit, P.H. & Sandars, J.E. (2012). The clinical associate curriculum – the learning theory underpinning the BCMP programme at the University of Pretoria. *African Journal of Health Professions Education*, 4(2): 128-131.

¹²Zimmerman, B. (2000). Self-regulatory cycles of learning. In: G. A. Straka (Ed.). *Conceptions of self-directed learning, theoretical and conceptual considerations*. New York: Waxman

¹³Loucks-Horsley, S., Hewson, P. & Love, N. (1998) *Designing Professional Development for teachers of mathematics and science*. Thousand Oaks, CA: Corwin Press.

1. INTRODUCTION

1.1 Welcome

J.R.R. Tolkien once said: “Not all who wander are lost.” I invite you to join me on a journey of self-empowerment¹⁴. The focus of this programme is addressing your self-regulated professionalism and preparing you for the realities of the profession.

As a pre-service teacher you will play a central role in future in the transformation of education¹⁵ in South Africa. The question you will have to ask yourself is: *How do I become an instrument of change and where would this journey begin?* Any endeavor would start with taking responsibility for your professionalism before entering the profession. This is your opportunity to be self-exploratory. In this programme we start with the *self* – the *self* as a student and the *self* within a community of practice¹³ and in the mentoring relationship with your mentor.

1.2 Purpose statement

The aim of this programme is to empower pre-service teachers with a view to becoming innovative and reflective in their classroom practice. It focuses on Whole Brain® Thinking, action learning, a community of practice and self-regulated learning. You will not be formally assessed in this programme, but you will hand in a portfolio of evidence for your own professionalism. You have the choice to add this to your Teaching Practice portfolio to your mentor lecturer.

1.3 Critical cross-field outcomes

The critical cross-field outcomes encapsulate the skills, knowledge and values that contribute to personal success as well as to your community, practice and nation. They are broad, generic cross-curricular outcomes and imperative when entering the profession.

¹⁴Smit, T. & Du Toit, P.H. (2016). Transforming beginner teacher mentoring interventions for social reform. *South African Journal of Education*, 36(3): 1-12.

¹⁵Engelbrecht, J. & Harding, A. (2008). The impact of the transition to outcomes-based teaching on university preparedness in Mathematics in South Africa. *Mathematics Education Research Journal*, 20(2): 57-70.

As a teacher you have to be able to do the following:

- 1 Identify and solve problems in your classroom practice and make decisions using critical and creative thinking;
- 2 work effectively with other members of a community of practice;
- 3 organise and manage yourself and your teaching activities responsibly and effectively;
- 4 use action learning in your own practice;
- 5 communicate effectively in the community of practice and with your mentor teacher using visual, symbolic and/or language skills in various modes;
- 6 use technology effectively in your practice and critically show responsibility towards your own learning.

In order to contribute to your professionalism which influences the school you are or will be working at, this programme makes you aware of the importance of the developmental outcomes that expect you to do the following:

- 1 Reflect on and explore a variety of strategies to learn more effectively as a professional;
- 2 participate responsibly in a community of practice and mentoring relationship;
- 3 be culturally and aesthetically sensitive across a range of social contexts.

These critical cross-field and developmental outcomes and programme intentions are directly linked to the following attributes of 21st century education.

1.4 Attributes of the 21st century

Currently unprecedented demands are made on the education sector regarding, for example, advances in information and communication technologies¹⁶. We are living in a world that is more interconnected than ever before. As pre-service teacher you have to consider the following characteristics of 21st century education as seen in table 1, for our own teaching practice:

¹⁶Guo, L. (2014). Preparing teachers to educate for 21st century global citizenship: Envisioning and enacting. *Journal of global citizenship & equity education*, 4(1): 1-23.

Table 1: Attributes of 21st century education¹⁷

Identifying, analysing real-life problems with a view to solving them in a creative fashion	Being able to communicate by verbal and visual means	Reflecting on one's execution of tasks and finding ways to become more effective	Developing professionalism
Managing change	Using technology	Becoming a visionary practitioner	Enacting leadership skills
Organising and managing self	Developing people skills with a view to developing others	Being able to contribute as a member of a community of practice	Demonstrating quality citizenship attributes
Being a lifelong learner	Acting as a role-model	Becoming a reflexive practitioner who builds professionalism through a process of self-enquiry	Being action-orientated
Integrating information and information technology		Developing entrepreneurial capabilities	Developing an appreciation and an understanding of the "knowledge economy"

As citizens and educators in the 21st century we are required to reflect critically on the attributes listed in Table 1 for our own development. In this programme you will be in collaborative relationships during the community of practice sessions and within your mentoring relationship with your mentor.

1.5 Specific outcomes

This programme invites you to do the following:

- Cultivate your professionalism as a pre-service teacher
- use action learning to become a self-regulated professional;
- explore and understand Whole Brain® learning in order to apply the principles in your practice;

¹⁷Du Toit, P.H. (2017). *Innovative mentoring in Higher Education*. Workshop, 19 September. University of Pretoria.

- become an active member of a community of practice;
- execute a SWOT analysis for observation, reflection and action in your classroom practice.

1.6 Programme schedule

Table 2: Programme schedule

Session	Theme	Involvement	Duration and place	Time and date	Facilitator
1: Preparation for empowerment	Introduction. Execution of initial SWOT analysis. Expectations of the programme. Establishment of a community of practice. Action learning	Community of practice	60 minutes University of Pretoria: Groenkloof Aldoel Building Room 2-87	Before commencement of teaching practice period	Ms. T. Smit
2: Process	Herrmann Brain® Dominance Instrument(HBDI) Whole Brain® Thinking Innovation into practice	Individual completion Community of practice	120 minutes University of Pretoria: Groenkloof: Aldoel Building Room 2-87	On the Internet: In own time Commencement of teaching practice period	Herrmann Institute Prof. P.H. du Toit and Ms. T. Smit
3: Product	Critical reflection Evaluation Execute final SWOT analysis	Community of practice	60 minutes Groenkloof University of Pretoria: Aldoel Building Room 2-87	During or after teaching practice period	Ms. T. Smit

The schedule for the pre-service programme is based on the following self-empowerment process for mentoring outlined in figure 1.

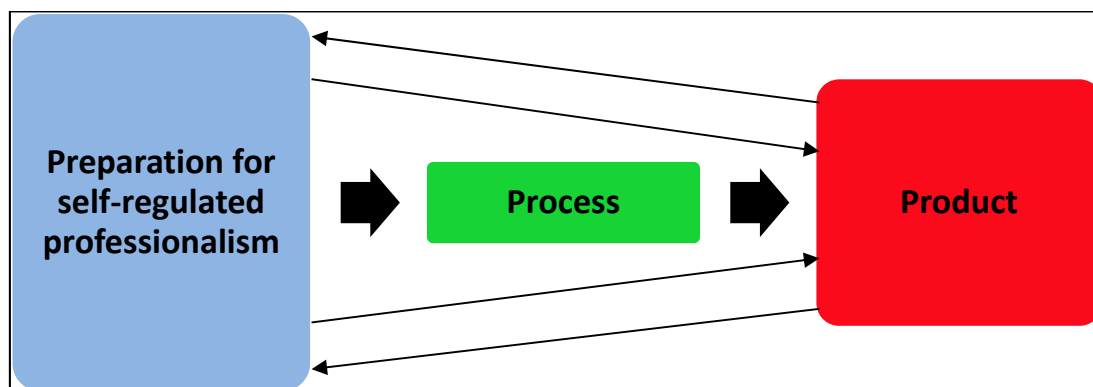


Figure 1: Pre-service teacher self-regulated professionalism process

The following phases illustrated in table 3^{18,19} will be used during the community of practice sessions. For your own self-empowering professional development these phases need to be regarded as a process, not an event.

Table 3: Phases in the self-empowerment action learning process

Preparation for self-regulated professionalism	In this phase we lay the foundation for your empowerment as a collective. A community of practice is established with other students. We as a group contemplate the expectations in your own teaching practice. We consider the “self”. The first action learning process takes place.
Process	The challenges you face are considered and the second action learning process takes places. Whole Brain® Thinking and your Herrmann Brain profile are considered. The second action learning process takes place.
Product	The last phase of the self-regulated professionalism process entails self-reflection about your professional development and teaching practice. In the mentoring relationship and in the community of practice it focuses on redefining goals and visions or assessing the progress made.

¹⁸Ambrosetti, A., Knight, B.A. & Dekkers, J. (2014). Maximizing the potential of mentoring: A framework for pre-service teacher education. *Mentoring and Tutoring: Partnership in Learning*, 22(3): 224-239.

¹⁹Biggs, J.B. (1985). The role of metalearning in study processes. *British Journal of Educational Psychology*, 55: 185-212.

2. SELF-REGULATED PROFESSIONALISM

When you start off in the education profession you will have to take responsibility for your own professional development. Most teachers in South Africa do not have access to continuous quality professional development opportunities²⁰. Professional development programmes are considered necessary for both novice and experienced teachers. In 2012 The Bill and Melinda Gates Foundation found that teachers consider effective, meaningful professional development to be critical in their practice²¹. The more traditional approaches used include short workshops or conferences that are less effective in reaching one's goals. In this programme the challenging and transformational self-regulated professionalism approach to professional development is highlighted²². It is graphically illustrated in figure 2.

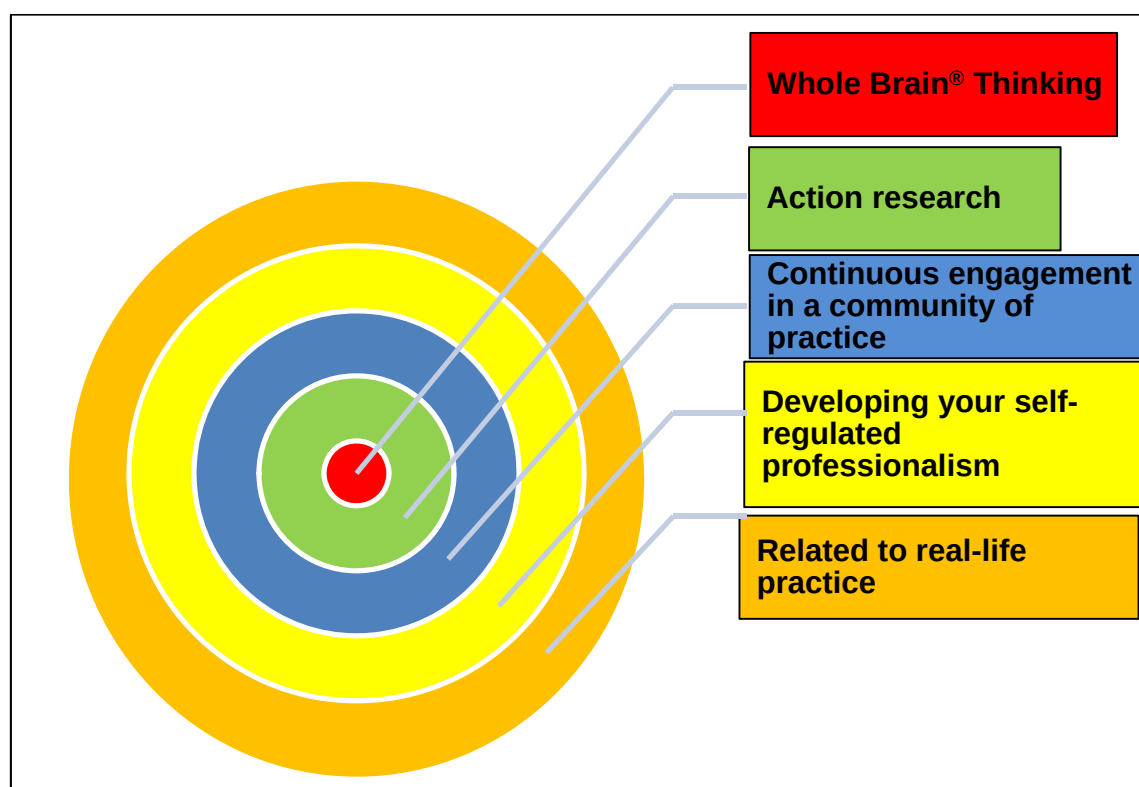


Figure 2: Pre-service teacher approach to self-empowerment professional development

²⁰Department of Basic Education. (2015). *Professional Learning Communities: A guideline for South African Schools: GDE*

²¹www.scholastic.com/primarysources/pdfs/Gates2012_full.pdf

²² Starkey, L., Yates, A., Meyer, L.H., Hall, C., Taylor, M., Stevens, S.&Toia, R. (2009). Professional development design: Embedding educational reform in New Zealand. *Teaching and Teacher Education*, 25: 181-189. DOI: 10.1016/j.tate.2008.08.007

The approaches used in your professional development in this programme have Whole Brain® Thinking at their core²³. You will have the opportunity to set goals, celebrate your efforts, reflect on and challenge your problems in our community of practice. The design and direction of these sessions will be determined by you and the other pre-service teachers.

To ensure that this self-regulated professional development approach is effective and authentic, it must focus on your own practice²⁴. You will therefore be offered the opportunity to interact with other students during community of practice sessions. This will be done in the form of peer-mentoring where we will challenge and support one another. We will engage in discussions on how to become innovative and address your practice. After every session you will be expected to take responsibility for your own development by implementing action learning in your own classroom practice. As an integral part of action learning you will need to reflect critically.

NOTES

²³De Boer, A-L., Du Toit, P.H. & Bothma, T. (2015). Activating whole brain® innovation: A means of nourishing multiple intelligence in higher education. *The Journal for Transdisciplinary Research in Southern Africa*: Special edition: Re-enchantment, 11(2): 55-72.

²⁴Friden, K., Hanegan, N. & Nelson, C.R. (2009). Authentic and simulated professional development: Teachers reflect what is modeled. *School Science and Mathematics*, 109(2): 79-94.

2.1 Whole Brain® Thinking



Ned Herrmann, Founder of Herrmann International

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Whole Brain® Thinking focuses on using one's whole brain, not just the parts one might feel most comfortable with. What one feels most comfortable with is labelled our brain dominance. It is expressed in the way in which we learn, understand, solve problems, express ourselves, teach, etc²⁵.

The Herrmann Whole Brain® Model (figure 3) illustrates the four quadrants of the brain that show the thinking preferences of individuals. These preferences have an impact on nearly everything we do and encompass all human behaviour²⁶. Understanding your thinking style preferences provides the following:

- A new perspective of yourself and the people you deal with on a daily basis ²⁷;
- An account of how we think, it values diversity and argues for mutual understanding²⁸;
- the ability to get better results when leveraging your own thinking preferences and stretching to the other quadrants of the brain when necessary, in order to be a whole brain thinker and teacher.

²⁵Hughes, M., Hughes, P. & Hodgkinson, I.R. (2016). In pursuit of a 'whole-brain' approach to undergraduate teaching: Implications of the Herrmann brain dominance model. *Studies in Higher Education*, 42(12): 1-17.

²⁶Herrmann, N. (1995). *The creative brain* (2nd edition). USA: Quebecor Printing Book Group.

²⁷Herrmann, N. (2000). *Herrmann Brain Dominance Instrument thinking styles assessment*. Pretoria: HBDI.

²⁸De Jager, T. (2011). *Beginner-teacher professional development: An action research approach to mentoring*. M.Ed. dissertation, University of Pretoria.

The human brain is fascinating and considered one of the wonders of the world. The following are a few facts about this organ and its development:

Table 4: Facts about the human brain²⁹

1.4 kg of unlimited potential	Contains 2 trillion neurons	In the last twenty years knowledge progressed more than in the last twenty centuries

The Herrmann Brain® Dominance Instrument (HBDI®) as seen in Figure 3 was developed for people to become aware of their own thinking preferences to be used in one's personal and professional life³⁰. Profiles are considered as neither good nor bad, right or wrong³⁰. Differences in thinking preferences might be both a blessing and a curse during mentoring and in communities of practice. The awareness of our own and others' thinking preferences may promote harmony, tolerance and effective communication³¹.

Teaching like other activities in our daily lives, requires a balance between all four quadrants of the brain. For quality teaching, you need to adapt to the preferences of the learner. This will improve your teaching practice and will contribute to your becoming a self-empowered professional, regulating your own learning and professionalism. The following Herrmann Whole Brain® Dominance Instrument (figure 3) is used to enhance your understanding of how you think and learn:

²⁹Herrmann, N. (2000). *Herrmann Brain Dominance Instrument Thinking Styles Assessment*. Pretoria: HBDI

³⁰ Herrmann, N. (1995). *The creative brain*. (2nd edition). USA: Quebecor Printing Book Group.

³¹Greyling, W.J. & Du Toit, P.H. (2008). Pursuing a constructivist approach to mentoring in the higher education sector. *South African Journal of Higher Education*, 22(5): 957-980.

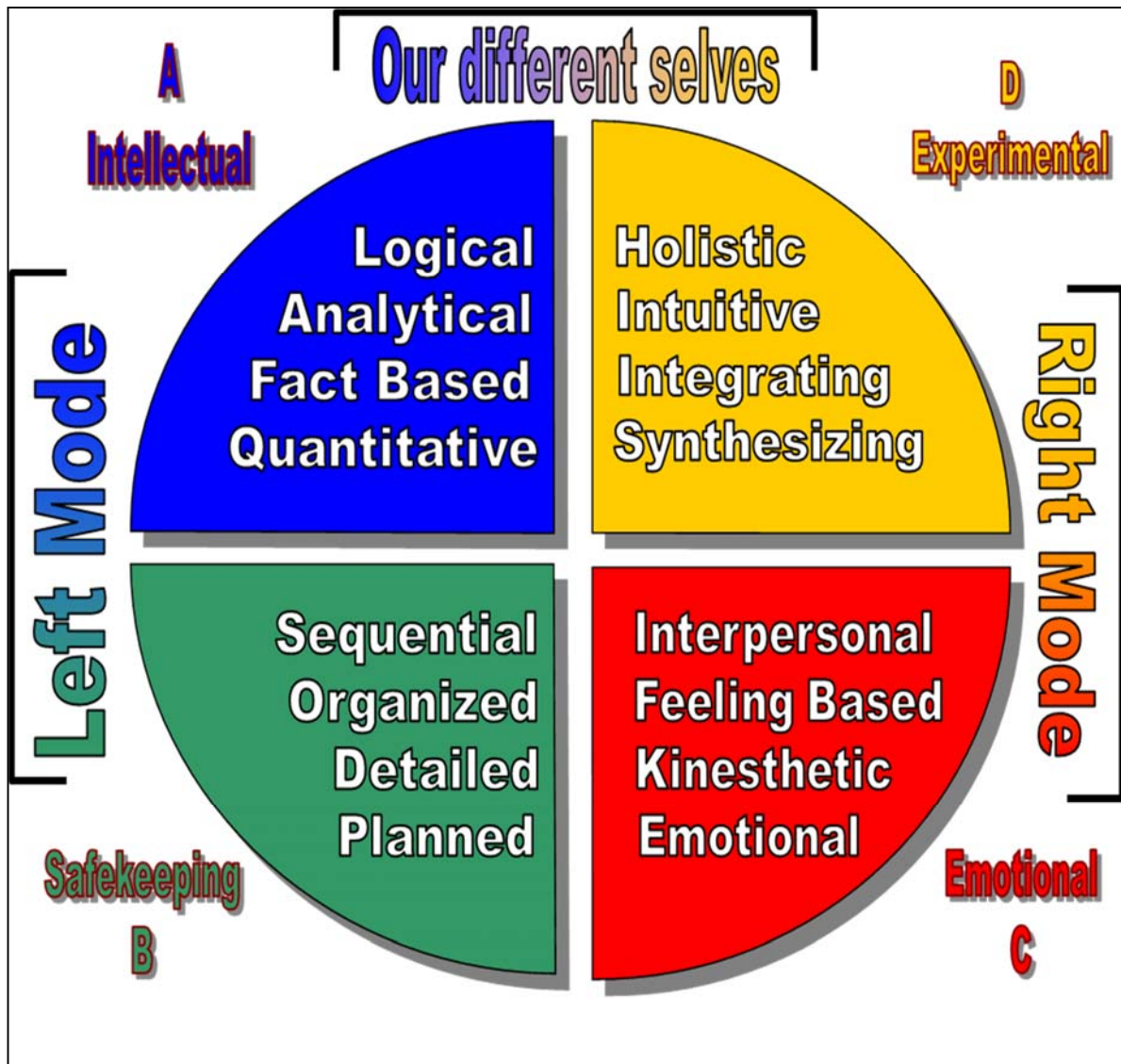


Figure 3: Herrmann's Whole Brain® model³²

The comprehensive whole brain model³³ (figure 4 and 5) is an expansion of the Herrmann Whole Brain® Model. It indicates the four different quadrants (A, B, C and D) and entails that when an individual displays a inclination for a specific quadrant, there might be an averting of another. This usually becomes apparent in tasks a learner struggles with when not using part of his or her preferred mode of thinking. In each

³²Herrmann, N. (1996). *The whole brain business book*. New York: McGraw Hill.

³³De Boer, A-L., Du Toit, P.H., Scheepers, M.D. & Bothma, T.J. (2013). *Whole Brain Learning in higher education: Evidence-based practice*. Oxford: Chandos Publishing.

quadrant the model elaborates on the preferences, expectations, struggles and preferable ways of facilitating learning.

NOTES

This image shows a single page of white paper with horizontal blue or grey ruling lines, typical of notebook paper. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

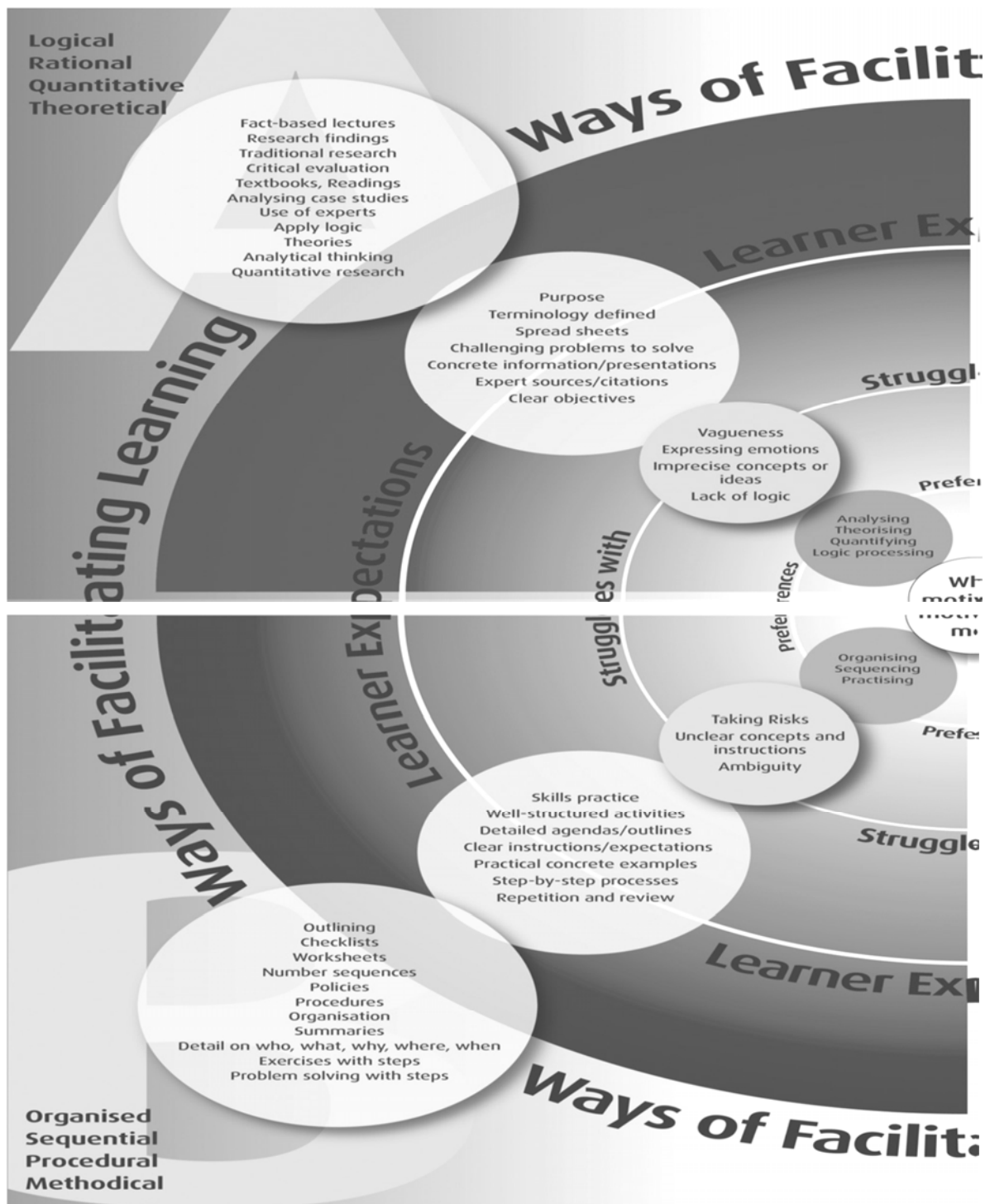


Figure 4: Comprehensive whole brain model³⁴ quadrants A and B

³⁴De Boer, A-L., Du Toit, P.H., Scheepers, M.D. & Bothma, T.J. (2013). *Whole Brain Learning in Higher Education: Evidence-based practice*. Oxford: Chandos Publishing.

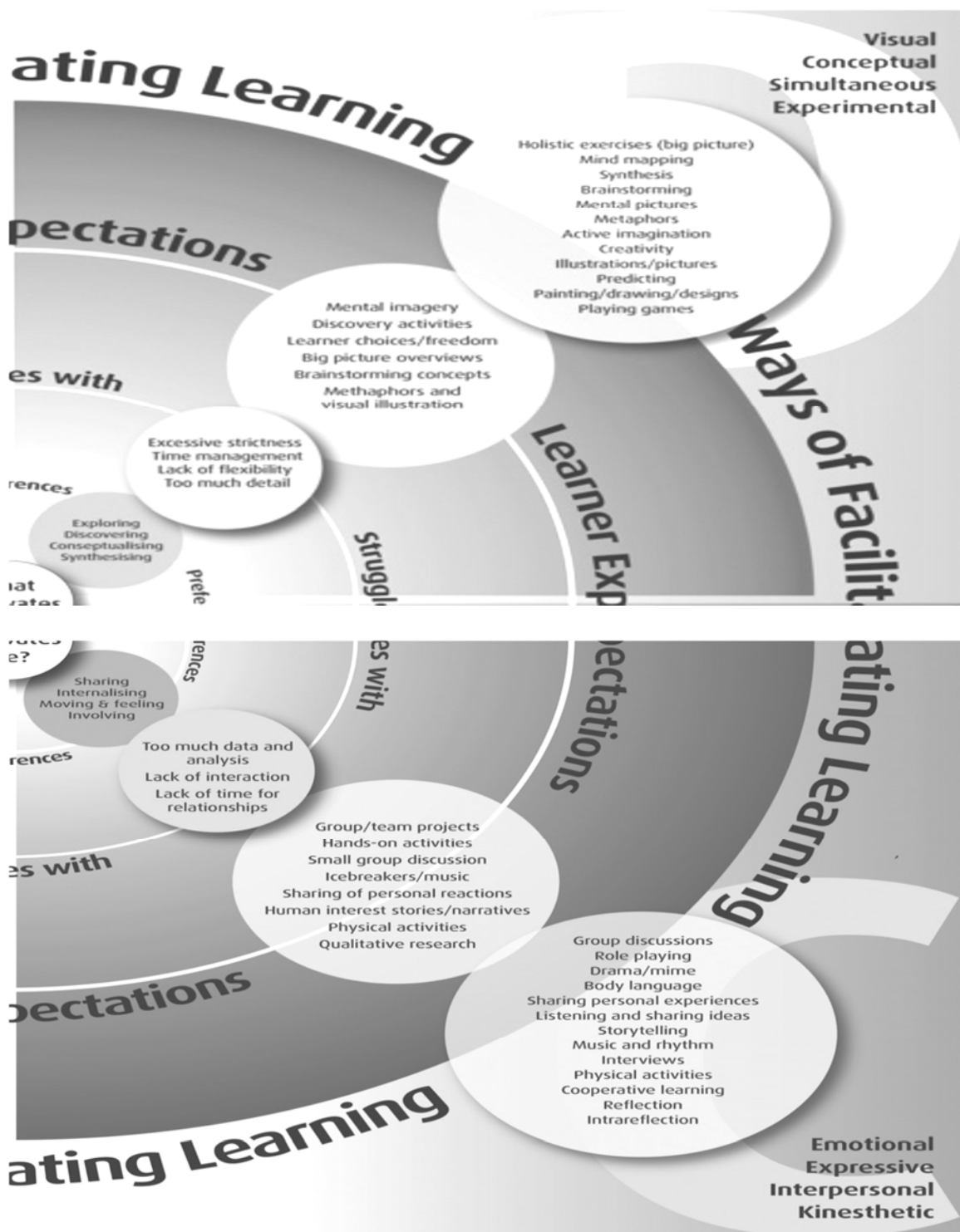
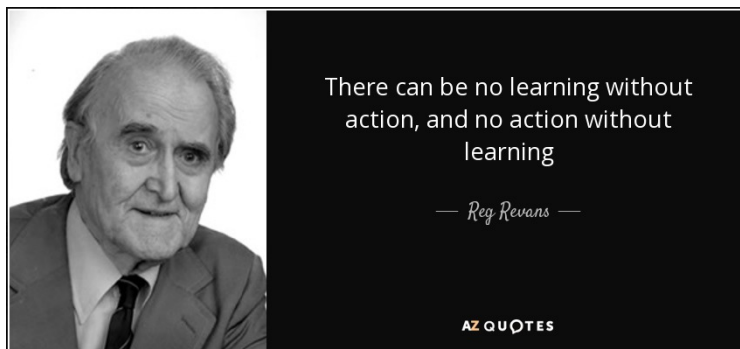


Figure 5: Comprehensive whole brain model quadrants D and C

2.2 Action learning



A baseline study was conducted in 2017 when questionnaires were distributed to 280 University of Pretoria pre-service teachers. E-mails with a questionnaire attached were sent to the mentor teachers. There was an overwhelming belief by the participating pre-service teachers that a more interactive approach was needed when they were mentored to prepare them for the profession. As many as 50% revealed: They wanted a mentor who was a facilitator, who enacted the action learning process illustrated in figure 6 below. They would therefore prefer to teach or facilitate learning in the same manner.

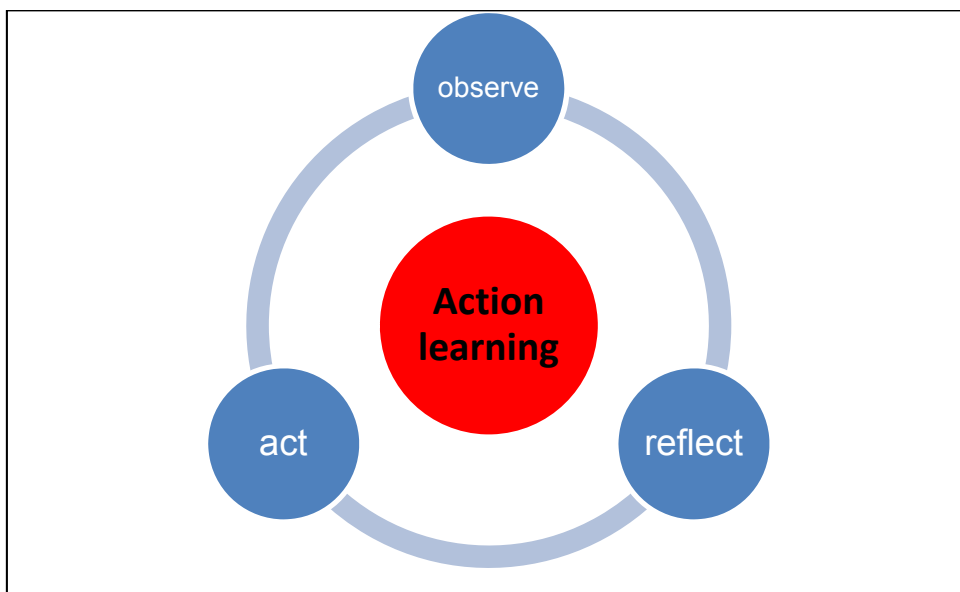


Figure 6: The action learning process

As illustrated in figure 6, action learning refers to learning through action. The focus in this programme is your professionalism, therefore the notions of action learning form part of action research³⁵. You will therefore, for example, observe your classroom practice and take action after self-reflection or reflection in order to improve³⁶. It combines “self-development with action for change”³⁷. This process is ongoing and illustrated as a cycle. The following aspects are important during the action learning process⁴⁰ in this programme: We work collaboratively taking action on real problems in our practices by using questioning as the main technique to help us solve our problems.

The transition from pre-service to beginner teacher is an important, but difficult segment of teachers’ careers, as they are expected to perform successfully and assume full teaching responsibilities from the first day on the job³⁸. In figure 7 the majority of the participants in the study responded by indicating that they believed pre-service teachers should take responsibility for their own learning and that they needed to be reflective in terms of their own practices. That illustrate that you need to be a self-regulated professionalism.

Notes

³⁵ Hugo, J.F.M., Slabbert, J., Louw, J.M., Marcus, T.S., Bac, M., Du Toit, P.H. & Sandars, J.E. (2012). The clinical associate curriculum – the learning theory underpinning the BCMP programme at the University of Pretoria, *African Journal of Health Professions Education*, 4(2): 128-131.

³⁶Du Toit, P.H. (2009). *Reader for postgraduate studies in professional development, facilitating learning and assessment*. Pretoria: University of Pretoria. Department of Humanities Education.

³⁷Pedler, M. & Burgoyne, J. (2008). Action learning. In Reason, P. & Bradbury, H. (Eds.). *The handbook of action research*. SAGE Publications Ltd.

³⁸Eby, L., Rhodes, J. & Allen, T. (2010). Definition and evolution of mentoring. In Allen, T.D. & Eby, L.T. (Eds.). *The Blackwell handbook of mentoring*. Malden: Blackwell Publishing Ltd.

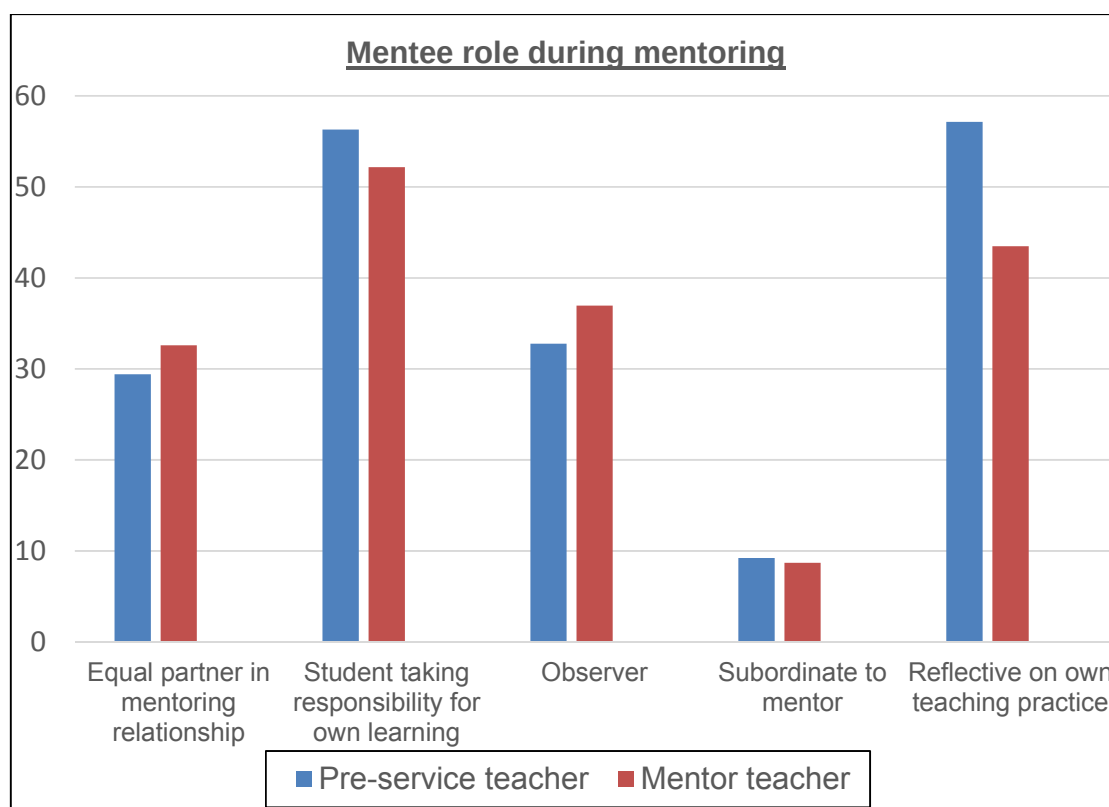


Figure 7: Mentee role during mentoring

The aim of this programme relates to taking control: You must have an action-orientated approach to your self-regulated professionalism³⁹. It is a form of empowerment⁴⁰. This entails being goal-driven, motivated, independent and being an active participant in your development. In order to be action-orientated, you have to develop and deepen your professional teacher identity, it is at the core of the profession and is related to the *self*. Identity development is an active and reflective process. Paulo Freire once said “Reflection – true reflection – leads to action”. It is, however not a spontaneous activity. We therefore need to dedicate time and effort to it⁴¹. You should scrutinise and reflect on your classroom practice in order to improve, transform and innovate it. However, action learning is not a process of finding things, but finding yourself and therefore it is

³⁹Hugo, J.F.M., Slabbert, J., Louw, J.M., Marcus, T.S., Bac, M., Du Toit, P.H. & Sandars, J.E. (2012). The clinical associate curriculum – the learning theory underpinning the BCMP programme at the University of Pretoria. *African Journal of Health Professions Education*, 4(2): 128-131.

⁴⁰Ross, J.A. & Bruce C.D. (2012). Evaluating the impact of collaborative action research on teachers: A quantitative approach. *Teacher Development*, 16(4): 537-561.

⁴¹ Gelter, H. (2003). Why is reflective thinking uncommon? *Reflective practice*: 4 (3), 337-344.

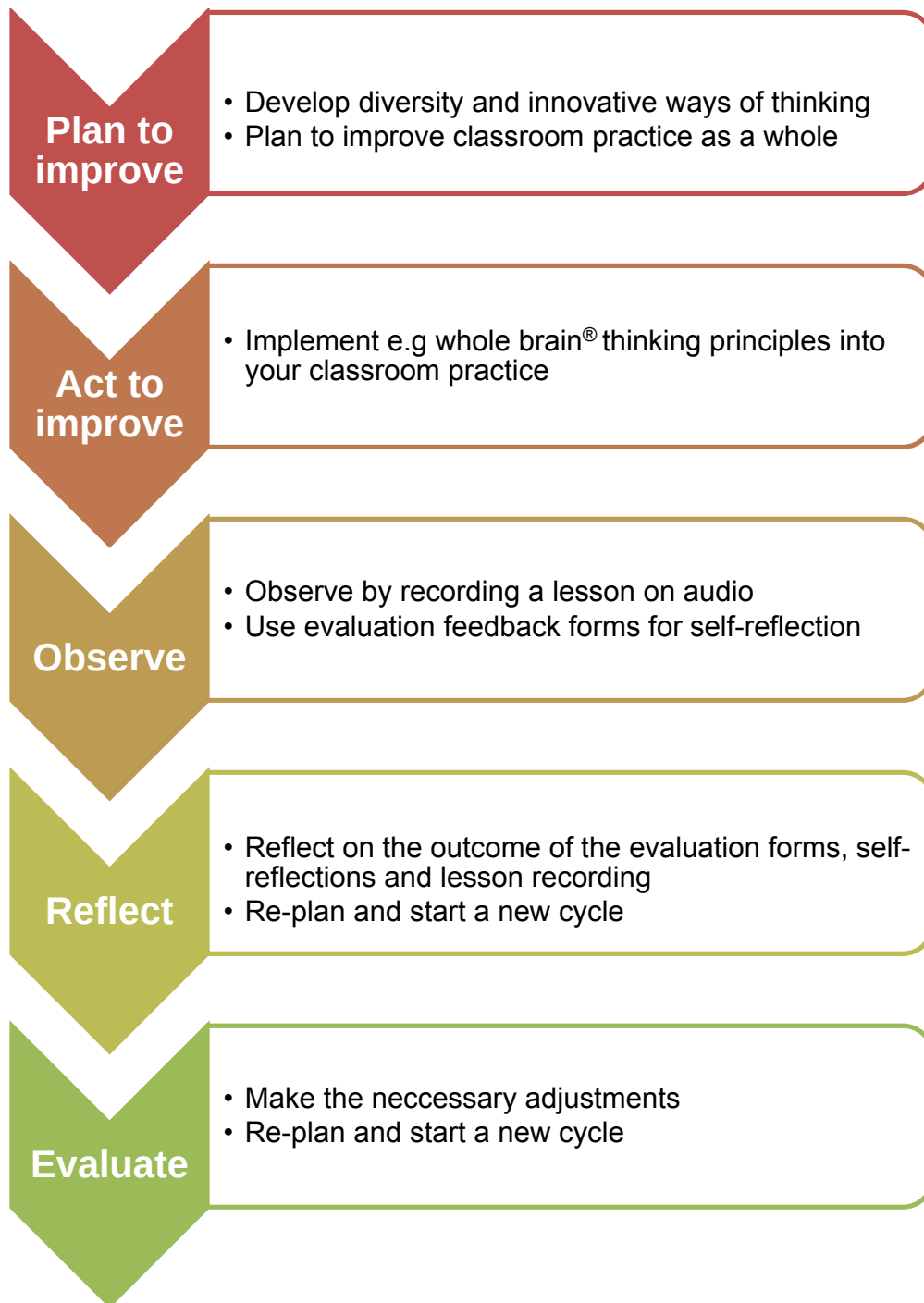


Figure 8: Action learning approach

2.3 Community of practice and peer-mentoring

The most powerful professional development occurs within a learning community⁴³.

The National Department of Education values the use of Professional Learning Communities (PLCs) as stated in the *Strategic Planning Framework for Teacher Education and Development in South Africa, 2011-2015 (ISPFTED)*. A PLC focuses on student needs to accomplish school improvement. The assumption is “none of us is as smart as all of us⁴⁴.”

In this programme the introduction of a learning community is directed at your own self-regulated professionalism. We therefore use the term communities of practice where we share our domain of interest in mentoring pre-service teachers while considering our own professional empowerment. Peer-mentoring, action learning, self-regulated learning and a consideration of our thinking preferences form an integral part of a community of practice.

Peer-mentoring, which will be used in the community of practice and in the mentoring relationship, is regarded as an essential component of becoming an instrument for transformation⁴⁵. It deals with challenging old assumptions, beliefs and practices. We therefore share information, give collegial support and engage in critical reflection⁵¹ by interacting regularly and considering our mentoring practices. We reflect on the results of the baseline study conducted, especially the challenges pre-service teachers face and the mentoring they require as depicted in figures 9 and 10.

In one question, the results of which are illustrated in figure 8, the participants had to reflect on the educator roles they supposed pre-service teachers needed more mentoring in before entering the profession.

⁴³ Ioannidou-Koutselini, M.& Patsalidou, F. (2015). Engaging school teachers and school principals in an action research in-service development as a means of pedagogical self-awareness. *Educational Action Research*, 23(2): 124-139.

⁴⁴Hugo, J.F.M., Slabbert, J., Louw, J.M., Marcus, T.S., Bac, M., Du Toit, P.H. & Sandars, J.E. (2012). The clinical associate curriculum – the learning theory underpinning the BCMP programme at the University of Pretoria. *African Journal of Health Professions Education*, 4(2): 128-131.

⁴⁵ Du Toit, P.H. (2012). Using action research as process for sustaining knowledge production: A case study of a higher education qualification for academics. *South African Journal of Higher Education*, 26(6):1216-1233.

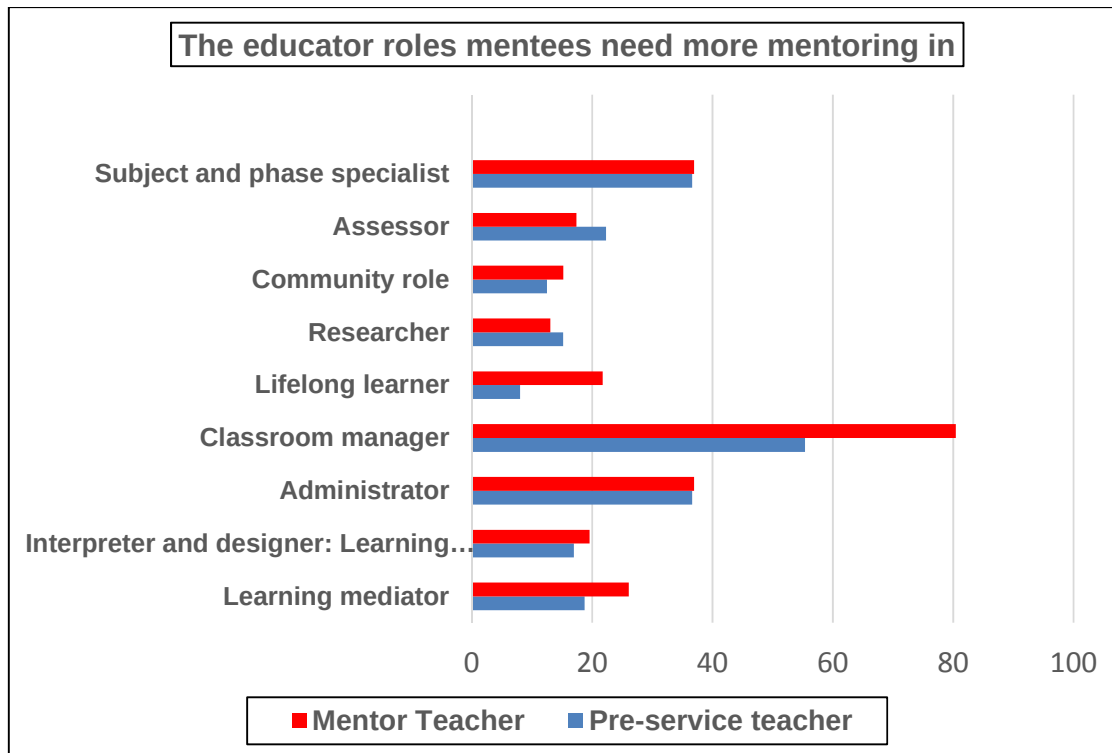


Figure 9: Educator roles mentees need more mentoring in

These educator roles are depicted in the 1999 *Norms and Standards for Educators*. The role that predominantly needs the most support, is that of classroom manager. The majority of the pre-service teachers experienced this as their greatest challenge in teaching practice.

The mentor teachers indicated that pre-service teachers need more guidance in managing their personal time (see figure 10). This aspect and the coordination of extra-mural activities were labelled challenging by the pre-service teachers.

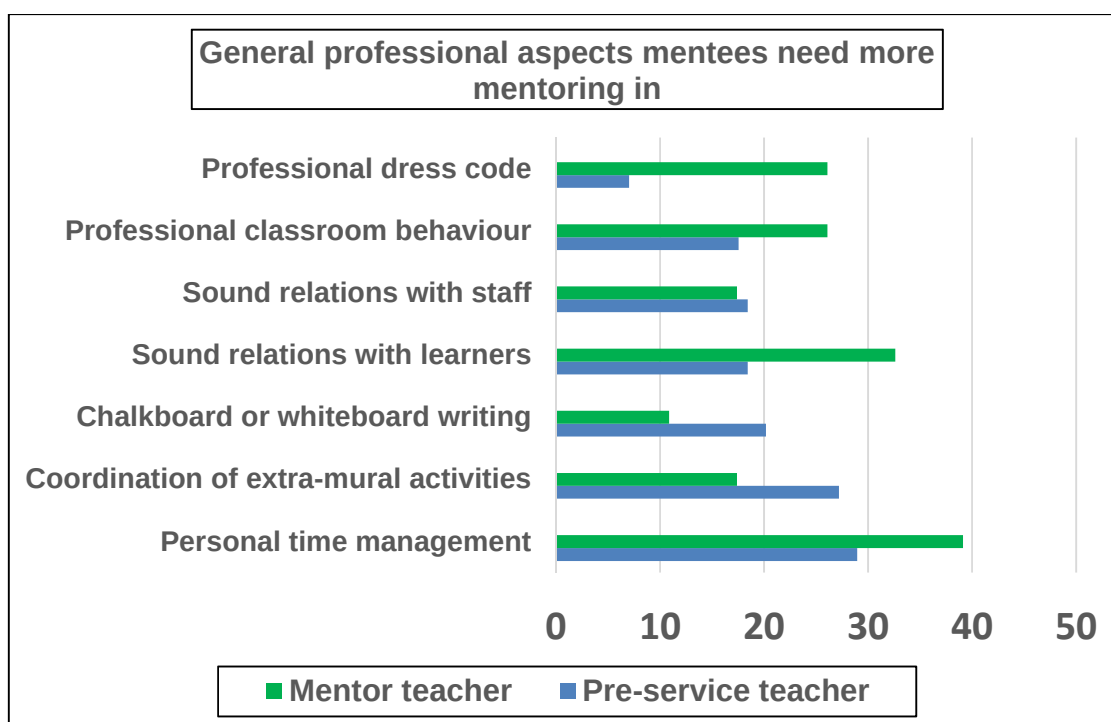


Figure 10: General professional aspects mentees need more mentoring in

It is interesting to note that only 7 % of the students (figure 10) considered a professional dress code as something they needed assistance with, while 26 % of the mentor teachers regarded it as one of the critical aspects. It is evident that the students did not consider their chalk- or whiteboard writing skills as adequate.

Interaction in the form of discussions, analysis and problem solving,⁴⁶ resulting in our professional self-empowerment will take place throughout this programme. As a member of our peer-mentoring community of practice you need to be committed and willing to share your competence. The aim of this professional cooperative learning opportunity⁴⁷ is learning with and from one another.

To have an enriching experience you need to reflect not only on your classroom practice but also on the peer-mentoring occurring in the community of practice. We will

⁴⁶MacPhail, A., Patton, K., Parker, M. & Tannehill, D. (2014). Leading by example: Teacher educators' professional learning through communities of practice. *Quest*, 66(1): 39-56.

⁴⁷Du Toit, P.H. (2013). Social transformation starts with the self: An autobiographical perspective on the thinking style preferences of an educator. *South African Journal of Education*, 33(4): 1-12.

employ a SWOT analysis⁴⁸. This tool will be used throughout the programme to examine your practice's strengths and weaknesses, opportunities for growth and improvement, and also the threats the external environment presents to its survival.

5. Conclusion

The South African school system is unique, since it includes different races, perspectives, cultures and languages. Our country has a complicated political history and faces specific critical challenges in education. Furthermore there is an established 30-50% drop out rate of educators in England within the first five years⁴⁹. In South Africa, it has been found that teachers under the age of 30 tend to resign in significant numbers in comparison to older teachers⁵⁰. How can a pre-service teacher become self-empowered with a view to transforming education? A reform in mentoring is introduced and implemented in this programme where we are moving away from the traditional mentoring approach. It is action-orientated with a view to self-empowerment in order for you as a pre-service teacher to become a self-regulated professional.

⁴⁸Van Oordt, M.L., Van Oordt, T. & Du Toit, P.H. (2014). Are two teachers better than one? *Meditari Accountancy Research*, 22(2): 165-185.

⁴⁹Burghes, D., Howson, J., Marencon, J., O'Leary, J. & Woodmead, C. (2009), *Teachers matter: Recruitment, employment and retention at home and abroad*, London: Politeia

⁵⁰ELRC (Education Labour Relations Council). (2005). *Educator attrition and mortality in South Africa: A study into gross educator attrition rates and trends, including analysis of the causes of these by age and gender, in the public schools system in South Africa*. Cape Town: HSRC Press

PRE-SERVICE TEACHER SELF-REGULATED PROFESSIONALISM



Mentor and pre-service teacher relationship

Pre-service teacher course manual

Compiled by:
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Facilitator:
Ms. Tanya Smit

Programme leader:
Prof. P.H. du Toit

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SWOT ANALYSIS

You will conduct various SWOT analyses during this programme: Keep the following in mind:

Strengths and weaknesses are internal factors you need to consider.

The opportunities and threats are external factors influencing for e.g. your mentoring practice.

The aim is to use this tool to change weaknesses into strengths and threats into opportunities.

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1. GENERAL PREMISE AND EDUCATIONAL APPROACH

1.1 General description of course	"Pre-service teacher self-regulated professionalism: Self-empowerment in a community of practice" focuses on your professional development.
1.2 Purpose of programme	The aim is to empower pre-service teachers with a view to becoming a self-regulated professionalism. It focuses on Whole Brain® Thinking, action learning, a community of practice and self-regulated learning.
1.3 Course outcomes	This pre-service teacher programme invites you to do the following: • Cultivate your professionalism as a pre-service teacher • use action learning to become a self-regulated professional; • explore and understand Whole Brain® learning in order to apply the principles in your own practice; • become an active member of a community of practice; • execute a SWOT analysis for observation, reflection and action in your classroom practice.
1.4 Additional resources for further reading	Kindly consider the references in the footnotes of the course material.
1.5 Using the course material and – manual	The course material provides a challenging and transformational self-empowerment approach to professional development. In the course manual the action learning process is discussed. During the community of practice sessions peer-mentoring will be used in order to develop professionally. During this process you will be in a mentoring relationship.
1.6 Learning presumed to be in place	As a pre-service teacher familiarise yourself with the IQMS policies and the CPTD requirements of SACE. Kindly consult the following documents: http://www.sace.gov.za/CRMCPTDSelfService/CPTDDocuments.asp http://wced.pgwc.gov.za/circulars/minutes04/ehrd43.pdf http://wced.pgwc.gov.za/circulars/minutes04/ehrd43.pdf

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2. ADMINISTRATIVE INFORMATION

2.1 Contact details

<i>Role</i>	<i>Name and surname</i>	<i>Room nr. and building</i>	<i>Telephone number and e-mail address</i>
Programme leader	Prof. P.H. du Toit	University of Pretoria: Groenkloof campus: Aldoel : 3-62	(012) 420 2817 pieter.dutoit@up.ac.za
Facilitator	Mrs. T. Smit	University of Pretoria : Groenkloof campus: Aldoel: 3-58	(012) 420 5544 tanya.smit@up.ac.za

2.2 Community of practice sessions

We would have the community of practice sessions as arranged by the participants.

Session	Theme	Involvement	Duration and place	Time and date	Facilitator
1: Preparation for empowerment	Introduction. Execution of initial SWOT analysis. Expectations of the programme. Establishment of a community of practice. Action learning	Community of practice	60 minutes University of Pretoria: Groenkloof Aldoel Building Room 2-87	Before commencement of teaching practice period	Ms. T. Smit
2: Process	Herrmann Brain® Dominance Instrument(HBDI) Whole Brain® Thinking Innovation into practice	Individual completion Community of practice Conduct two action learning opportunities	120 minutes University of Pretoria: Groenkloof: Aldoel Building Room 2-87	On the Internet: In own time Commencement of teaching practice period	Herrmann Institute Prof. P.H. du Toit and Ms. T. Smit
3: Product	Critical reflection Evaluation Execute final SWOT analysis	Community of practice	60 minutes Groenkloof University of Pretoria: Aldoel Building Room 2-87	During or after teaching practice period	Ms. T. Smit

3. THE PRE-SERVICE SELF-REGULATED PROFESSIONALISM PROCESS

The activities in this course are scheduled according to the following process as seen in figure 1:



Figure 1: Developing the self: The pre-service teacher development framework

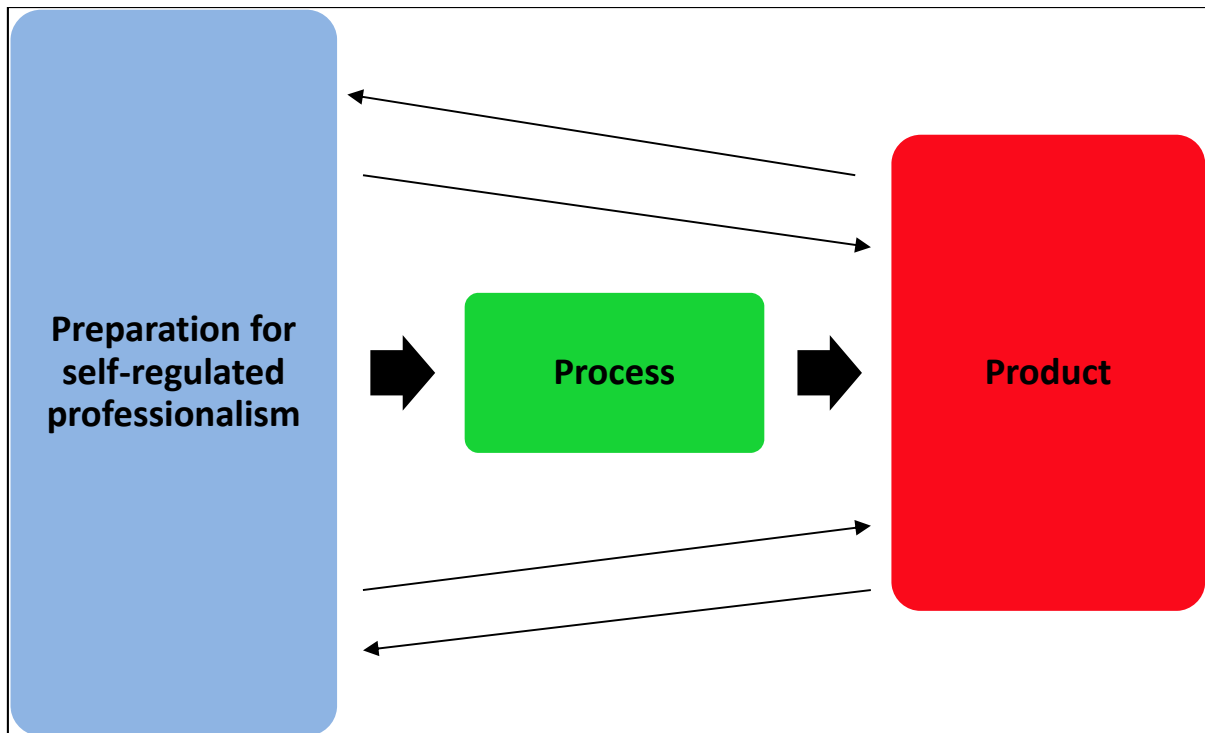


Figure 2: Pre-service teacher self-regulated professionalism process

The process followed in this course is illustrated in figure 1. The attendance certificate you receive is proof of your professional empowerment. Figure 2 illustrates the self-regulated professional process you will undertake. It corresponds with the action learning process in figure 3, which you will implement in your own classroom practice in two of the lessons.

You will conduct action learning in your classroom practice. You will use the following framework in figure 3:

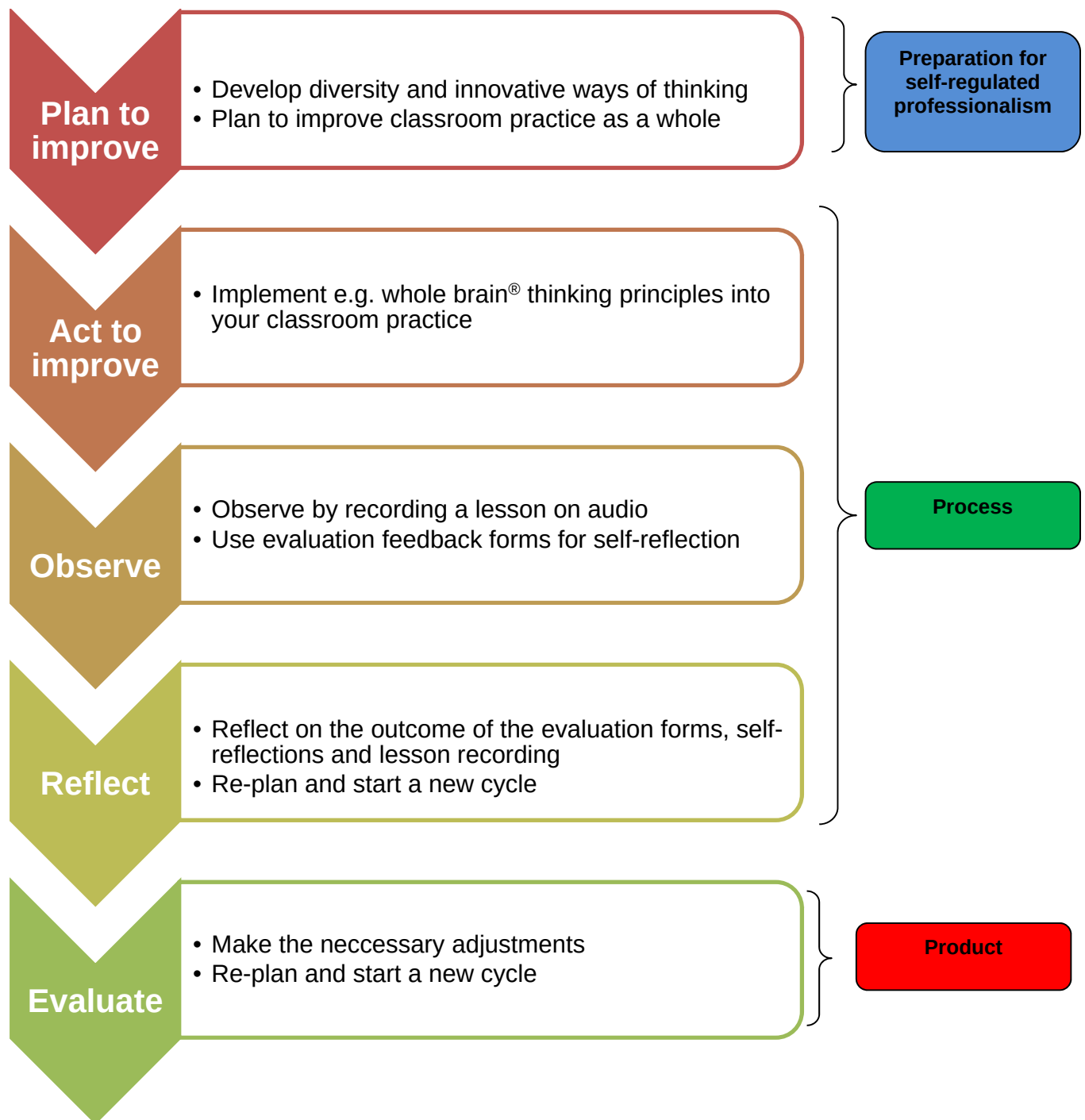


Figure 3: Action learning process

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4. ASSESSMENT

During this course you will need to participate in your mentoring relationship, in the community of practice and conduct two action learning opportunities.

4.1 Self-assessment rubric: Pre-service self-regulated professionalism

In this short course you will not be formally assessed, but you have to hand in your reflections, the action learning evaluation forms and the feedback questionnaires in order to receive a certificate of attendance.

Kindly complete the following self-assessment rubric at the end of this course:

Kindly complete the following self-assessment rubric:

Criteria	Novice (0-1 marks)	Moderate(2-3 marks)	Excellent(4-5 marks)
Action learning in two learning opportunities	I did not conduct any action learning	I completed one action learning opportunity	I completed both action learning opportunities
SWOT analysis: Observation, critical reflection and action in my practice	I did not observe, reflect or took action in my practice in order to improve	I observed, but did not reflect critically in order to improve my practice	I observed, critically reflected and took action in my practice in order to improve it
I participated and was an active member of the community of practice and my mentoring relationship	I did not participate actively in the community of practice or mentoring relationship	I participated, but was not an active contributing member of the community of practice and mentoring relationship	I participated and was an active member of the community of practice while contributing and gaining from my peers and mentor
I took responsibility for my own learning during this teaching practice period and applied the principles of Whole Brain® Thinking into my own practice	I did not take responsibility for my own learning during this teaching practice period and did not apply Whole Brain® Thinking principles.	I applied Whole Brain® Thinking principles into my practice, but did not fully take responsibility for my own learning. I struggled to either create or work on my own goals or did not conceptualise my problems or designed ways to address my problems or struggled to construct my own professionalism.	I applied Whole Brain® Thinking principles into my practice and took responsibility for my own learning. I created and worked on my own goals, conceptualised my problems, designed ways to address my problems and constructed my own professionalism.

5. PHASE 1: PREPARATION FOR SELF-REGULATED PROFESSIONALISM

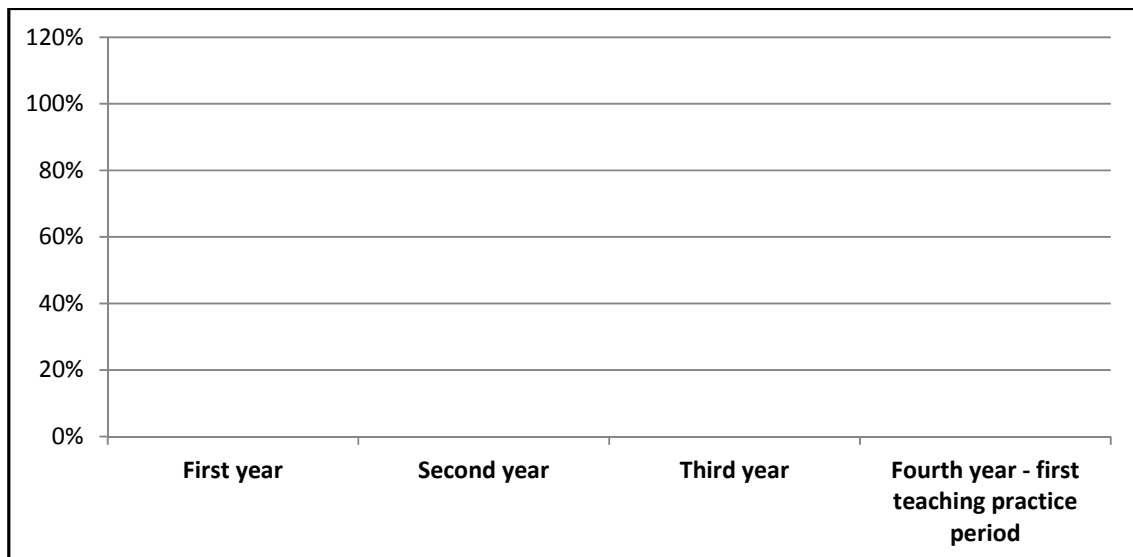
5.1 Self-reflection worksheet 1

Date	

5.1.1 Personal SWOT analysis of my overall personal teacher professionalism and current practice:

My strengths (INTERNAL) 	My weaknesses (INTERNAL)
Opportunities in my professionalism (EXTERNAL) 	Threats to my professionalism (EXTERNAL)

5.1.2 Draw a line chart reflecting on how you regulated your own development and learning during your studies:



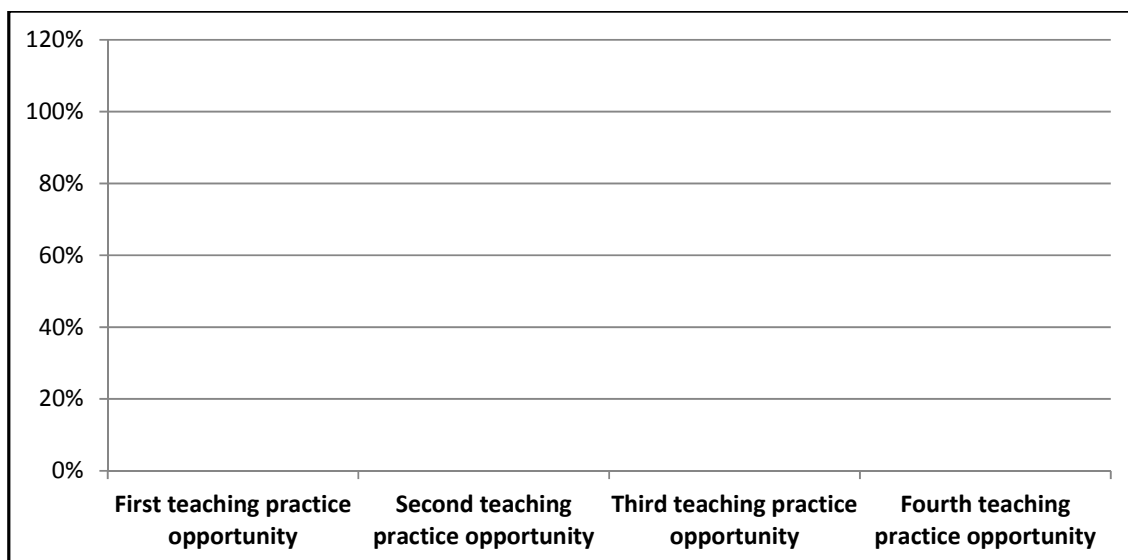
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5.1.3 SWOT analysis: Own teaching practices:

The strengths of my teaching practice	The weaknesses in my teaching practice
Opportunities in my teaching practice	Threats to my teaching practice

5.1.4 Quality of own teaching practice

Draw a line reflecting on the quality of your own teaching practice during your studies:



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5.2 Community of practice session 1 *(To be completed in the first session by the group)*

5.2.1 Whole Brain group reflection and discussion: Community of practice and teaching practice

What? What are our expectations of this programme and the community of practice? What are our goals in the community of practice? What challenges do we face in our own classroom practices and how can it be overcome? What are the rules and communicative practices within our community of practice?	Why? Why should we consider our own and the other group members way of thinking and doing? Why should we be self-regulated professionals?
How? How can we achieve quality teaching to address the current challenges pre-service teachers face when entering the profession? Are we prepared for the profession?	Who? Do you think it is essential for a teacher to develop professionally? Elaborate

6. PHASE 2: PROCESS

6.1 Self-reflection worksheet 2

6.1.1 The Herrmann Brain Dominance Instrument®

Complete it online when the link is e-mailed to you.

6.1.2 Whole Brain Reflection after the first teaching practice period: Lesson presentations

What should I improve?	Why improve my practice?
How can I improve my practice?	Who do I need to consider when improving my mentoring practice or who will be influenced or empowered?

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6.2 Community of practice session 2**To be completed during in the community of practice*

Date	

6.2.1Community of Practice SWOT analysis: Thinking preferences

Consider the effect of knowing your own and the other members of the community of practice thinking preferences:

The strengths	The weaknesses
Opportunities	Threats

6.2.2 How can we take more responsibility for my own learning during this teaching practice period?

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6.3 Action learning process: Lesson presentation 1

Kindly use the following observation sheets and the feedback questionnaire to conduct action learning in your own classroom practice. You will use this in two of your lessons. You may decide when to conduct these lessons and what two lessons you want to use. Kindly complete the action learning of both lessons during the process phase of the course. Consider the following action learning process:

- 1) Introduce whole brain thinking® principles into your lesson by considering the comprehensive whole brain® model.
- 2) Give the learners the opt-out letter for their parents to complete. A learner should only bring the letter back to the school if they parents signed the opt-out form, if they can participate, they should not sign it. Kindly keep these opt-out letters to give to the facilitator. If a learner is not allowed to participate, they should be in the class, but no photo's can be taken of them.
- 3) Plan and prepare for your lesson. Ask your mentor teacher to make an audio recording of the lesson your phone or tablet and kindly ask their assistance in taking photos of your lesson.
- 4) Record the lesson on audio and take photo evidence.
- 5) Give the learners feedback questionnaires directly after the lesson presentation. It should be done anonymously. Take it back in and deliver it to the facilitator.
- 6) Listen to the audio recording and use the following observation sheets to reflect on it.

Observation sheet 1: Innovation and lesson progression

Observation sheet 2: Learner engagement and activities

Observation sheet 3: Learning and teacher support material

Observation sheet 4: Questioning

- 7) When listening to the audio and photo evidence of the lesson complete the evaluation forms as follow: First just listen to the whole audio of the lesson and look at the photo evidence. Secondly consider the observation sheets and use it to tick or write in the columns as the minutes is indicated. For example from 10-15 minutes I used group work where they had to solve a problem, quadrants A and C were activated. Then using the Bloom's taxonomy of educational objectives, you indicate the level of thinking achieved.
- 8) You then reflect on how you achieved whole brain® learning. Also consider the level of thinking addressed during the lesson using the revised Bloom's taxonomy in figure 4. Also consider the

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feedback questionnaires given to the learners. Consider what changes you would want to make in the second action learning opportunity lesson presentation while completing the number. 6.6.

- 9) For the second lesson conduct the process and stipulated (steps 1-8) again. Implement changes into the lesson to achieve whole brain learning in your lesson and high order thinking according to Bloom's revised taxonomy

The following figure illustrates the levels of the revised Bloom's taxonomy to be used during the action learning process.

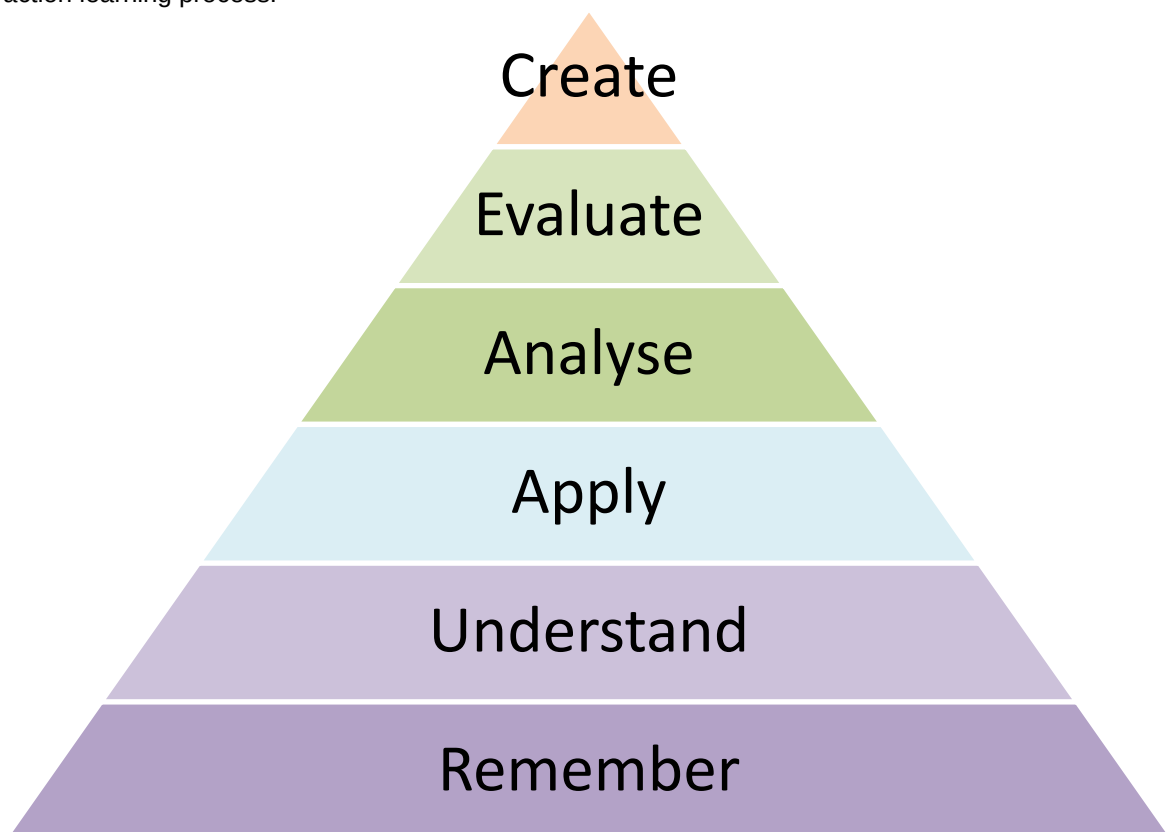


Figure 4: Bloom's revised taxonomy¹

Create	Combine parts to make a new whole
Evaluate	Judge the value of information or ideas
Analyse	Break information down into parts
Apply	Apply information
Understand	Understand what it means
Remember	Recognise and recall the information

¹ Krathwohl, D.R. (2002). A Revision of Bloom's Taxonomy: An Overview. *Theory into practice*, 41(4): 212-218

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6.4 Action learning: Lesson 1

Subject: _____

Lesson title: _____

Grade: _____

6.4.1 Observation sheet 1: Self-reflection of lesson 1: Innovation and lesson progression

Write down the phase of the lesson and the kind of innovative ideas or activities you designed and included during this learning opportunity:			Tick what brain quadrant(s) were stimulated:			
Time	What kind of innovation did you include in the lesson? This can include e.g. the use of resources/ media/technology/ experiments/ classroom organization, etc.	How did your lesson progress? When did you initiate and complete the following phases: Introduction, development and consolidation	A: E.g. Fact based	B E.g. Organised	C: E.g. Inter-personal	D: E.g. Exploring
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

<u>How did the kind of innovation(ideas or activities) address the levels of the revised Bloom's taxonomy? Kindly tick the specific level(s):</u>						
Time	Remember	Understand	Apply	Analyse	Evaluate	Create
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

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6.4.2 Observation sheet 2: Self-reflection of lesson 1: Learner engagement and activities: Consider the comprehensive whole brain® model page 16-17 in the course material.

How is the class organised? (Kindly tick the relevant boxes)					What possible learner expectations according to the comprehensive whole brain® model were realised? (consider pages 16-17 in the course material)			
Time	Groups	Pairs	Class	Individual	A: E.g. Challenging problems solved	B: E.g: Well- structured activities	C: E.g. Group project	D: E.g. Discovery activities
0-5 minutes								
5-10 minutes								
11-15 minutes								
16-20 minutes								
21-25 minutes								
26-30 minutes								
31-35 minutes								
36-40 minutes								

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6.4.3 Observation sheet 3: Self-reflection of lesson 1: Learning and teacher support material (LTSM)

<u>Utilisation of LTSM in the lesson</u>			<u>What brain quadrants did the use of the LTSM in this lesson stimulate?</u>			
Time	What kind of media, technology or equipment did I use?	How did it contribute to the lesson outcome?	A	B	C	D
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

<u>Bloom's taxonomy</u>						
How did the learning and teaching support material address the levels of Bloom's revised taxonomy?						
Time	Remember	Understand	Apply	Analyse	Evaluate	Create
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

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6.4.4 Observation sheet 4: Self-reflection of lesson 1: Questioning

Indicate who asked questions during the lesson: (Tick in the boxes)			Kind of question(guide/confirm/c hallenge/probe/clarify/ela borate	What brain quadrant(s) did the question(s) stimulate? (Tick)			
Time	Pre-Service teacher	Learner(s)		A	B	C	D
0-5 minutes							
5-10 minutes							
11-15 minutes							
16-20 minutes							
21-25 minutes							
26-30 minutes							
31-35 minutes							
36-40 minutes							

How did the kind of questioning address the levels of Bloom's revised taxonomy?						
Time	Remember	Understand	Apply	Analyse	Evaluate	Create
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

6.5 Learner feedback questionnaire: Lesson 1

FEEDBACK QUESTIONNAIRE: LEARNERS

Kindly complete the following feedback questionnaire by reflecting on your experience during this lesson. Your answers will not influence your marks and are strictly confidential and anonymous. The data will be used by your teachers for reflection. Please indicate the applicable answer with an X.

SUBJECT: _____

STUDENT TEACHER NAME: _____

GRADE: _____

1: PERSONAL DETAILS

Gender

Indicate your gender:

Male	Female

1.2. Age

Indicate your age:

12	13	14	15	16	17	18	19	20

1.3. Home language

Specify your home language:

Afrikaans	English	IsiSwazi	IsiXhosa
IsiZulu	Ndebele	Northern Sotho	Sesotho
Tswana	Venda	XiTsonga	Other

2. LEARNER EXPERIENCE DURING THE LESSON PRESENTATION

2.1 Rate your overall experience of this lesson presentation:

Negative	Somewhat negative	Somewhat positive	Positive

3. INSTRUCTION AND LEARNING DURING LESSON

Indicate to what extent you agree with the following statements:

3.1 The student teacher had knowledge of the subject	Strongly disagree	Disagree	Agree	Strongly agree
3.2 The lesson included innovative and creative ideas and activities	Strongly disagree	Disagree	Agree	Strongly agree
3.3 We as the learners were engaged in the lesson	Strongly disagree	Disagree	Agree	Strongly agree
3.4 The class was managed in an effective and respectful manner	Strongly disagree	Disagree	Agree	Strongly agree
3.5 Resources and/or media were used effectively	Strongly disagree	Disagree	Agree	Strongly agree

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3.6 The lesson presentation was relevant to my real-life situation	Strongly disagree	Disagree	Agree	Strongly agree
3.7 The student teacher was well prepared for the lesson	Strongly disagree	Disagree	Agree	Strongly agree
3.8 The lesson progressed effectively from an introduction to the conclusion	Strongly disagree	Disagree	Agree	Strongly agree
3.9 The student teacher communicated effectively	Strongly disagree	Disagree	Agree	Strongly agree
3.10 The student teacher used the time during the lesson effectively and was able to finish the lesson in the allocated time	Strongly disagree	Disagree	Agree	Strongly agree
3.11 The outcomes of the lesson was clear to me	Strongly disagree	Disagree	Agree	Strongly agree
3.12 I understand what will be expected of me during assessment now or in the following lesson	Strongly disagree	Disagree	Agree	Strongly agree
3.13 The student teacher did valuable research for this lesson	Strongly disagree	Disagree	Agree	Strongly agree
3.14 The student teacher considered our different viewpoints or ways of thinking	Strongly disagree	Disagree	Agree	Strongly agree
3.15 I gave my cooperation to the student teacher during this lesson	Strongly disagree	Disagree	Agree	Strongly agree

4. TEACHER PROFESSIONALISM

Indicate to what extent you agree with the following statements:

4.1 The student teacher had effective chalkboard or whiteboard skills	Strongly disagree	Disagree	Agree	Strongly agree
4.2 The student teacher exhibited professional classroom behavior	Strongly disagree	Disagree	Agree	Strongly agree
4.3 The student teacher follows a professional dress code	Strongly disagree	Disagree	Agree	Strongly agree

5. Any other comments with regards to the lesson presented to you:

THANK YOU FOR YOUR TIME

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6.6 Reflection and evaluation after lesson 1:

Kindly complete the following questions in order to reflect, evaluate and improve before the following lesson.

6.6.1 Observation sheet 1: Innovation and lesson progression

6.6.1.1 What quadrants were activated? _____

6.6.1.2 What innovative activity will I implement to achieve whole brain® learning?

6.6.1.4 What levels of Bloom's revised taxonomy were mostly achieved? _____

6.6.2 Observation sheet 2: Learner engagement and activities

6.6.2.1 How was the learners mostly organised or engaged during the lesson?

6.6.2.2 Were their expectations met when considering the comprehensive whole brain model?

6.6.2.3 What will you implement in the following lesson to consider all the quadrant expectations?

6.6.3 Observation sheet 3: LTSM

6.6.3.1 What quadrants were activated? _____

6.6.3.2 How can I employ LTSM in the following lesson to achieve higher order thinking in Bloom's taxonomy?

6.6.4 Observation sheet 4: Questioning

6.6.4.1 What quadrants were activated? _____

6.6.4.2 What levels in Bloom's taxonomy did I address during questioning? _____

6.6.4.3 How can I achieve the highest level in the following lesson?

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6.7 Action learning: Lesson 2

Subject: _____

Lesson title: _____

Grade: _____

6.7.1 Observation sheet 1: Self-reflection of lesson 2: Innovation and lesson progression

Write down the phase of the lesson and the kind of innovative ideas or activities you designed and included during this learning opportunity:			Tick what brain quadrant(s) were stimulated:			
Time	What kind of innovation did you include in the lesson? This can include e.g. the use of resources/ media/technology/ experiments/ classroom organization, etc.	How did your lesson progress? When did you initiate and complete the following phases: Introduction, development and consolidation	A: E.g. Fact based	B E.g. Organised	C: E.g. Inter-personal	D: E.g. Exploring
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

<u>How did the kind of innovation(ideas or activities) address the levels of the revised Bloom's taxonomy? Kindly tick the specific level(s):</u>						
Time	Remember	Understand	Apply	Analyse	Evaluate	Create
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

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6.7.2 Observation sheet 2: Self-reflection of lesson 2: Learner engagement and activities: Consider the comprehensive whole brain® model page 16-17 in the course material.

How is the class organised? (Kindly tick the relevant boxes)					What possible learner expectations according to the comprehensive whole brain® model were realised? (consider pages 16-17 in the course material)			
Time	Groups	Pairs	Class	Individual	A: E.g. Challenging problems solved	B: E.g: Well- structured activities	C: E.g. Group project	D: E.g. Discovery activities
0-5 minutes								
5-10 minutes								
11-15 minutes								
16-20 minutes								
21-25 minutes								
26-30 minutes								
31-35 minutes								
36-40 minutes								

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6.7.3 Observation sheet 3: Self-reflection of lesson 2: Learning and teacher support material (LTSM)

<u>Utilisation of LTSM in the lesson</u>			<u>What brain quadrants did the use of the LTSM in this lesson stimulate?</u>			
Time	What kind of media, technology or equipment did I use?	How did it contribute to the lesson outcome?	A	B	C	D
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

<u>Bloom's taxonomy</u>						
How did the learning and teaching support material address the levels of Bloom's revised taxonomy?						
Time	Remember	Understand	Apply	Analyse	Evaluate	Create
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

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6.7.4 Observation sheet 4: Self-reflection of lesson 2: Questioning

Indicate who asked questions during the lesson: (Tick in the boxes)			Kind of question(guide/confirm/c hallenge/probe/clarify/ela borate	What brain quadrant(s) did the question(s) stimulate? (Tick)			
Time	Pre-Service teacher	Learner(s)		A	B	C	D
0-5 minutes							
5-10 minutes							
11-15 minutes							
16-20 minutes							
21-25 minutes							
26-30 minutes							
31-35 minutes							
36-40 minutes							

How did the kind of questioning address the levels of Bloom's revised taxonomy?						
Time	Remember	Understand	Apply	Analyse	Evaluate	Create
0-5 minutes						
5-10 minutes						
11-15 minutes						
16-20 minutes						
21-25 minutes						
26-30 minutes						
31-35 minutes						
36-40 minutes						

6.8 Learner feedback questionnaire: Lesson 2

FEEDBACK QUESTIONNAIRE: LEARNERS

Kindly complete the following feedback questionnaire by reflecting on your experience during this lesson. Your answers will not influence your marks and are strictly confidential and anonymous. The data will be used by your teachers for reflection. Please indicate the applicable answer with an X.

SUBJECT: _____

STUDENT TEACHER NAME: _____

GRADE: _____

1: PERSONAL DETAILS

Gender

Indicate your gender:

Male	Female

1.2. Age

Indicate your age:

12	13	14	15	16	17	18	19	20

1.3. Home language

Specify your home language:

Afrikaans	English	IsiSwazi	IsiXhosa
IsiZulu	Ndebele	Northern Sotho	Sesotho
Tswana	Venda	XiTsonga	Other

2. LEARNER EXPERIENCE DURING THE LESSON PRESENTATION

2.1 Rate your overall experience of this lesson presentation:

Negative	Somewhat negative	Somewhat positive	Positive

3. INSTRUCTION AND LEARNING DURING LESSON

Indicate to what extent you agree with the following statements:

3.1 The student teacher had knowledge of the subject	Strongly disagree	Disagree	Agree	Strongly agree
3.2 The lesson included innovative and creative ideas and activities	Strongly disagree	Disagree	Agree	Strongly agree
3.3 We as the learners were engaged in the lesson	Strongly disagree	Disagree	Agree	Strongly agree
3.4 The class was managed in an effective and respectful manner	Strongly disagree	Disagree	Agree	Strongly agree
3.5 Resources and/or media were used effectively	Strongly disagree	Disagree	Agree	Strongly agree

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3.6 The lesson presentation was relevant to my real-life situation	Strongly disagree	Disagree	Agree	Strongly agree
3.7 The student teacher was well prepared for the lesson	Strongly disagree	Disagree	Agree	Strongly agree
3.8 The lesson progressed effectively from an introduction to the conclusion	Strongly disagree	Disagree	Agree	Strongly agree
3.9 The student teacher communicated effectively	Strongly disagree	Disagree	Agree	Strongly agree
3.10 The student teacher used the time during the lesson effectively and was able to finish the lesson in the allocated time	Strongly disagree	Disagree	Agree	Strongly agree
3.11 The outcomes of the lesson was clear to me	Strongly disagree	Disagree	Agree	Strongly agree
3.12 I understand what will be expected of me during assessment now or in the following lesson	Strongly disagree	Disagree	Agree	Strongly agree
3.13 The student teacher did valuable research for this lesson	Strongly disagree	Disagree	Agree	Strongly agree
3.14 The student teacher considered our different viewpoints or ways of thinking	Strongly disagree	Disagree	Agree	Strongly agree
3.15 I gave my cooperation to the student teacher during this lesson	Strongly disagree	Disagree	Agree	Strongly agree

4. TEACHER PROFESSIONALISM

Indicate to what extent you agree with the following statements:

4.1 The student teacher had effective chalkboard or whiteboard skills	Strongly disagree	Disagree	Agree	Strongly agree
4.2 The student teacher exhibited professional classroom behavior	Strongly disagree	Disagree	Agree	Strongly agree
4.3 The student teacher follows a professional dress code	Strongly disagree	Disagree	Agree	Strongly agree

5. Any other comments with regards to the lesson presented to you:

THANK YOU FOR YOUR TIME

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7. PHASE 3: PRODUCT

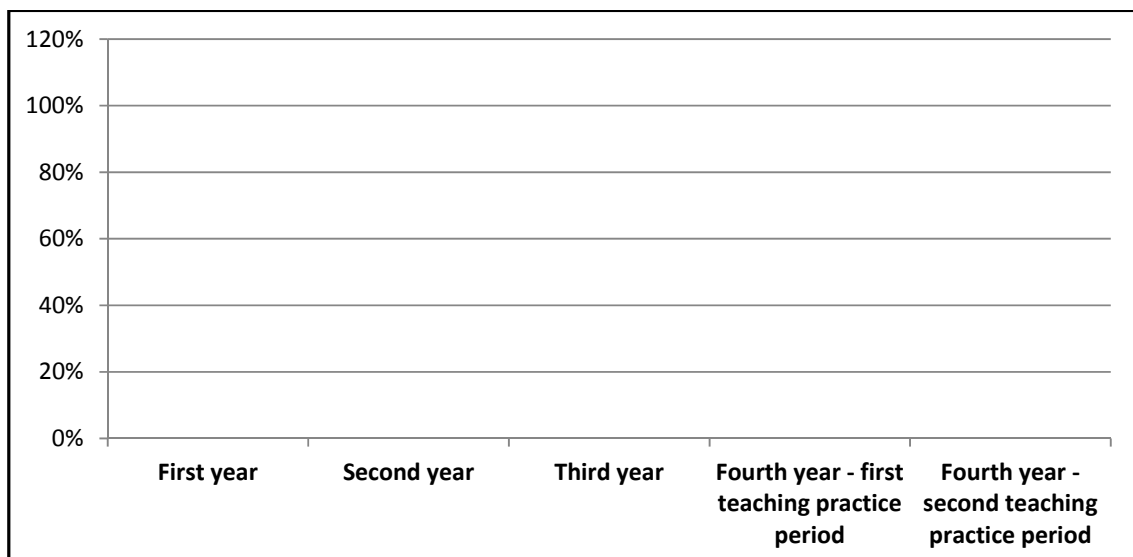
7.1 Self-reflection worksheet 3

Date	

7.1.1 Personal SWOT analysis of my overall personal teacher professionalism:

My strengths (INTERNAL) 	My weaknesses (INTERNAL)
Opportunities in my professionalism (EXTERNAL) 	Threats to my professionalism (EXTERNAL)

7.1.2 Draw a line chart reflecting on your self-regulated professionalism during your studies until now:



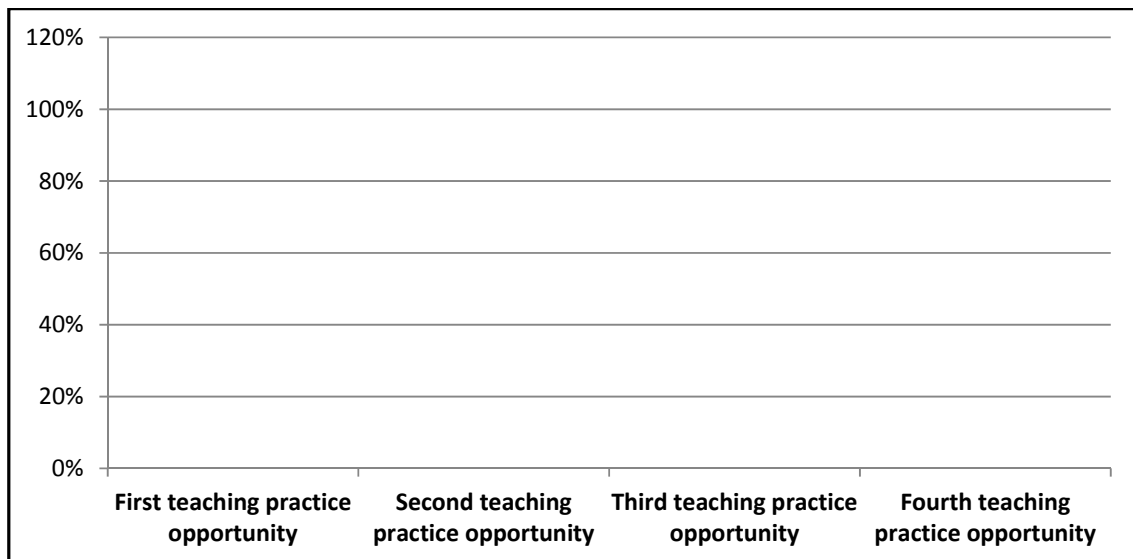
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7.1.3 SWOT analysis: Own teaching practices:

The strengths of my teaching practice _____ _____ _____	The weaknesses in my teaching practice _____ _____ _____
Opportunities in my teaching practice _____ _____ _____	Threats to my teaching practice _____ _____ _____

7.1.4 Quality of own teaching practice

Draw a line reflecting on the quality of your own teaching practice during your studies up to where you currently are:



7.1.5 Whole brain reflection on own self-regulated professionalism

What influence did this programme have on my self-regulated professionalism?	Why did it have this influence?
How will it influence my practice now or in the future?	Who will benefit/not benefit??

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7.2 Community of Practice session 3

Date	

7.2.1 SWOT analysis: Community of practice: The use of action learning for observation, reflection and action in our teaching practices:

The strengths	The weaknesses
Opportunities	Threats

7.2.1.1 How can the weaknesses be changed to strengths?

7.2.1.2 How can the threats be changes to opportunities?

7.2.2 Whole brain group reflection: Community of practice

What? What was the influenceof being part of the COP on our professional development and mentoring practice?	Why? Why is or is it not important to be part of a COP ?
How? How will our practices be influenced now or in the future?	Who? Who is/was or might still be affected?

7.2.3 Community of Practice SWOT analysis: Pre-service teacher self-regulated professionalism programme

The strengths	The weaknesses
Opportunities	Threats

7.2.3.1 How would you recommend can the weaknesses be changed to strengths?

7.2.3.2 How can the threats to this programme be altered into opportunities?
