

## Faculty of Education

Title: Community of Enquiry Practices in the Mathematics and Literacy classrooms: A study of two Western Cape primary schools.

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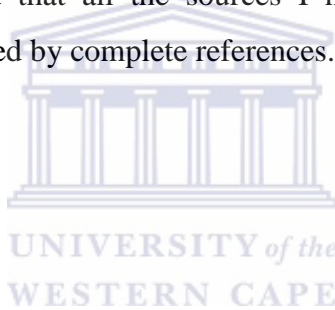
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DECLARATION

I, the undersigned hereby declare that *Community of Enquiry Practices in the Mathematics and Literacy Classrooms: A study of two Western Cape Schools* is my own original work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.



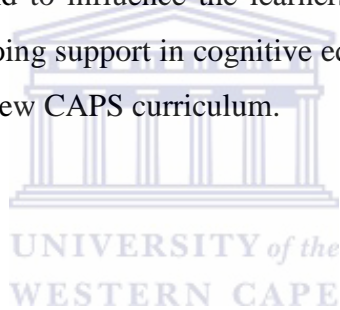
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## ABSTRACT

The research explores the effects of Community of Enquiry practices on the teaching and learning of Mathematics and Literacy in two local primary schools. After the 1994 elections, both the government and education system changed in South Africa. With the introduction of Outcomes Based Education (OBE), critical outcomes that emphasized thinking and collaboration became a vital part of the curriculum. Soon after, the Education system adopted the National Curriculum Statement (NCS) and thereafter the Revised National Curriculum Statement (RNCS), which maintained these outcomes. The Curriculum and Assessment Policy Statement (CAPS) was introduced to the Foundation Phase in 2012 and to the Intermediate Phase in 2013 with the Critical Outcomes, (which emphasizes thinking) now stated as the aims of CAPS. However, no guidelines are provided regarding classroom practice. The approach to teaching these aims is not made clear. Lipman's Philosophy for Children (P4C) is one way of working towards these aims, and promoting thinking and is consistent with many of Vygotsky's ideas. He initiated ideas about cognitive development in which he refers to the importance of dialogue in which one is able to talk and communicate with others. Vygotsky also emphasised scaffolding where the teacher provides the learner with clues and suggestions in order to develop better problem- solving techniques and thinking habits. His concept of the zone of proximal development (ZPD) refers to the individual's ability to accomplish more or to perform a challenging task with the proper assistance. The development of language is considered important within his theory as Vygotsky believes that individuals are born only with lower mental processes and develop their thinking ability (higher mental processes) by acquiring the thinking tools developed in a particular culture, the most important of which is language. The research followed a qualitative research methodology. The study explored the perceptions of both educators and learners after an intervention based on Philosophy for Children. Qualitative data involved two group interviews with teachers, one with the Cognitive Education Co-ordinator and interviews with four focus groups of selected Grade 5 and 7 learners (12 per group) whose teachers implemented Lipman's Community of Enquiry pedagogy in the

classroom the previous year. Quantitative data included a learner self-rating scale. All the educators of the two schools, who were involved in the classroom Community of Enquiry training, were invited to participate in the study, as were selected learners from the two Grade 5 and 7 classes at each school. I made use of thematic analysis of the interview data from both learners and teachers. Themes within the interviews were identified. Themes pertaining to teacher perception of self-change, teacher perception of learner change, and learner perceptions of self change were identified. During thematic analysis, the three research sub-questions were underlined. These were: (1) What are the teachers' perceptions of self-change? (2) What are the teachers' perceptions of learner change? (3) What are the learners' perceptions of self-change? The conclusion of the study was that P4C has the potential to affect the teachers professionally and to influence the learners positively in Mathematics and Literacy classrooms. Ongoing support in cognitive education is vital in order to reach the aims required for the new CAPS curriculum.



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# CHAPTER 1

## INTRODUCTION TO THE STUDY

### 1.1 INTRODUCTION

This chapter provides a brief background and rationale to the study. It will also highlight the different cognitive aspects of the CAPS curriculum as well as the aims of the study. Furthermore, a brief outline of the theoretical framework and well as the research methodology will be given. Additionally, the general structure of the thesis will be summarized and certain terminology will be defined.

### 1.2 CONTEXT OF SOUTH AFRICAN EDUCATION AND RATIONALE

#### 1.1.2 Context and rationale

After the April 1994 elections, drastic changes started happening in South Africa. In a document of the ANC (1994), one important issue was that the existing education system needed to be transformed.

The following goals were mentioned:

“All individuals should have access to lifelong education and training irrespective of race, class, gender, creed or age. The pursuit of national reconstruction and development, transforming the institutions of society in the interest of all and enabling the social, cultural, economic and political empowerment of all citizens. The reconstruction of the curriculum for schooling and for other contexts will be essential in order to rid the education and training system of racism, dogmatism and outmoded teaching practices.” (ANC, 1994:10)

The challenge was to integrate thirteen different and unequal education departments and create an education system that would benefit all equally. The response to this challenge was a new OBE curriculum. The Outcomes-based curriculum introduced in certain classes in 1998 specified Critical and

Developmental Outcomes across all learning areas, which include the need for learners to develop as critical and creative thinkers. Several problems arose, included the fact that teachers were unprepared to implement the new curriculum (Bloch, 2009). The Revised National Curriculum Statement (2002) retained the Critical and Developmental outcomes but attempted to make the curriculum simpler. These critical outcomes are now known as a section of the aims of the South African Curriculum (see 1.3). Conley, Du Plessis & Du Plessis (2007:56) highlight the importance of these outcomes and state: “These outcomes have a direct influence on both the kind of learner that is envisaged and also the kind of teacher that is envisaged.”

The National Curriculum Statement aimed to address the divisions of the past (Department of National Education, 2002). Its goal was to establish a democratic society that protected human rights. It aimed to improve all the lives of all citizens. It aimed to build a democratic society where there would be equal treatment of all citizens. Furthermore, the kind of learner envisaged is one who takes on the following values:

democracy, equality, human dignity, life and social justice. The curriculum seeks to create a lifelong learner who is confident and independent, literate, numerate, multi-skilled, compassionate, with a respect for the environment and the ability to participate in society as a critical and active citizen. (Department of National Education, 2002:3)

The curriculum documents describe a learner who can think effectively but teachers are unaware of the steps needed to teach thinking and tend to rely on dependent/ passive learning. The action that is taken to empower teachers in this regard is little. Steyn and Wilkinson (1998) cited in Mda and Mothata (2004), urged over ten years ago that there was a need for teachers to be trained in order to construct meaningful classroom activities and arrange teacher, parent and learner participation.

The Critical and Developmental Outcomes specified for South African Education have aims which imply the need for educators to promote thinking actively. For the learners to be able to become effective thinkers, they should direct their own

processes of thinking (WCED, 2002). Killen (2007) noted that the main word in each Critical Outcome is an action verb which gives us two important functions namely: they force us to think of ways in which learner can ‘show’ their learning as well as point out the difficulty of the learning that educators are expecting. There is a great need to develop the higher-order thinking skills in learners so that the Critical Outcomes can be achieved.

### **1.2.2 Personal rationale**

I started teaching a few years ago in an informal settlement in the Cape Flats. Firstly, as a teacher, I observed informally how Mathematics and Language were taught in the Intermediate phase classrooms. These were my observations: learners looked bored/ confused and couldn’t make sense of their teaching world. I realized that Language and Mathematics can’t be taught in isolation. Limited exposure to Language and Mathematics cognitive concepts can impair the learners’ full development. Some learners felt inadequate because Mathematics and Reading did not make sense to them. Learners struggled when they were required to connect the abstract or conceptual aspects of Language and Mathematics with reality/real life situations. They experienced difficulty in switching between the multiple demands of Language and Mathematics problems.

Secondly, I pursued my studies in Educational Psychology in 2008 and developed an in-depth interest in supporting learners with basic educational needs. I started a career as learning support educator and wanted to know why learners are struggling within these two content areas. I realized that the root of the problem is of a cognitive nature and learners should be taught how to think critically and to make connections between what has been taught and what is needed to solve real life problems. Learners see most problems in isolation and cannot make inferences/ predictions and deductions. Scaffolding an instruction is one technique that is definitely working for my learners. I adopted a constructivist pedagogy in order to empower my learners to construct their own understanding and I try to mediate meaning to learners and not just give information. I want learners to understand clearly what the aim of each lesson is by keeping learners on task by

providing structure. I wanted to know more about how P4C could be used within the curriculum to help learners to think. My background as teacher may have influenced how I related to the participants and how I interpreted my data.

### **1.3 CURRENT: CURRICULUM AND ASSESSMENT POLICY STATEMENT (CAPS)**

The National Curriculum Statement (Grades R-12) aims to produce learners that know how to:

- identify and solve problems and make decisions using critical and creative thinking;
- work effectively as individuals and with others as members of a team;
- organize and manage and themselves and their activities responsibly and effectively;
- collect, analyse, organise and critically evaluate information;
- communicate effectively using visual, symbolic and/or language skills in various modes;
- use science and technology effectively and critically showing responsibility towards the environment and health of others;
- and demonstrate and understanding of the world as a set of related systems by recognizing that problem solving contexts does not exist in isolation.

(CAPS, Home Language Intermediate phase, 2011: 5)

It is possible for these aims to be reached in the classroom if teachers are trained to infuse thinking skills into their Literacy and Mathematical teaching. Critical thinking is a demand that the new curriculum places on learners. The context of Education in 2012-2013 is somewhat alarming. If we do not produce good education, it will prevent our youth from competing in a very competitive world which will not make sense to them. They should thus be equipped to become problem-solvers who will be able to survive in this world. In our schools, some teachers do know how to teach critical thinking but in other schools they do not. Why does the South African Education system have such a high drop- out rate? In other words, why are the learners not equipped to be able to compete with the

complexities of higher grades? The statistical information in a newspaper report (Cape Times, November 2012) was quite alarming. It reported that only a small percentage of learners were able to complete their schooling career successfully. Howie, Van Staden, Tshele, Dowse and Zimmerman (2012) reported that in 2011 'reading comprehension with over 40% not reaching even the 'low' international benchmark. Which avenues do we need to explore so that our learners would be equipped to manage these cognitive demands that are placed on them as they pursue their schooling career? P4C is one strategy that can make a difference to help teachers to reach every one of the above aims.

#### **1.4 AIM OF THE STUDY**

The study explored teachers' and learners' perceptions regarding the effects of teachers' Community of Enquiry practices on the teaching and learning of Mathematics and Literacy in two local primary schools. These teachers received training in P4C including COE practices. If the intervention was successful in enhancing thinking one would expect to find that educators and learners approach Literacy and Numeracy differently. The research sub-questions were:

Research question 1: What were the teachers' perceptions of self-change?

Research question 2: What were the teachers' perceptions of learner change?

Research question 3: What were the learners' perceptions of self-change?

#### **1.5 THEORETICAL FRAMEWORK**

This section provides a brief overview of the theory presented in Chapter 2.

##### **Vygotsky's ideas**

The theoretical framework of Lev Vygotsky underpins this study. He initiated new ideas about cognitive development. The development of language is



considered important within his theory as Vygotsky believed that individuals are born only with lower mental processes and develop their thinking ability (higher mental processes) by acquiring the thinking tools developed in a particular culture, the most important of which is language.

He stated that cultural tools are important in cognition because after receiving co-constructed assistance, children internalize it, which will aid them in the future to better utilize these tools. He emphasized how private speech within language development promotes the development of thinking. Children use self-talk to guide actions to assist with their thinking. As Woolfolk (2004) explains, his theory stated that social interactions are needed for learning. Vygotsky refers to the importance of dialogue where one is able to talk and communicate with others. This, he said, would allow individuals to move towards more individualized thinking.

Knowledge is a co-constructed activity using shared problem solving. This experience of orally communicating with others, which implies the use of language, will importantly aid the child in the future to utilize better strategies should a problem similar to this occur. The effect of these co-constructed dialogues, will eventually become independent thinking.

Vygotsky also emphasized scaffolding where the teacher provides the learner with clues and suggestions about both the content and process of learning in order to develop better problem- solving techniques and thinking habits. Scaffolding is also referred to as mediation and occurs within the zone of proximal development (ZPD) of the learner. Given the right assistance, the child will be able to carry out a complicated task in order to achieve more than he or she is capable of doing alone (Woolfolk, 2004).

In Lee and Smagorinsky (2000), a study of Vygotsky suggests that learning in a school situation can be of an optimal nature when the learner arrives with adequately developed spontaneous concepts learned in community contexts.

The learner, who is using spontaneous concepts, is then placed in a social context with a more skilled teacher who, through stimulating, modelling and questioning, directs the learner to a more adult-like representation of the task at hand. The learner does not acquire this in isolation. As stated above, this condition is called by Vygotsky the zone of proximal development (ZPD) and is often referred to as a metaphorical place where problem-solving happens. Development and learning is inseparable which make the school, home and community environments crucial and equally important in developing a child's full potential. These ideas are explained in chapter 2.

### **Lipman's ideas**

Philosophy for children is the 'brand name' of Lipman's materials and practices. It is sometimes used as a generic term for philosophical inquiry and the use of Community of Enquiry pedagogy with children but in fact there are a number of approaches using philosophy with children. It is claimed that philosophical questions awaken the children's natural curiosity and extend their understanding because they underpin everyone's experience and children naturally wonder about them. Philosophy for children employs a pedagogy called the Community of Enquiry. Lipman, (2003) noted that reasoning and understanding can only be encouraged through the teaching of caring, creative and critical thinking.

Research confirms that children gain academically from regular participation in Community of Enquiry dialogue in the classroom (Sutcliffe, 2003). No studies involving 'pure' P4C have yet been undertaken locally, although local studies suggest that children gain in confidence and learn to speak together more reasonably (Roberts, 2006) when exposed to Community of Enquiry practices. Lipman's ideas and practices are discussed in greater detail in chapter 2 where the Literacy and Maths demands of the CAPS curriculum are also presented.

## 1.6 RESEARCH METHODOLOGY

This study was carried out within a qualitative framework. Henning, van Rensburg and Smith (2004:3) believe that within a qualitative inquiry, “We want to understand, and also explain in argument, by using evidence from the data and from the literature, what the phenomenon or phenomena that we are studying are about”.

The evidence from this study came from fifteen teachers and seventy-two learners from two Western Cape schools. These teachers had been part of a COE intervention programme. The learners’ ages ranged between 10 to 13 years old and the teachers’ experience ranged from few to about twenty-five years. Data collection was in the form of two group interviews with the teachers and one interview with the co-ordinator. Learner data were obtained by means of four focus group interviews as well as a rating scale.

The open-ended questions in the rating scale as well as the interviews, lend themselves to themes and thematic analysis was used as a means to analyze the data. The rating scale was analyzed numerically. Permission was obtained from the Western Cape Education Department as well as the principals of the respective schools to conduct the study. Furthermore, written consent forms were completed by the parents whose children participated in the study.

A copy of the thesis will be made available to the WCED at the end of the study. The two participating schools will each receive a copy summary of the research findings

## 1.7 STRUCTURE OF THE THESIS

Chapter one, the present chapter, is an introduction to the study, where the context is explained and the main concerns to be investigated are identified. It provides a brief overview of the theoretical justification for the work and the methodology to be employed in the research.

Chapter two provides the review of the literature - explaining the theory that underpins the study and relevant research knowledge concerning cognitive development and Community of Enquiry practices. This process helped the researcher to obtain information on what has been done and gained directions as to what data were to be collected and how to interpret the study.

Chapter three provides detail regarding the research methodology and its theoretical assumptions. Semi-structured interviews, focus groups as well as a learner individual rating scale were used to gather data. The qualitative data were analyzed using thematic analysis and numerical/ statistical calculations were performed on the quantitative data.

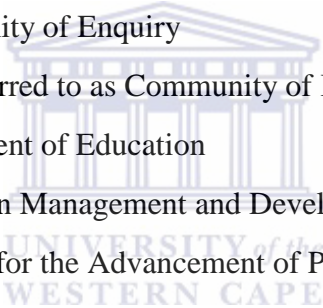
Chapter four contains a presentation of the findings, organized in terms of the research questions.

Chapter five provides a discussion of the findings and their implications and makes recommendations in terms of both practical actions and further research.

## 1.8 TERMINOLOGY AND ABBREVIATIONS

### Community of Enquiry

“A community of inquiry, for Lipman, is a group motivated to generate deeper understanding by means of conversations structured by the thinking and reasoning tools developed within the discipline of philosophy” (Green, 2008:2). However, as Splitter and Sharp, 1995 point out, a community of enquiry is an ideal to strive for and may be different in different disciplines.



ANC	- African National Congress
CAPS	- Curriculum and Assessment Policy Statement
COE	- Community of Enquiry Also referred to as Community of Inquiry (COI)
DoE	- Department of Education
EMDC	- Education Management and Development Centre
IAPC	- Institute for the Advancement of Philosophy for Children
NCS	- National Curriculum Statement
OBE	- Outcomes Based Education
P4C	- Philosophy for Children
RNCS	- Revised National Curriculum Statement
SDT	- Staff Development Team
SIP	- School Improvement Plan
WCED	- Western Cape Education Department
ZPD	- Zone of Proximal Development

## 1.9 CONCLUSION

This chapter presented the context of South African Education and the rationale for the study. Aspects of the current curriculum were mentioned and the aim of the study was explained. The theoretical framework and the methodology used in the study were briefly explained. Finally, the thesis structure was given and the terminologies as well as abbreviations used were explained. The next chapter will focus on the review of literature and theory that underpins the study.

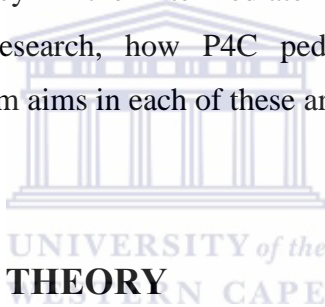


## **CHAPTER 2**

# **THEORIES AND PRACTICES OF COGNITIVE DEVELOPMENT**

### **2.1 INTRODUCTION**

In this chapter I summarize Vygotsky's theory of cognitive development, which supports the idea of actively intervening to improve thinking. I then describe Philosophy for Children (P4C), which is one way of doing this. Thereafter I review and discuss the requirements of the South African (CAPS) curriculum for Mathematics and Literacy in the Intermediate Phase. Finally I discuss, with reference to relevant research, how P4C pedagogy can contribute to the achievement of curriculum aims in each of these areas.



### **2.2 VYGOTSKY'S THEORY**

How do our children develop into thinking beings? Cognitive psychology is a branch of developmental psychology and is concerned with how human beings develop and grow as thinkers over their life-span (Colman, 2003). Vygotsky's theory maintains that the use of psychological tools allows a qualitative change in mental life. Vygotsky had a broad view of development and asked how psychological processes develop. The other question he raised was: how do children acquire these psychological tools or cognitive functions? According to Vygotsky (1962) the answers to these two questions are to be found in social processes. Key points in Vygotsky's theory of cognitive development are explained below.

### ***2.2.1 Higher and lower mental functions***

Vygotsky said that the lower mental functions are the mental abilities that human beings are equipped with at birth, which include simple attention, perception, memory and reasoning. In the course of development these functions are extended and become more complex as children acquire what Vygotsky called ‘psychological tools’. The basic abilities that people are born with are refined and improved as they grow up and develop into higher mental functions. He claimed that we should understand the process of mediation, in order to understand the mental processes. In higher forms of human behaviour, the individual actively modifies the stimulus situation as a part of the process of responding to it. According to Vygotsky (1962, 1978) with the use of language based tools, higher mental functions develop. Examples of such internal mental tools are speech, counting writing and memory strategies. This is why Vygotsky says that learning makes development possible, rather than that learning must wait until development occurs.

### ***2.2.2 Importance of language***

Vygotsky focuses on the role of language. As Meadows (2006) points out Vygotsky sees language as one of the most important ‘psychological tools’ in the acquisition of cognitive abilities. Vygotsky claims that young children firstly use language socially as a means to relate to others and not to think. He asserts that it is a gradual process for thought and language to merge, which progressively influences the thinking of a child. Only then, he says, is thinking expressed in language and language becomes a tool for thought.

Ntshangase cited in Swartz, De La Rey, Duncan & Townsend (2009) explains that language serves various purposes as children develop. The writer stresses that during the “social stage, between birth and the age of three years” (2009:82), language is used to express how children feel and what they want and “during the egocentric stage, between the ages of three and seven, children begin to use language to direct their own behaviour namely by talking aloud”. Vygotsky described these utterances as “external speech”. Normally from the age of seven

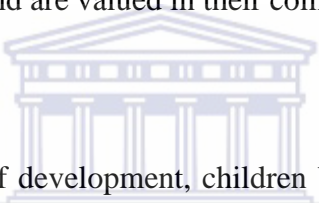


forwards the external speech changes to internal speech because from this age, children become able to direct their behaviour silently, through the use of inner speech. The child is now able to shape and direct his or her thinking because of the fusion of thought and language.

### ***2.2.3 Socio-cultural mediation***

Vygotsky noted that babies and young children possess mental functions that are not yet fully developed. A transformation needs to take place from lower to higher mental functions. According to Vygotsky, this is accomplished through socially mediated activity, where more knowledgeable others assist in the process. Vygotsky's social-cultural theory focuses on how beliefs and culture are passed on between generations. Children acquire the ways of thinking and being that have evolved over time and are valued in their communities.

Vygotsky puts it that:



...in the process of development, children begin to use the same forms of behaviour in relation to themselves that others initially used in relation to them. Children master the social forms of behaviour and transfer these forms to themselves...Logical argumentation first appear among children and only later is united within the individual and internalized. Child logic develops only along with the growth of the child's social speech and whole experience...it is through others that we develop into ourselves and...this is true not only with regard to the individual but with regard to the history of every function...Any higher mental function was external because it was social at some point before becoming an internal, truly mental functioning. ...Any function in the child's cultural development appears twice, or in two planes. First it appears in the social plane and then on the psychological plane. First it appears between people as an inter-psychological category and then within the child as an intra-psychological category.

Vygotsky 1981, in translation in Wertsch 1981:296 in Meadows 2006

Ntshangase (2009:81) cites, in Swartz, De La Rey, Duncan & Townsend, (2009), that Vygotsky proposed that "cultural tools are ways of functioning in response to the demands of the culture in which a child is raised". In the light of the above the writer says that children acquire these tools through interaction with others in their environment. With time, they adopt these tools as their own. In other words

becoming an effective thinker and learner is, according to Vygotsky, something that children learn and acquire and therefore mediators are important, i.e. parents and teachers. Parents and teachers need to show children how to use their minds and how to reason, not just wait for development to happen. According to Vygotsky, children progressively acquire higher mental functions. This is made possible through directed instruction from others in their environment that is more capable.

#### ***2.2.4 Zone of proximal development***

Vygotsky said that we should not just look at what a child can do unaided, but at what he or she can do with help. Ntshangase (2009:81) explains the “zone of proximal development (ZPD) as an area that has at its lower boundary, the level of problem-solving that a child can perform on his/her own, and as its upper boundary, the level of problem-solving that a child is capable of, given the assistance of a more competent instructor”. He adds that outside the “upper boundary are those tasks that a child cannot yet perform”, even if a proficient instructor helps. These tasks are beyond the child’s cognitive capacity. “Within the ZPD the support given to the child is gradually decreased as the child masters the task(s) at hand” (Ntshangase, 2009). Consequently, the writer adds, “when children reach the upper boundary of their ZPD, this then becomes their lower boundary for other, more cognitively demanding tasks” (Ntshangase, 2009:82). In other words a parent or teacher should not just wait until a child can do something, but provide them with guidance and cues that are gradually reduced.

If Vygotsky is correct about how human thinking develops, it is important to provide mediational input. Since the 1980s this point has been made in the cognitive development literature, notably by Feuerstein (1980) but also by many others. Several approaches to the active ‘teaching of thinking’ have emerged. Lipman’s P4C, developed from the late 1970s, is in many ways consistent with a Vygotskian understanding of human development, although its theoretical foundation is not cognitive psychology. It represents one practical way in which ordinary teachers can encourage and enhance thinking in the classroom.

## **2.3 PHILOSOPHY FOR CHILDREN: A WAY OF IMPLEMENTING VYGOTSKY'S IDEAS**

### ***2.3.1 Definition and aims***

Lipman (1991, cited in Fisher, 2003:38) defines “Philosophy for Children as philosophy applied in education for the purpose of producing students with improved proficiency in reasoning and judgement”. Furthermore, he states that its purpose is to help children transfer from the “routine to the reflective, from “unconsidered to considered, from everyday thinking to critical thinking” (2003:38). He reasoned that this improvement in thinking can be seen as a move from unconscious to conscious thought, from every day to critical thinking, moving from the surface of things to the structure of things, from what Socrates calls the unconsidered life to a considered view which back claims and opinions with reasons. He considers Philosophy for children to be an approach that goes beyond critical thinking because it emphasizes the purpose as well at the process of thinking. Among the approached to enhancing thinking, P4C is unique in that it explicitly addresses social and moral, as well as cognitive, aspects of thinking.

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Lipman writes that

Education involves more than skill development. We may acquire a skill but may misuse it.... Thus it is the humanities discipline of philosophy and not reasoning skills alone that should be taught as an integral part of the elementary and secondary school curriculum.” He added that “Philosophy is to the teaching of thinking what literature is to the teaching of reading and writing. (Lipman, 1991 cited in Murriss, 2000:45)

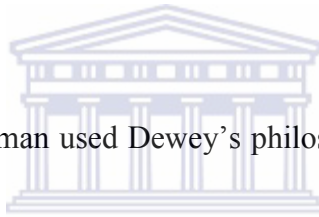
### ***2.3.2 Theoretical foundations***

P4C programmes derive from the philosophy of Dewey (McCall, 2009). McCall (2009:102) writes extensively about Dewey’s view of knowledge which is “an adaptive human response to the environment aimed at changing the environment.” McCall explains that Dewey argues that we engage in interaction with our surroundings with the goal of changing them. In order to act responsibly on the environment individuals need to be capable of reflective thinking.

Dewey (1933:6) defines reflective thinking as the

active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends... it is a conscious and voluntary effort to establish belief upon a firm basis of reasons.

Dewey believed that reflective thinking is a practice through which “we examine the grounds and consequences of our belief in order to investigate an area of imperfect knowledge or to solve a problem” (Dewey, 1933:6). Everyone experiences problematic situations. In order to learn from these adverse encounters in life individuals need to be able to reflect on them systematically. Dewey accentuated the continued use of enquiry. He mentioned that one’s thinking is then ordered and builds towards a well thought-out judgment. Lipman added to Dewey’s ideas and Peirce’s (1965-6) notion of enquiry as scientific method.



As McCall explains, Lipman used Dewey’s philosophical theory in the following ways:

	Dewey’s pragmatic philosophy	Instantiated in Lipman’s P4C practice
1.	In Dewey’s pragmatic philosophy, ‘truth’ is the product of ‘successful, active manipulation’ of the world by people, and best encountered within a democratic setting.	In Lipman’s P4C practice, there is an emphasis on democratic practice in which children are joint creators of meaning.
2.	In Dewey’s pragmatic philosophy there is no epistemological-metaphysical distinction.	In Lipman’s P4C practice, the construction of meaning takes priority.
3.	In Dewey’s pragmatic philosophy, people negotiate and construct truth in relation to their experience of the world.	In Lipman’s P4C practice, children negotiate the link between ideas and their own experience.
4.	In Dewey’s pragmatic philosophy, truth is a kind of heuristic relationship between a person and the world.	In Lipman’s practice, every child’s experience and thinking have equal value.

Source: McCall (2012:104)

Lipman believed that children needed the experience of philosophy as part of their education, in order to prepare them for democratic citizenship. He and his

colleagues created the P4C materials in order to make it possible for ordinary teachers to give philosophy lessons and transform classrooms into communities of enquiry.

### ***2.3.3 The P4C materials and their use***

P4C consists of a series of sequential narratives designed to introduce children and young people aged 6-16 to key philosophical ideas and concepts. The narratives provide the stimulus for children's questions, which then form the agenda for the lesson as they are discussed. These P4C narratives are not stories with a plot but snapshots of classroom life in which children model the kind of enquiry that Lipman would like to see in classrooms. The narratives are accompanied by comprehensive manuals designed to make it possible for teachers in ordinary classrooms to introduce philosophical enquiry.

The P4C manuals contain discussion plans and exercises for extending leading ideas and thinking skills relating to each story. A philosophical discussion plan consists of a group of questions around a central concept or problem. The questions may form a series, which either build upon each other or which circle around a topic so that it can be seen from many angles. This planned use of leading questions aims to stimulate the creative response of the student, to exercise and broader thinking in a more systemic way.

According to Fisher (2003), a typical P4C lesson works as follows: a group of children or adults sit in a circle with the teacher forming part of the group. Part of the chosen novel is read aloud round the class or group. Poor readers are allowed to 'pass' as they can choose not to read. After the reading is done, the teacher asks the group to reflect on the story to pick out what they find significant or interesting. She gives time for thinking and time for shared discussion and then writes up learners' questions, adding the name of each contributor.

According to Fisher (2003), with the help of a teacher, a topic will be chosen that will be the focus for discussion. Once the topic is chosen, the teacher usually

refers it back to the contributor, asking for a comment about the question. The aim is to discover the philosophical dimension of the topic. The text will be questioned and new words and concepts will be explored. This will allow learners to articulate views and beliefs make judgements and give reasons. The teacher ensures that learners respect each other's views and takes an active role in facilitating this enquiry process.

The teacher has a specific role in a classroom community of enquiry. Firstly, the teacher will choose a way to share the story and guarantee that everyone understands. Secondly, the children will be motivated to pose questions that the story makes them wonder about. These questions should ideally come from the class. The teacher will then assist the learners to establish ground rules for their enquiry. During the dialogue the teacher models certain thinking tools. Lastly, children are encouraged to stay motivated and to persist with an enquiry, and eventually to monitor their own use of 'thinking tools'. Splitter and Sharp (1995) point out that the role of the teacher as facilitator gradually reduces over time although she always has the responsibility of maintaining the philosophical aspect of the dialogue.

In the community of enquiry process children learn how to use some of the language of thinking used by philosophers. This is modelled for them by the teacher. These thinking tools can be thought of as cognitive skills which Lipman defines as 'the ability to make cognitive moves and performances well' (Lipman, 1991:76). He added to Bloom's theory and "distinguishes between lower-order and higher-order cognitive skills in terms of complexity, scope, the intelligible organisation of a complex field, the recognition of causal or logical compulsions and qualitative intensity" (Lipman, 1991:94). Sutcliffe (2003) and Kennedy (2003) highlight the fact that asking questions is a cognitive move.

Sutcliffe (2003:73) summarised the most common thinking moves as follows:

members question one another; members request of each other reasons for belief; members build on one another's ideas; members deliberate among themselves; members offer counter-examples to hypotheses of others, individuals point out possible consequences of one another's ideas; members utilise specific criteria when making judgements and members co-operate in the development of rational problem-solving techniques

Kennedy (2003) summarises the thinking moves as follows:

Asking a question; agreeing or disagreeing; giving a reason; offering a proposition, hypothesis or explanation; offering an example or counterexample; classifying/ categorising; making a comparison; offering a definition; identifying an assumption; making an inference; making a conditional statement; reasoning syllogistically; self-correcting; restating and entertaining different perspectives.

#### ***2.3.4 Community of Enquiry pedagogy***

The previous section has described the way a community of enquiry works within the context of Lipman's original model. Others have subsequently adopted this pedagogy while using different forms of initial stimulus. In all cases the focus is on respectful dialogue intended to clarify concepts of interest to the participants. Carnell and Lodge (2002) describe dialogue as an important means of creating conducive learning environments. This section looks more closely at the nature of a community of enquiry.

Splitter and Sharp (1995), as well as Lipman (2009), describe the community of enquiry concept as one which has two main features namely community and enquiry. The community aspect is built on "co-operation, care, trust, safety and a sense of common purpose" while the enquiry aspect is "driven by the need to transform" (Splitter and Sharp, 1995:18). Murriss and Haynes (2008:3) state that children constantly seek answers to questions and by attentively listening to each other's ideas, "thinking out loud and carefully building on each other's ideas." They further state that through encouragement, they will be able to clarify concepts, develop their own lines of enquiry and use various examples to check the acceptability of their arguments. They add that "the fostering of trust and care alongside reasonable and responsible thinking underlies our conviction that the

transformation of classrooms into communities of enquiry is an educational imperative...” (Murriss and Haynes, 2008:3). They stress that children start seeing themselves as active thinkers, discoverers and as valuable human beings. They maintain that this conceptual framework enhances learning and is not discipline bound. It can be applied to all areas of learning.

Fisher (2003) also highlights respect and trust as two vital elements in a community of inquiry setting. Both of these may take time to develop within a group. But, as Sutcliffe (2003) remarks, such a community creates a better understanding and appreciation of each other’s words and worlds and is worth working towards. Sharp (2009) warns, however, that “communal inquiry is hard work involving continual growth in understanding the other.” But if the teacher is prepared to persevere, dialogic enquiry helps children learn how to make better, wiser and more well-thought-out judgements.

Splitter and Sharp (1995:17) define community of enquiry pedagogy as .....

one of those key concepts which takes on new aspects and dimensions as teachers and students apply it, at once immanent and transcendent: it provides a framework which pervades the everyday lives of its participants and it serves as an ideal to strive for.

In other words this pedagogy is more complex than it at first appears. Murriss and Haynes (2008) point out that community of enquiry pedagogy makes substantial demands on the teacher. They add that special training and skills in philosophizing are required. They explain that the teacher has a combined role as co-enquirer, guardian, listener and guide. Murriss and Haynes (2008) stress the fact that the teacher’s job is not easy because the children need to be assisted with the difficult task of building on each other’s ideas. Though the children might be able to internalize some of the facilitator’s thinking moves, the role of the teacher can never be ‘dismissed’. The words of Kitchener (1990) are referred to by Murriss (2000:44), who states that “children can do philosophy, but they need scaffolding by a competent facilitator.”



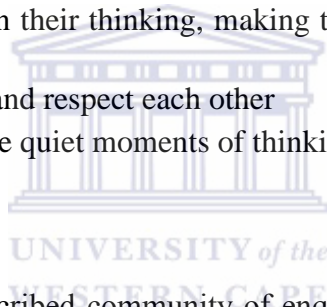
Children not only can, but should, do philosophy because philosophy is there

... to provide a framework in which fundamental questions of how we think and know are raised and considered alongside equally fundamental questions of how we ought to treat one another and the world itself (Splitter & Sharp, 1995:3)

This pedagogy, it is claimed, confers many benefits. Fisher (1998:55) summarized that classroom communities of enquiry can boost self-esteem, intellectual confidence and the ability to participate in reasoned discussion. Learners will then be able to:

- Explore issues of personal concern such as love, friendship, death bullying and fairness and more general philosophical issues such as personal identity, change, truth and time
- Develop their own views, explore and challenge the views of others
- Be clear in their thinking, making thoughtful judgements based on reasons
- Listen to and respect each other
- Experience quiet moments of thinking and reflection

(Fisher, 1998: 55)

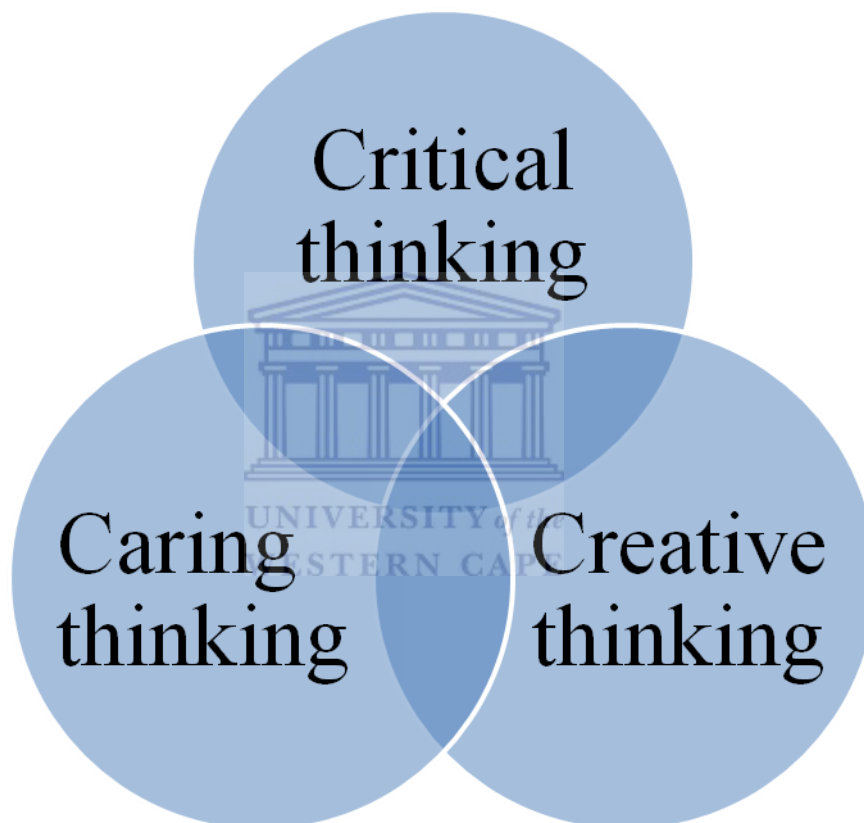


Morehouse (1993:9) described community of enquiry as "...well suited to assist the student who is on the verge of understanding, in other words a student at a zone of proximal development. The advantage of discussion with a community of enquiry is that what one student knows about one part of the discussion, for example a concept or a strategy, can help another student who will in turn be helped by another student in a circle of 'assisted instruction'. The teacher can also aid this process by modelling and providing cognitive structures in particular." (Morehouse,1993:9). The teacher is not necessarily the expert. The teacher's greatest concern is for understanding among their students. This is a developing process which cannot be created instantly. Children are encouraged to express their own ideas and to challenge each other without fighting and in so doing they become more confident.

### ***2.3.5 Lipman's model of thinking***

Lipman (2003) does not limit himself to a narrow understanding of thinking. He proposes a model of thinking in which critical, creative and caring thinking should be treated equally.

“In teaching for multi-dimensional thinking, one must be on one's guard not to give the impression to students that critical thinking is equal to the whole of thinking.” (Lipman, 2003: 201)



***Multidimensional model of thinking, adapted from Lipman 2003:200***

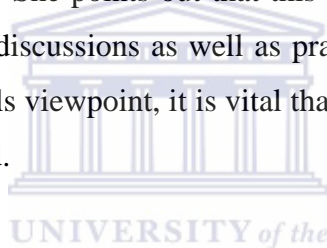
Critical thinking is important. As Haynes (2002) states, by encouraging questioning and critical thinking, teachers will equip pupils for democracy. She further remarked that philosophical dialogue offers good opportunities for children to learn to point out differences in arguments and the need to consider many examples in order to make sound judgements. But it must be balanced by caring and creative thinking. Oliverio (2012:18) emphasizes the value of

promoting the ability to self-correct so that one's own culture does not become a form of "imprisonment in fixed horizons" and P4C is a means to do so.

According to Fisher (1998) Lipman's ideas are applied widely in the UK, particularly in the context of moral and social education. With its emphasis on questions and questioning it can be incorporated into all fields of the curriculum.

### ***2.3.6 Research findings about P4C***

McGuinness (1999) speaks about the concepts that are vital in emerging thinking skills and mentions that it is vital to allocate time and create opportunities to talk about what children are thinking and make it more explicit. She adds that alternative approaches for thinking together with new knowledge are communally created in the classroom. She points out that this can be done in interaction with peers, through dialogue discussions as well as practical activities. She concludes that, from a thinking skills viewpoint, it is vital that this type of socially facilitated activity is wisely planned.



Sharp, speaking to Striano and Oliverio (2012), claims that P4C could help to create a generation that would be critical, creative and caring. She claims that P4C could help children when taught in a classroom community of inquiry but she adds that this is highly dependent on teachers' skills. Teachers need to be equipped with the following:

- critical, creative and caring thinking
- concept formation skills
- dialogical skills
- reasoning skills
- inquiry skills
- global consciousness
- intercultural understanding
- better judgment-making
- education of the emotions (Striano and Oliverio, 2012: 43)

All of the above would be helpful in the Literacy and Mathematics classroom.

Research internationally suggests that P4C does make a difference when carried out regularly in classrooms by skilled teachers. For example, it has been found to lead to higher IQ scores (Trickey and Topping, 2008), higher achievement (Fisher, 2003), greater interpersonal respect (Sutcliffe, 2003; Mehrnoosh, 2009), thoughtful dialogue (Trickey and Topping, 2008) and to promote reasoning (Lipman, 2003).

Mehrnoosh's (2009) investigation was based on Lipman's theory. It explored the effect of community of inquiry methods on interpersonal relationship skills. This semi-experimental study revealed that after being exposed to community of inquiry methodology, positive interpersonal relationship skills developed in the experimental group of children who were engaged in enquiry for 12 sessions.

In Hunter's study (2007) attention was paid to socio-cultural as well as mathematical norms. The intervention contributed to individual and collective responsibility for making sense. It became a collective responsibility to make sense. The result of the scaffolded mathematical participation brought about an increase in mathematical reasoning. The teacher's continued press for inquiry and argumentation helped. She finally commented that the "teachers' increased expectations provided the students with a platform to learn and use explanatory justification, generalised reasoning, the construction of a range of inscriptions to validate the reasoning and more detailed use of mathematical language" (Hunter, 2007:37).

Studies show that P4C is good for self-esteem. Fisher (2003) reported research findings from a variety of studies worldwide showing that P4C has a positive effect on children's self-esteem and, consequently, on their achievement scores in English and Mathematics. He noted that the learners enjoyed philosophical discussions and find the community of inquiry approach motivating. He found that teachers were of opinion that philosophical discussion added a new dimension to teaching and the way learners think. As learners' self-esteem

improved, they became more ready to ask questions, to put challenges to each other and to give meaning to what had been said.

Trickey and Topping (2008) showed that enquiry in philosophy can help children become more advanced in their thinking. Cognitive gains were evident and learners were now able to construct meaning and understanding.

Recent studies have shown that P4C can bring about significant changes with regard to certain thinking moves. Lipman (2003) refers to research which showed that students who have been exposed to the P4C programme become more reasonable, more thoughtful, more sensible and more considerate.

Significant findings by Fisher (2003) and Gardner (2009) suggest that respect for each other can improve in a P4C setting. Haynes (2002) pointed out that children often ask questions with philosophical potential. She mentioned that P4C is beneficial for the growth of moral, social and personal development, education and citizenship and higher-order thinking skills.

Cassidy and Donald (2009) explain that P4C can make an important contribution to curriculum change and also has the potential to offer wider social benefits by allowing children to speak. Their study's results evidently indicate that children are capable of high level reasoning and that responsive dialogue is conducive to children becoming effective contributors and responsible citizens. Studies have shown that P4C promotes reasoning. Data analysis from a study carried out in 1994, (Lipman, 2003), involving 5<sup>th</sup> and 6<sup>th</sup> graders in four different sites in the USA, found that students who had been taught Philosophy for Children over the course of an academic year were capable of superior reasoning after the intervention.

Gardner's paper (2009) was based on respect that children should develop for each other. She remarked further that this is all about assisting students

developing an understanding of mathematics and making them realise that is a process to make sense out of. She added that the students need to know and understand. They need to be made aware that mathematical problems have to be interpreted and carefully examined. She argued that we must also let them understand the relationship between mathematics and uncertainty and the part played by the one who gives and the one who answers a mathematical problem. Finally, she mentions the pivotal role that the community plays as a creator of ideas.

Skemp (1971), Cassidy and Donald (2009) and Sharp (2009) speak about the benefits of discussion with fellow-students as an important contributing factor in cognitive development. Skemp (1971) points out that ideas become more conscious if formulated in words. He added that another factor is the interrelating of ideas with those others. Discussion also stimulates new ideas so that the ideas of each become available to all, as in the case of the pieces of a jig-saw puzzle. Listening to someone else may spark off new ideas. He also mentions that in a group there must be an agreed form of behaviour, such as willingness to take turns to speak, to consider the viewpoint of others and to listen to them. He added that if the group members disagree, they should do it in the right kind of way with a shared understanding of the process.

Green (2009) concluded her study by saying that both teachers and learners firstly became critical thinkers, secondly become conscious of their ability to create and in turn developed greater confidence.

In a study on pre-service teachers' experiences, Green, Condy and Chigona (2012) reported the following findings from both interviews and written reflections of the students. Students reported that to have been part of a community of inquiry session was interesting because opportunities were given to see how others think and what type of arguments were brought forth to the table. Students also reported that they became aware of their own thinking, became more organised and developed skills to "listen, speak and think critically in a conversation". The

authors noted that students were able to use thinking moves effectively and could build on each other's ideas and give counter examples where necessary. The students also noted observable positive changes among their learners with regard to behaviour and attitude. There were, however, concerns with the community of inquiry approach. Classroom size did not allow effective group work, language issues came up where English was not the Language of Learning and Teaching (LOLT) and the approach was seen as time-consuming as most of the learners were not able to read the stories within the allocated time-frame.

### ***2.3.7 Philosophy for Children in South Africa***

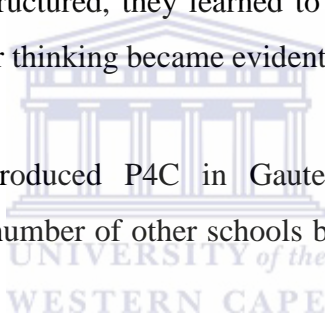
Lipman's work was introduced to teachers in the Western Cape in 2004 through a series of workshops. Intermediate phase teachers in grades 4, 5 and 6 subsequently wrote stories designed for different grades using Lipman's Philosophy for Children texts as a model. These stories include 'snapshots' of school life which raise questions without giving answers in order to inspire children to raise and discuss questions that concern them. As Lipman recommends, these chosen questions are to be discussed by the class as a 'community of enquiry'. Rules of enquiry are set by the class in order to promote respect for each other.

This project resulted in the Stories for Thinking texts (SFT) for the intermediate phase, together with simple manuals to accompany each of the three story books. Thereafter, various research studies were undertaken, for example by Borman (2005), Roberts (2006), Permall (2007), Agulhas (2011) and Green (2012). Borman (2005) conducted her research in one Intermediate phase classroom in the Western Cape. With regard to the learners, their listening skills, respect for each other, participation in discussion, expressing opinions, speaking skills, confidence, transfer, change of opinion and the ability to make new friends, in general improved. Roberts' (2006) study was another way of investigating the effects of the teacher development programme based on the Philosophy for Children. Thematic analysis showed that substantial changes can occur in learners' educational functioning, their reasoning ability as well as their ability to

listen to others and to engage in effective class discussions. Permall's (2007) research reported learner improvement within the areas of respect, self-confidence, listening and use of cognitive moves, interpersonal skills, contextual applications and thoughtfulness. Agulhas (2011) found that SFT was able to assist with the reading ability of some learners, improved their confidence levels and appeared to cause a positive change in the general behaviour of learners. Challenges he identified were language barriers, lack of monitoring and support and time constraints,

Green (2008) conducted research in the Western Cape and reported the following classroom changes within the learners/ teachers: the teachers' expectations of their learners were raised, learners became more involved, the interactions between the learners became more structured, they learned to respect each other more and a greater awareness of their thinking became evident.

Murriss (2012) also introduced P4C in Gauteng at the University of the Witwatersrand and in a number of other schools but to date, no research findings are available.



## **2.4. THE SOUTH AFRICAN CURRICULUM**

### **2.4.1 Mathematics in the Intermediate Phase**

The South African Oxford School Dictionary (2009:204) defines mathematics as the 'study of numbers, measurements and shapes'.

The Intermediate Phase Mathematics Curriculum and Assessment Policy Statement (CAPS) provide teachers with the following definition of mathematics, "Mathematics is a language that makes use of symbols and notations to describe numerical, geometric and graphical relationships. It is a human activity that involves observing, representing and investigating patterns and quantitative



relationships in physical and social phenomena and between mathematical objects themselves. It helps to develop mental processes that enhance logical and critical thinking, accuracy and problem-solving that will contribute in decision-making.” (CAPS, 2011:8). This is followed by a description of specific aims and specific skills. The focus and weighting of content areas as well as content specification is also explained in detail in the CAPS document.

The aims of the teaching and learning of Mathematics are specified as follows:

- “a critical awareness of how mathematical relationships are used in social, environmental, cultural and economic relations;
  - confidence and competence to deal with any mathematical situation without being hindered by a fear of Mathematics
  - a spirit of curiosity and a love for Mathematics
  - an appreciation for the beauty and elegance of Mathematics
  - recognition that Mathematics is a creative part of human activity
  - deep conceptual understanding in order to make sense of Mathematics
  - Acquisition of specific knowledge and skills necessary for:
    - the application of Mathematics to physical, social and mathematical problems
    - the study of related subject matter (e.g. other subjects)
    - further study in Mathematics.”
- (CAPS, 2011:8)

To achieve these aims, learners need to be able to think well and for themselves.

These aims also reflect many of the ideas of other authors about the teaching and learning of Mathematics. Ernest (2004) wrote intensively about the philosophy of mathematics education.

His more recent summary of these aims is as follows:

- Utilitarian knowledge
- Practical, work-related knowledge
- Advanced specialist knowledge
- Appreciation of mathematics
- Mathematical confidence as well as

- Social empowerment through mathematics. (Ernest, 2004: 316)

These aims could assist in the holistic understanding of Mathematics teaching and learning.

Ernest (2004) focussed in his paper on the process of doing mathematics as well as the importance of problem-solving strategies. His ideas are based on the constructivist theory of learning as applied to mathematics. According to Cockcroft (1982:71), mathematics teaching at all the different levels should include the following:

- opportunities for exposition by the teacher,
- discussion between teacher and pupils and between pupils and themselves,
- appropriate practical work,
- consolidation and practice of fundamental skills and routines, problem-solving, including the application of mathematics to everyday situations
- Investigational work

Smith's (2004) viewpoint is similar to that of Ernest (2004) and states that Mathematics should be for one's own sake because of its practical value i.e one can benefit from it. It provides knowledge of the economy, science, technology and engineering that is useful in the workplace and for the citizen. Like Smith, Heymann's (2003) viewpoint inspires teachers to focus on preparing students for later life, promoting cultural competence and critical thinking, developing an understanding of the world, developing a sense of responsibility as well as practising communication and co-operation. In a more recent study regarding Mathematics, Noyes (2007) speaks about the big questions concerning Mathematics education. Important questions that he raised were:

- Why teach mathematics?
- Of what use is the mathematics curriculum to different groups of learners?
- Why are popular views of mathematics often so negative and what might teachers do in an attempt to challenge these?
- Where has Mathematics education come from and where is it going?
- How does/ can Mathematics education contribute to general education: young people's personal, social, spiritual, moral and cultural development?

He explores alternative classroom activities and argues that fewer students are taking up Mathematics because they do not see Mathematics as a powerful tool that could change the world.

Teaching approaches can help to develop children's appreciation of mathematics as well as giving them strategies for tackling new problems (Ernest, 2004). He remarked that teachers must concentrate on teaching for understanding to enable learners to develop skills and concepts, as well as the ability to apply them in mathematical thinking. Secondly, he states that time must be devoted to developing and applying the general strategies of problem-solving and investigational work in mathematics.

As the CAPS document (2011:8) explains, to develop essential mathematical skills the learner should:

- develop the correct use of the language of Mathematics
- develop number vocabulary, number concept and calculation and application skills
- build an awareness of the important role that Mathematics plays in real life situations including the personal development of the learner.

The document also explicitly refers to certain cognitive skills:

- learn to listen, communicate, think, reason logically and apply the mathematical knowledge gained
- learn to investigate, analyse, represent and interpret information
- learn to pose and solve problems

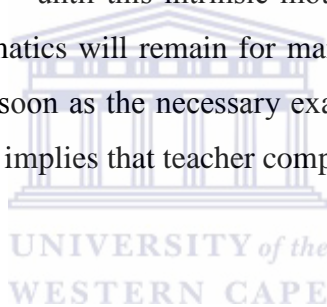
(CAPS, 2011:8)

All of the above cognitive skills are nurtured as learners engage in a community of enquiry.

Skemp (1971) identified challenges in mathematics teaching. These include the fact that mathematical concepts are far more abstract than those of everyday life and that mathematics cannot be learned directly from the everyday environment, but only indirectly from other mathematicians. He emphasised that the learner is now largely dependent on his teachers. Skemp (1971) further commented and argued that because "Mathematics teaching to those at a lower conceptual level is

lacking, many people acquire at school a lifelong dislike, even fear, of mathematics”.

Many students lack confidence in their ability to understand mathematics and arrive in the classroom unmotivated and afraid of failure. Skemp (1987) expressed the view that when in direct contact with the students, the teacher is responsible for general direction or guidance of the work, for explanation and for correction of errors. He stressed that the teacher needs to create and maintain interest and motivation in order to reduce anxiety. He further believes that anxiety in mathematics can be reduced by the ‘efficiency of mathematical thinking’. He mentions that both extrinsic and intrinsic factors play a role in how Mathematics is learned. He adds that currently extrinsic factors overwhelm the intrinsic ones. He concludes by saying: “ until this intrinsic motivation is better comprehended and put to work, mathematics will remain for many a subject to be endured, not enjoyed and dropped as soon as the necessary exam results have been achieved” (Skemp, 1971:135). This implies that teacher competence is crucially important.



According to Kennedy (2009), the main idea of P4C is the notion of enquiry. Furthermore, she mentioned that “if inquiry is adopted as an approach in mathematics teaching, it will entail a profound change in the way both teachers and students engage with and make sense, not just of math activities but of the world, the other and oneself” (Kennedy, 2009:524). She speaks about the three modes of community of mathematical inquiry which are basically problem solving, talking about mathematics through collaborative inquiry and thirdly doing and talking mathematics. She suggests that once children are exposed to a mathematical inquiry setting, learning will become meaningful and they will be able to solve a variety of mathematical problems in real life situations and eventually will move to a more philosophical level.

Kennedy (2012) refers to earlier work that described two different forms of mathematical engagement. She speaks about the first mode as “doing and talking

mathematics” (2012:259), which basically focuses on problem-solving, defining and interpreting problems, working on different solutions and reflecting on alternative methods and eventually drawing conclusions. She adds another mode of engagement namely, “talking about mathematics (2012:260), which basically speaks about posing questions which concerns mathematics as a system as well as how it relates to human experience. She focuses in her paper on the second mode in order to bring out “new meanings from what has always been in plain sight” (2012:260). She has begun to move towards a pedagogy of interruption. She referred to Biesta (2006:261) who writes that “it is crucial - if we are to engage in transformative teaching- to remain open to the possibility of interruption of dominant or current practices or conceptions, or our self-understanding as teachers and learners, which often reflects only a narrow and superficial view.”

#### **2.4.2 Literacy in the Intermediate Phase**

Kern (2000:16) defines literacy as follows:

*“Literacy is the use of socially-, historically- and culturally-situated practices of creating and interpreting meaning through texts. It entails at least a tacit awareness of the relationships between textual conventions and their contexts of use and ideally the ability to reflect critically on those relationships. Because it is purpose-sensitive, literacy is dynamic- not static- and variable across and within discourse communities and cultures. It draws on a wide range of cognitive abilities, on knowledge of written and spoken language, on knowledge of genres and on cultural knowledge.”*

So how does one translate this definition into the real classroom issues? Kern (2000:16, 17) considers seven principles that arise out of this definition:

1. Literacy involves interpretation. Writers interpret the world of events, experiences, ideas etc. and the reader then interprets the writer’s interpretation in terms of his or her own idea of the world.
2. Literacy involves collaboration. The writers write for an audience and decisions about what must be said and what can go without saying, are based on their understanding of their audience. The readers on the other

hand must bring to the table their motivation, knowledge and experience in order to make the writer's text meaningful.

3. Literacy involves conventions. The way people read and write is governed by cultural conventions that develop through use.
4. Literacy involves cultural knowledge. Reading and writing function within particular systems of attitudes, beliefs, customs, ideals and values. Readers and writers operating from outside a given cultural system are often misunderstood by those operating on the inside of the cultural system.
5. Literacy involves problem solving. Reading and writing involve figuring out relationships between words, between larger units of meaning and between texts and real or imagined worlds.
6. Literacy involves reflection and self-reflection. Readers and writers think about language and its relations to the world and themselves.
7. Literacy involves language use. Literacy requires knowledge of how language is used in spoken and written contexts to create dialogue.

“The Home Language provides for language proficiency that reflects the basic interpersonal communication skills required in social situations and the cognitive academic skills essential for learning across the curriculum. Emphasis is placed on the teaching of listening, speaking, reading and writing skills at this language level. This level also provides learners with literacy, aesthetic and imaginative ability that will provide them with the ability to recreate, imagine and empower their understandings of the world they live in.” (CAPS, 2011:8).

The CAPS document (2011:8, 9) furthermore specifies in addition to the infusion of Thinking and Reasoning, the skills needed for literacy teaching and learning:

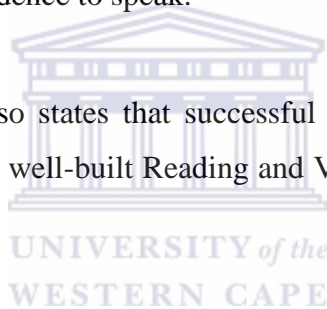
1.	Listening and Speaking
2.	Reading and Viewing
3.	Writing and Presenting
4.	Language Structures and Conventions

(CAPS, 2011: 8, 9)

Listening comes before reading and saying comes before writing. The development of listening should be facilitated through effective listening and speaking. In order to empower learners to recognize values and attitudes rooted in scripts, critical listening skills are needed.

It is furthermore made clear in the CAPS document that in the Intermediate Phase, Home Language learners will use Listening and Speaking skills to work together with others and negotiate meaning. The skills learned in the foundation phase, will be built on. More sustained conversations, discussions and short oral presentations will develop within the Intermediate phase. With regard to learners' spoken language in this phase, it still needs to be strengthened and utterances should become longer and more complex. COE is a setting in which learners develop oral language skills and confidence to speak.

The CAPS document also states that successful learning across the curriculum will be made possible by well-built Reading and Viewing skills but this is not the focus of my research.



The new CAPS document requires of the learners and teachers to incorporate thinking and reasoning aspects into all content areas. It is no longer a separate outcome. The thinking and reasoning outcome according to RNCS (2002:57) is when the “learner will be able to use language to think and reason, as well as to access, process and use information for learning”. This thinking and reasoning aspect is now everywhere in the CAPS document and the teacher should model these skills. “More developed thinking skills, including ‘thinking about their thinking’ (meta-cognition) and information literacy are important for cross-curricular work and for educational success. They should be taught in an integrated way in the context of problem-solving activities with a clear and valuable educational purpose”. (RNCS, English Home Language, Intermediate phase, 2002:57). The experience of a community of inquiry, develops these thinking skills, as explained by Splitter and Sharp (2003) and others.

The CAPS document concludes the following about Language teaching: the teacher should show good practice, followed by the learners who show these skills in a group setting and then the learner will apply these skills individually.

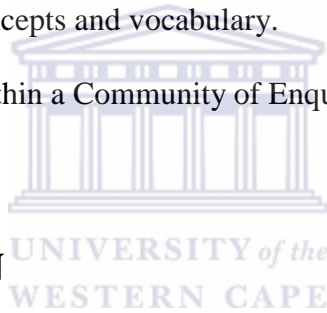
The CAPS document (2011) is in agreement with Reese (1997) who explains the role of the teacher in language and literacy teaching is as follows:

The teacher:

- Creates a climate which fosters critical thinking
- Helps learners to be aware of the view of the world presented by an author and how this affects different people
- Provides opportunities for making comparisons, identifying the main issues in a text and providing supporting detail
- Identifies cause and effect and predicting outcomes
- Discusses concepts and vocabulary.

Much of this happens within a Community of Enquiry setting.

## 2.5 CONCLUSION



Vygotsky's theory implies that thinking skills and dispositions can and should be actively taught. This chapter has argued that Philosophy for Children (P4C) is an effective means of implementing this theory, with benefits for social, cognitive and moral development. Its practices are well supported by research and align well with the demands of the most recent South African curriculum. The research methodology employed in this study, which investigated the use of P4C in local classrooms, will be explained in the next chapter.



## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.1 INTRODUCTION**

In this chapter I present the methodology for carrying out the study. The chapter presents the research design and the rationale for its choice. I then identify the participants in the study, explain the data collection instruments, the procedure for data collection and the method of data analysis. Finally, I explain the measures taken to promote the validity of the study and ensure that the research was ethically conducted.



#### **3.2 RESEARCH AIM AND OBJECTIVE**

The study aimed to explore the teachers' and learners' perceptions regarding the effects of teachers' Community of Enquiry practices on the teaching and learning of Mathematics and Literacy in two local primary schools. The research question was: With reference to the teaching of Literacy and Mathematics in the Intermediate phase, what classroom changes were perceived after teachers had been trained in Community of Enquiry pedagogy?

#### **3.3 RESEARCH DESIGN**

The study was conducted within the interpretive paradigm.

The paradigm is explained by Scott and Usher (2011:29) as follows:

In interpretivism, research takes everyday experience and ordinary life as its subject matter and asks how meaning is constructed and social interaction is negotiated in social practices.

They furthermore add that “human action is inseparable from its significance and experiences. It is categorized and arranged through ‘interpretive frames’ in order to make sense of the world” (2011:29). They continue by stating that interpretivism is targeted at daily practices, for example in classroom situations. I collected my learner data within this natural setting (the classroom) and the teacher data after school in a more private setting. The study primarily followed a qualitative design.

Denzin and Lincoln (2003:5) define qualitative research as follows:

Qualitative research involves the studied use and collection of a variety of empirical materials- case study; personal experience; introspection; life story; personal experience; introspection; life story; interview; artifacts; cultural text and productions; observational, historical, interactional and visual text- that describe routine and problematic moments and meanings in individuals’ lives.

Creswell (2008:46), states that

Qualitative research is a type of educational research in which the researcher relies on the views of participants; asks broad, general questions; collects data consisting largely of words (or text) from participants; describes and analyses these words for themes; and conducts the inquiry in a subjective, biased manner.

Welman, Kruger and Mitchell (2005:52), summarize qualitative research as follows:

1. The researchers of this discipline try to achieve an insider’s view by talking to subjects or observing their behavior in a subjective way: they believe that first-hand experience of the object under investigation produces the best data.

*I observed and collected my data from teachers and from learners.*

2. It is based on flexible and explorative methods because it permits the researcher to change the choice of data collection strategy progressively so that an in depth understanding of what is being investigated can be achieved.

*I used flexible semi-structured interview questions which allowed the research participants to make sense of their world and further elaborate on it.*

3. Its data are presented in language instead of numbers.

*The qualitative data were reported as statements by participants.*

4. The researchers make use of a holistic approach where a wide range of data is collected.

*I made use of different data collection instruments namely semi-structured interview questions, focus groups as well as a rating scale and I collected data from different sources.*

5. This type of research involves small samples of people, studied in depth.

*My samples were small and I realize that the data are not generalizable.*



### **3.4 RESEARCH PARTICIPANTS**

#### **3.4.1 Teachers**

Fifteen intermediate phase teachers from two schools in the Western Cape, all of whom had training in the Philosophy for Children programme, participated in my study\*. The majority was female teachers and their experience ranged from early to late career teaching. All reported that they had learned from the training and applied it in their classrooms. They were interested to be part of the study but had severe constraints on their time.

Some of these teachers had been part of the Philosophy for Children training under the auspices of Education Management and Development Centre (EMDC) South in 2005 and also in a subsequent training initiative at their school in 2006. Others had only attended the latter. The 2005 training involved a group of

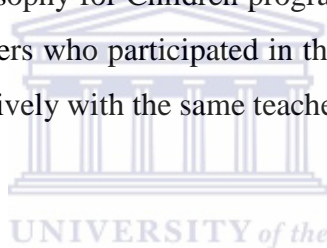
teachers from different schools. The 2006 training was focused on each of these two schools individually. The 2005 training took place over 8 weeks and comprised approximately 15 hours in total. The 2006 training took place over six weeks and comprised approximately 6 hours in total.

#### **3.4.2 Cognitive Education co-ordinator**

At each school this teacher co-ordinated the teaching of thinking at the school. At the one school only the person, who previously held this responsibility was available to speak to me.

#### **3.4.3 Learners**

Thirty-six Grade 7 learners and thirty-six Grade 5 learners, whose teachers had been trained in the Philosophy for Children programme, participated in my study. In other words, the learners who participated in this study were in grades 6 and 4 the previous year respectively with the same teacher.



### **3.5 CONTEXTS OF THE TWO SCHOOLS**

The schools were selected because several teachers had been trained in P4C and Community of Enquiry methods. At the one school, at the time of the research, there were 860 learners in Grades R to 7, with 31 staff members, including support staff. The other school had 870 learners in Grades R to 7, with 34 staff members, including support staff. Both of the schools are not situated in poverty-stricken areas but most of the learners are from historically disadvantaged backgrounds and are being transported to school. The schools are regarded as lower-middle class and are relatively well-resourced (learning and teaching resources are easily available) and well-functioning. Teaching and learning occurs optimally. Learners daily receive effective teaching and there are no disturbances. Learning is not interrupted due to socio-economic disturbances or gang-related activities. Both of the schools are similar in composition. Learners come from

different cultural backgrounds and English Home Language is the Language of Learning and Teaching but not always the mother-tongue. Some learners thus struggle to express themselves as their thoughts and ideas in English do not come naturally.

## **3.6 DATA COLLECTION**

### **3.6.1 Semi-structured interviews**

In the case of using semi-structured interviews, the interviewer and research participants discuss a topic around a certain theme, using probes. This will lead to a spontaneous interaction between the interviewer and the participants of the research. suggest (Welman, Kruger and Mitchell, 2005). They furthermore state that in semi-structured interviews an attempt is made to understand how individuals experience their life-world and how they make sense of what is happening to them. They continue by saying that the interviewer will also be flexible and follow up new ideas and issues that emerge during the interview. McMillan and Schumacher (1997) point out that in semi-structured interviews there are ‘no choices’, such as a scale, where the respondents can choose from different options, and no ‘yes’ or ‘no’ answers. Wilson (2009: 280) agrees and states that a semi-structured interview ...” includes predetermined questions and topics to be covered, but also allows the interviewer to be flexible and to follow up new ideas and issues that emerge during the interview”. I created a list of questions that were covered in each session, but the process varied from one interview to the next.

I conducted two semi structured-interviews with the teachers, one at each school and a further interview with one cognitive education co-ordinator. At the second school, the co-ordinator was part of the group interview. My order of questions varied depending on how the interview developed.

Creswell (2009:179) states the following advantages of interviewing:

- Participants are able to provide the researcher with historical information.
- The researcher is able to take control over the line of questioning.
- Participants can be directly observed.

I also adapted the format, including the terminology, to fit the background of the teachers. Probes were used to clear up vague responses and elaborations were asked of incomplete answers. I posed questions that matched the position or organizational level of respondents. Guideline questions for the interviews are attached as Appendices A, B and C. Dependent upon the responses that I received, I asked further questions to pursue fruitful lines of enquiry in more detail or moved on to the next key question.

### **3.6.2 Focus groups**

According to Litosseliti (2003:1), “focus groups are small structured groups with selected participants, normally led by a moderator which are set up in order to explore specific topics and individuals’ views and experiences, through group interaction”. She describes it as a dialogue which is cautiously planned to acquire perceptions on a definite area of concern in a reassuring environment. She adds that this is where participants share and reply to comments, ideas and perceptions. She furthermore states that “it is important that those taking part find the discussion comfortable” and enjoy themselves without feeling forced to decide on things.

Casey and Krueger (2000) are in agreement with Litosseliti (2003) that in order to get the best results within a focus group interview, the learners need to feel safe. The intention was to discover what the learners really think and feel about the classroom practices. Guideline questions for the focus group are attached as Appendix D.

In the case of this study, I interviewed four groups of twelve learners each. At the one school I met with three groups, each consisting of 12 Grade 7 learners whose teachers had received training when they were in grade 6. They were being drawn

together for the purpose of uttering their opinions on a specific set of open questions. At the other school, I was able to interview only one group of 12 learners. The participants were selected via purposive sampling. Punch (1998) states that when one use purposive sampling, sampling is done in a deliberate way, with some purpose or focus in mind. Patton (1990, cited in Creswell, 2008, p.214) agrees with Punch (1998) that in purposive sampling “researchers intentionally select individuals and sites to learn or understand the central phenomenon.” I asked the teachers to choose four learners who participate well in class, four learners who sometimes participate and four learners who seldom participate in class. There was a good balance of English speaking boys and girls. Each interview took approximately 30 minutes. Purposive sampling aims to get the most valuable information from the participants in order to achieve a specific aim. I only approached those learners, who, in the teachers’ opinion, were likely to have the required information and be willing to share it.

The questions were ordered in a sequence. In the beginning simple and factual questions were asked. This allowed for participants to warm up and feel comfortable about disclosing and responding to information. At first the questions were general and unstructured and later progressed to the more specific and prompted.

### **3.6.3 Rating scale**

Wiersma and Jurs (2009:370) state that

Rating scales contain items related to a concept, phenomenon, activity or physical object; the respondent is asked to select a descriptor on a scale that most closely approximates his or her assessment of whatever is described in the item.

Ary, Jacobs & Razavieh (2002) emphasize that when a rating scale is used, it signifies a report about an activity with add-on descriptive headings. All 72 learners from both schools completed the rating scale. Learners were asked to indicate their evaluation of their Community of Enquiry experience and its effects within the Mathematics and Literacy classrooms. I supervised the learners,

explaining to them what was expected and I collected the data forms so there was a 100% return rate. The rating scale that I used was developed at the IAPC at Montclair State University and supplied by Professor Gregory when he trained in South Africa. A copy of this rating scale, to which I added two open-ended questions, is attached as Appendix E.

## **3.7 DATA ANALYSIS**

### **3.7.1 Thematic analysis**

The interviews with both learners and educators were audio recorded and transcribed. There were some inaudible voices however. I also took notes.

Opie (2008:121), summarised certain advantages of using an audio recorder

- Preserves natural language
- Objective record
- Interviewer's contribution also recorded
- Data can be re-analysed later

The main points made by the participants were also recorded in my notes. Time was made available for debriefing after the interview for me to go through the notes a try to re-create the session. It helped to reconstruct the content and process the session when the recording was not clear.

I made use of thematic analysis of the interview data from both learners and teachers. Themes within the interviews were identified.

McMillan and Schumacher (1997:533) state that thematic analysis

describes the specific and distinctive recurring qualities, characteristics, subjects of discourse, or concerns expressed. The researcher selectively analyzes aspects of human actions and events that illustrate recurring themes... The themes provide an explanation of the situation(s). The study contributes to knowledge by providing an understanding of the phenomenon studied. This type of study also enables others to anticipate, but not predict, what may occur in similar situations.



Wikipedia (2013) echoed the above and defines thematic analysis

...as the most common form of analysis in qualitative research. It emphasizes pinpointing, examining and recording patterns or themes within data. Themes are patterns across data sets that are important to the description of a phenomenon and are associated to a specific research question. The themes become the categories for analysis.

Palmquist (1993, cited in Babbie and Mouton, 2001:492) identified the following steps in conducting thematic analysis:

- deciding on the level of analysis  
*In this study, the level of analysis was individual statements*
- deciding how many concepts to code for  
*In a study of this kind, the data determines how many concepts to code for*
- deciding whether to code for the existence or frequency of a concept  
*In this study, I coded for the existence of concepts*
- deciding how to distinguish among concepts  
*I tried different patterns with the data, until I found one that could accommodate all statements and discriminated between categories*
- deciding what to do with irrelevant information  
*There was very little irrelevant information*
- analyzing results  
*I made use of chunking to analyze all utterances and statements, creating sub-themes where necessary*

Themes pertaining the teacher perception of self-change, teacher perception of learner change, and learner perceptions of self change were identified.

### **3.7.2 Rating Scale analysis**

Analysis of the rating scale data involved calculating the frequency of responses for each item of the three rating categories. These are reported as percentages.

## 3.8 VALIDITY OF THE DATA

### Objectivity and Validity in Qualitative Research

Trustworthiness			
Credibility	Transferability	Dependability	Confirmability

Adapted from Babbie and Mouton (2010:276)

#### 3.8.1 Trustworthiness

The concept of objectivity in qualitative research, according to Guba and Lincoln explained in Babbie and Mouton (2010:274), is “founded on the key notion of trustworthiness”. They state that ultimately the main point is to convince the audience to pay attention to the findings. The above four criteria are their subheadings as explained by Babbie and Mouton (2010: 274, 310). Trustworthiness is achieved through, credibility, transferability, dependability and confirmability. To facilitate credibility, they suggest prolonged engagement, persistent observation and triangulation.

Henning, van Rensburg and Smith (2004:103) also believe that

the word triangulation come to mind, because it has been in (and out of) use in qualitative methodology since, as a metaphor, it is supposed to indicate that by coming from various points or angles towards a “measure position” you find the true position.

I was not permitted prolonged engagement but I did attempt triangulation in terms of different sources and different methods. Peer debriefing and member checks were not possible because of the difficulty of access but I met the criterion of referential adequacy, because I have materials available that I used to document my findings.

#### 3.8.2 Transferability

How can data be transferred in general practice? Guba and Lincoln (1984) state that findings can be transferred using the following approaches namely thick description where the researcher gathers enough descriptions of data within the

context and while reporting them with precision, the reader would be able to judge about transferability. If context are similar others might anticipate similar results as McMillan and Schumacher (1997) suggest.

### **3.8.3 Dependability**

If the research were repeated, with similar respondents in a similar context, one should expect the findings to be alike (Babbie and Mouton, 2010). But context are seldom identical so this might not be the case.

### **3.8.4 Confirmability**

I have available the following six classes of data as explained by Babbie and Mouton (2010) which supported my research:

- raw data which includes audio recordings and rating scale forms
- data written up in themes
- personal notes



## **3.9 ETHICS**

Lankshear & Knobel (2004:101) stated that “Within educational research, ethics is concerned with ensuring that the interest and well-being of people are not harmed as a result of the research being done”. Correspondingly, Ary, Jacobs and Razavieh (2002) highlighted the following elements which I followed:

### **1. Informed consent**

Detailed information was provided to ensure that the participants and their parents were informed by a letter and signed agreement. The aims of the investigation were communicated to the participants and their parents. Permission was also obtained from the Western Cape Education Department to do research in the two schools.

## **2. Privacy and Confidentiality**

Sources of information were not disclosed without the express permission of the participants and confidentiality was assured. Names of schools and individuals were not mentioned. Babbie and Mouton (2010) and Wiersma and Jurs (2009) are also in agreement that anonymity should be assured and specific information should not be attached to a certain individuals and that information should be kept confidential.

## **3. Right to withdraw**

Participants were made aware of their right to withdraw at any time without giving a reason for pulling out.

## **4. Vulnerable participants**

The researcher avoided questions that were judgemental and insensitive to participants' cultural values.

## **5. Storage and Security**

Data were organised, kept and managed to prevent unauthorised access and loss.

## **6. Disclosure**

Participants were given the liberty to refuse. The degree of confidentiality was conveyed as well as the cautious manner in which the material that they provided would be handled. They were informed that the research was part of my Masters' study.

## **7. Communication of findings**

The researcher made a commitment to communicate the findings and importance of the research in easy and straightforward language to the relevant populations and government officials. Once my thesis has been examined, I will provide a summary to the schools involved.

### **3.10 CONCLUSION**

This chapter explained the research aim and objective, the research design, participants, context of the study, and the data collection instruments. The qualitative data were analyzed using thematic analysis. The quantitative component was statistically analyzed. The trustworthiness of the data and the ethical considerations taken into account were then discussed. Certain limitations of the research process are highlighted in Chapter 5. In Chapter 4, the findings of the study will be discussed and analyzed.



## CHAPTER 4

### RESEARCH FINDINGS

#### 4.1 INTRODUCTION

In this chapter I present my research findings. The research question was: With reference to the teaching of Literacy and Mathematics in the Intermediate phase, what classroom changes were perceived after teachers had been trained in Community of Enquiry pedagogy? Sources of information were the teachers themselves and the learners in their classrooms. The results are reported in the following order: Teacher perception of self-change, teacher perception of learner change, and learner perceptions of self-change.



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#### 4.2 TEACHER PERCEPTIONS OF SELF-CHANGE

Two themes were identified in the data, namely, changes in metacognitive awareness and changes in professional activities. Each of these two themes is illustrated below with quotations from the data.

##### 4.2.1 Teachers' metacognitive awareness

In this category I placed statements that have to do with teachers' thinking about their work. Examples are:

- *I started thinking 'out of the box' with regard to learning*
- *I became more knowledgeable and had to think about my own thinking before presenting a lesson*
- *I had to prepare myself thoroughly for the lessons for all the unexpected questions and elaborate where elaboration was needed*
- *I became open to new ways of teaching and realized that education is a process of enquiry*

#### **4.2.2 Teachers' professional activities**

In this category I placed statements that have to do with what teachers say they do in the classroom. Examples are:

- *I scaffold my lessons so that learners can become independent thinkers*
- *Critical thinking and thinking moves formed important elements in my teaching*
- *I carefully plan my lessons and learned to anticipate different outcomes of the lesson*
- *I tend to listen more to the learners even though I know they are wrong*

Teachers started thinking more about what they do and how they could bring about more holistic changes within their learners. It seems from the data that they were more interested in bringing out the best in all their learners. It was interesting to see that it was not easy for teachers to talk about the changes in their practices because maybe they did not recognize them. The teachers became more aware of developing thinking skills within their learners. The teachers had to think about their own thinking and the direction that the lesson might take before presenting a lesson. Some teachers reported that lesson preparation was more thoroughly done and allowed for deviations. Teachers started breaking away from rote teaching and moved in the direction of enquiry-based teaching. Some teachers came to the realization that they needed to think about their own thinking and always be open to the enquiry process. Some teachers started to adapt their methodology in order to develop autonomous thinkers.

### **4.3 TEACHER PERCEPTIONS OF LEARNER CHANGE**

Three themes were identified in the data, namely, use of thinking moves, self-concept development and social development

#### **4.3.1 Thinking moves**

Within this category there were a number of sub-categories, namely, listening, agreeing and disagreeing, giving reasons, connecting ideas, changing their minds and thinking more deeply. The examples below refer.

#### **4.3.1.1 Listening**

- *I noticed that the learners started getting patient with one another by listening to each other*
- *They became more tolerant with each other and listened to what the other person had to say without interrupting*
- *Skillful listening is always exercised in my class*

#### **4.3.1.2 Using agree / disagree**

- *I was shocked in how the learners would say confidently why they would agree and disagree with a statement*
- *Some learners said that they were not brought up to openly disagree with someone*
- *The learners would freely agree and disagree to a statement made and then provide reasons for their answers*
- *If they would have a similar opinion, they would say that they agree and disagree when they have a difference in opinion*

#### **4.3.1.3 Giving reasons**

- *Most of the learners were able to motivate why they gave a specific answer within the Literacy and Maths lessons*
- *It developed their thinking skills (I noticed one boy banging his head on his hand) while he was thinking of a reason for answering the way he did*
- *The learners could evaluate whether they effectively answered a question or not*
- *In my class, my learners did not just give answers, but gave reasons as to why they gave those specific answers*

#### **4.3.1.4 Connecting ideas**

- *This is one element that really surprised me – the learners ability to build on each other's ideas and to connect theirs with that of the others*
- *It was like a 'talking community'...*
- *I enjoyed how they connected to each other's ideas and more valuable information/ ideas came forth especially with regard to problem-solving in Maths*
- *The learners developed excellent skills on how to build on each other's ideas*

#### **4.3.1.5 Changing their minds**

- *The learners are sometimes very impulsive in answering in class but after hearing the others' input, they normally change their minds and adopt new answers*
- *Usually after building on each other's ideas, learners become convinced of adapting their viewpoints*



#### **4.3.1.6 Thinking more deeply**

- *Learners definitely became more thoughtful before answering*
- *Some of them tried to go beyond the surface of a question and critically addressed certain issues in Maths*
- *Community of Enquiry practices helped with problem-solving in the Maths classroom and the learners are more able to come up with solutions*
- *The learners could go deeply into a question*
- *The learners could evaluate whether they answered a question or not*

#### **4.3.2 Self-concept development**

In this category I placed statements that have to do with confidence and engagement as illustrated below:

- *I've noticed positive changes in self-esteem within the 'previously withdrawn' learners*
- *Some learners were afraid of speaking in front of their peers but once the ground rules were laid down, learners were brave enough to stand up*
- *Some of learners were not willing to participate- maybe afraid of failure and criticism. They groomed into vibrant and eager individuals once the ground rules were laid down*
- *I allow learners to use the strengths (eg. sums they can easily do), so that they feel more proficient and possibly more willing to engage in co-operative activities with more competent learners. By employing their strengths in different fields, they became better equipped and more confident to deal with sums they could not previously do.*
- *The learners are no longer afraid to voice their opinion*

#### **4.3.3 Social Development**

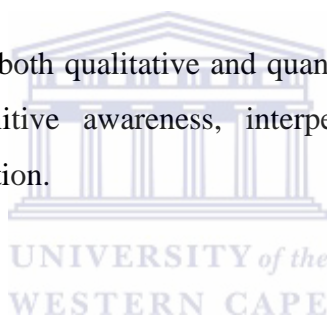
- *I think the learners were involved in fruitful discussions and learned to respect each other*
- *They valued each other's answers*
- *The learners developed excellent skills on how to build on each other's ideas*

The sentiments here were that teachers could see noticeable changes within their learners after they were exposed to Community of Enquiry practices. We can see some proof of good thinking practices. When given the thinking moves and vocabulary, they could speak about their thinking. Teachers noticed holistic development (cognitive, emotional and behavioural) within their learners. Teachers noticed that learners could effectively use the thinking moves within the classroom setting. Teachers created a space for self-concept development within their learners. Teachers noticed that the learners became more confident

individuals who were no longer afraid to voice their opinions. Teacher observed how learners started to attach more significance to what others have to say and this resulted in more productive lessons. Teachers did not say much about how their actual ways of teaching had changed but said a lot more about the learners than themselves. This might have been because of insufficient probing on my part or a threat feeling as if they were evaluated. It might also have been because they didn't see themselves as the main change factor but maybe thought the 'tool' would bring about changes in learners, or maybe they were not accustomed to noticing change within themselves.

## 4.4 LEARNER PERCEPTIONS OF SELF-CHANGE

In this section I include both qualitative and quantitative data. Four themes were identified namely cognitive awareness, interpersonal relations, self-concept development and motivation.



### 4.4.1 Qualitative data

#### 4.4.1.1 Cognitive awareness

Within this theme six subthemes were apparent, namely reasoning, perspective taking, social learning, understanding of concepts, use of thinking vocabulary and strategies for understanding. The examples below refer.

##### **Reasoning**

- *It's like putting every reason of everybody and choose the best from there*
- *When we had that lessons, my mind started believing different things*
- *When we disagreed on something, we would ask "why?". We infer and suggest what will happen in the story*
- *I know how to answer a problem in the maths classroom using different methods and I'm able to justify my answer*
- *My mind-set changed in a good way*
- *We make a connection if we have an experience from your past, what happen*

- *What I like is when someone is wrong, the class won't say ugly things but will give reasons why that answer is not the best answer*
- *If you agree with that person, you build on and add on to what other person's say.*
- *We listen carefully and connect to others' ideas We use predictions (what happens next), question (what), infer (make conclusions), suggest (my experience), visualise (create a picture), evaluate (check) and summarise (make the story shorter with important facts).*
- *The way we can answer a comprehension is quite easy for me because I use the seven strategies. The strategies are inferences, predict, connect, summarise, question and evaluate.*

### **Perspective taking**

- *I've learned that everyone else might have a different opinion than me, so I shouldn't criticise them.*
- *We got a bit better at looking at 'point of views' / ideas of other people*
- *I take note of what others have to say and build on it*
- *We ask questions that connect in that scenario, put yourself in that person's shoes and think how it will feel like*

### **Social learning**

- *I usually thought that I knew a lot, but after paying attention and listening to my friends in class, I gained even more knowledge and ways to solve problems*
- *I loved giving answers and always believed that I was right, but after paying attention to others, I gained so much more knowledge*
- *I now understand the properties of numbers just by remembering what others were saying*
- *I can learn more from other people's answers and opinions and makes sense of it*

### **Understanding of concepts**

- *I am able to go deeply into the question in order to come up with good answer that made sense*
- *I realized that maths is not only a subject in school but an everyday thing to use outside of school as well in some meaningful different ways*
- *It expands our opinion of numbers or anything to do with mathematics*
- *I understand different ways in doing sums and questions without counting on my fingers*
- *I am able to solve word problems without the help of a calculator*
- *I discovered other valuable methods in solving maths problems and apply knowledge*
- *When faced with a problem outside school, I think back of our discussions in class and try to solve the problem*

### **Use of thinking vocabulary**

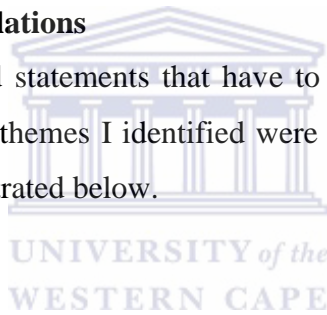
- *You must know the seven important words which are infer, visualise, summarise, suggest, ask questions, evaluate and connect.*
- *We read the story/comprehension and use the seven strategies (predict, summarise, infer, visualise, question, connect, suggest) to help us understand the comprehension.*

### **Strategies for understanding**

- *I ask our teacher and I ask my friends until I understand what's happening*
- *Say the question in an easier way in order to understand it... our teacher change the question to make it easier for us to understand*
- *I evaluate- did you like the story or not and if you want to put more words into the story to make it more interesting*
- *You ask a question about the question that you don't understand*

#### **4.4.1.2 Interpersonal relations**

In this category I placed statements that have to do with how learners relate to each other. The four subthemes I identified were dialogue, respect, listening and interdependence, as illustrated below.



#### **Dialogue**

- *We are like a community of partners using agree and disagree*
- *I could agree and disagree with other learners and say what I think*
- *We kind of agree a lot more*
- *When we disagree with someone, we motivate why*
- *This buddy system in maths works for me*
- *I have learned so much from my classmates and discovered new ways in solving Maths problems although I previously thought that maths was difficult*
- *Talking about maths first make it a bit easier for me*

#### **Respect**

- *It taught us how to respect and listen to each other's opinions*
- *I respect other people's ideas and accept that everyone is different*
- *I do respect others' opinions but I don't always change because I think I was meant to be like this*
- *To respect other people's opinions and say what you think*
- *I started trusting my friends*
- *To respect each other and listen to someone while they are talking*

## **Listening**

- *The literacy lessons helped me to listen to other people*
- *I am listening to other people's ideas*
- *I listen to other people when they are talking and I hope to keep it up*
- *I listen to what other children have to say*
- *Always listen when someone else is speaking because you'll never know when that information might come in handy later in your school years*
- *I didn't interrupt when someone else was talking because I wanted to hear more about what that person was thinking and saying*

## **Interdependence**

- *After working with my friends, I am now able to work on my own and think about what I did and set my own goals*
- *Most of the time, my friends help me but sometimes I can do sums on my own*
- *It feels nice being able to do Maths on my own after working in out in a group*
- *We assisted them –when they gave an answer with not a lot of detail, we added more in detail and made it more explicit*

### **4.4.1.3 Self-concept development**

The theme had to do with how learners perceive themselves.

- *I believe in myself*
- *Previously, I was afraid to participate in class because I seldom knew the correct answer, but now I answer without feeling shy/ afraid and just provide a reason why I gave that answer*
- *You became open-minded and free to say what you think is right*
- *It helped a lot of us to become confident and speak our minds*  
*Before the other learners would laugh at my answers and I would feel very bad and would be afraid to answer next time, but now things have changed and I am no longer afraid to answer in the class*
- *I didn't want to answer before, but now because of the respect for other people's answers' no answer is wrong and I like that and I feel very confident after those lessons*

### **4.4.1.4 Motivation**

The final theme in this category had to do with how learners developed the drive within themselves to learn.

- *The literacy lessons helped me to work hard*
- *There is now this determination in me to always try harder*
- *I feel like coming to school and participate in class*
- *I'm not good at Maths, but it's cool to learn new things*
- *Maths is fun and we learn a lot once you are thinking and your brain is working properly*

Learners could also notice the differences within themselves after being exposed to community of inquiry practices. These changes are holistic in nature and included cognitive changes, interpersonal changes and as well changes within the self. Learners were insightful and surprisingly articulate. Some learners moved away from self-centeredness and adopted philosophies from others. In terms of cognitive awareness, it seemed that the learners had become more aware of their own thinking and more able to speak about how they were thinking. They discovered that they could consider views that are not their own and that it could be valuable to do so. Learners expanded their memory skills because the ideas came from others and were easier to remember. Alternative methods in problem-solving were explored. Learners were able to relate better to each other and developed a partnership in the classroom. Trust was developed. Some learners, who were not able to work on their own, became able to work independently. Some learners were intrinsically motivated to learn and work harder in the classroom. At least some learners felt more confident and motivated, looked forward to coming to school and started to set goals for themselves. The listening in the classroom seems to have improved.



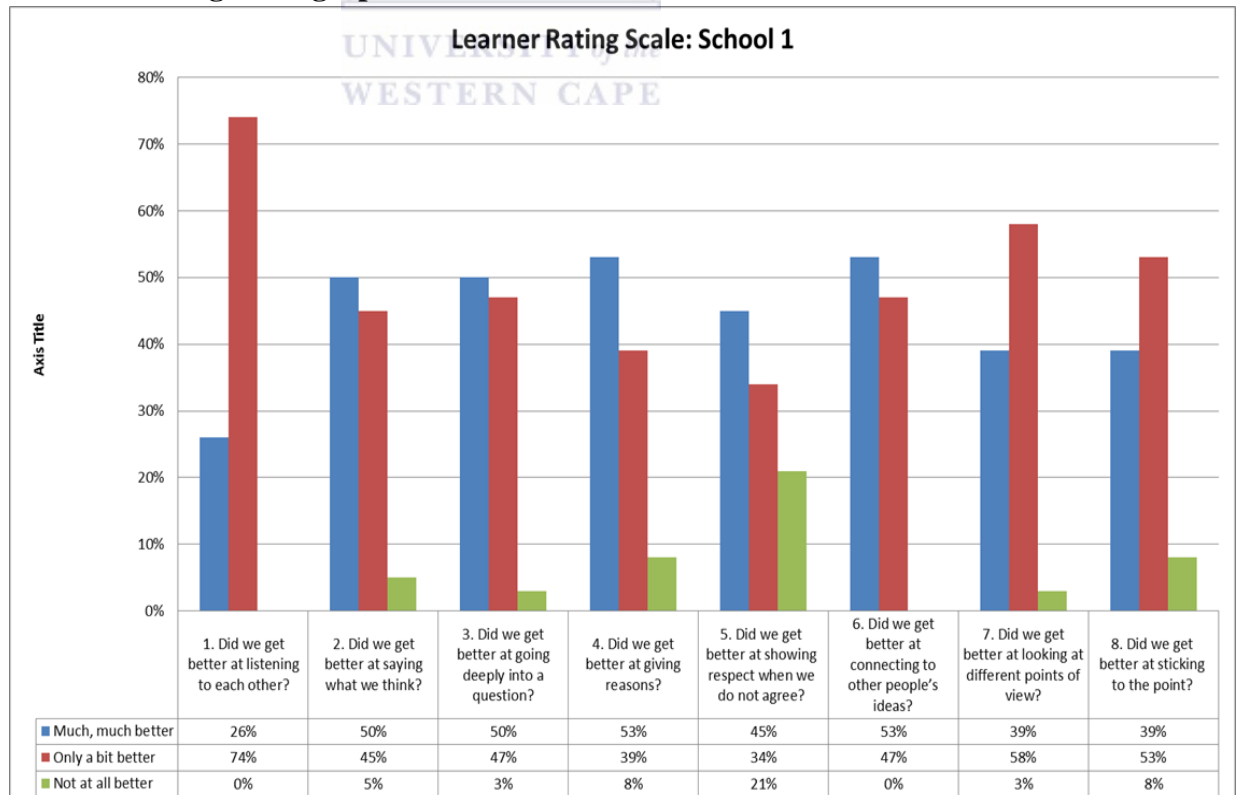
The data also suggest that a community was beginning to develop in the classroom and that the concept of respect was better understood. Some learners became more aware of their own thinking, were able to reason better and started to engage better in discussions. Some learners gathered that learning is fun once teachers used COE pedagogy.

#### 4.4.2 Quantitative Data

##### School 1 Learner Rating Scale

Learner Individual Rating Scale	Much, much better	Only a bit better	Not at all better
1. Did we get better at listening to each other?	26%	74%	0%
2. Did we get better at saying what we think?	50%	45%	5%
3. Did we get better at going deeply into a question?	50%	47%	3%
4. Did we get better at giving reasons?	53%	39%	8%
5. Did we get better at showing respect when we do not agree?	45%	34%	21%
6. Did we get better at connecting to other people's ideas?	53%	47%	0%
7. Did we get better at looking at different points of view?	39%	58%	3%
8. Did we get better at sticking to the point?	39%	53%	8%

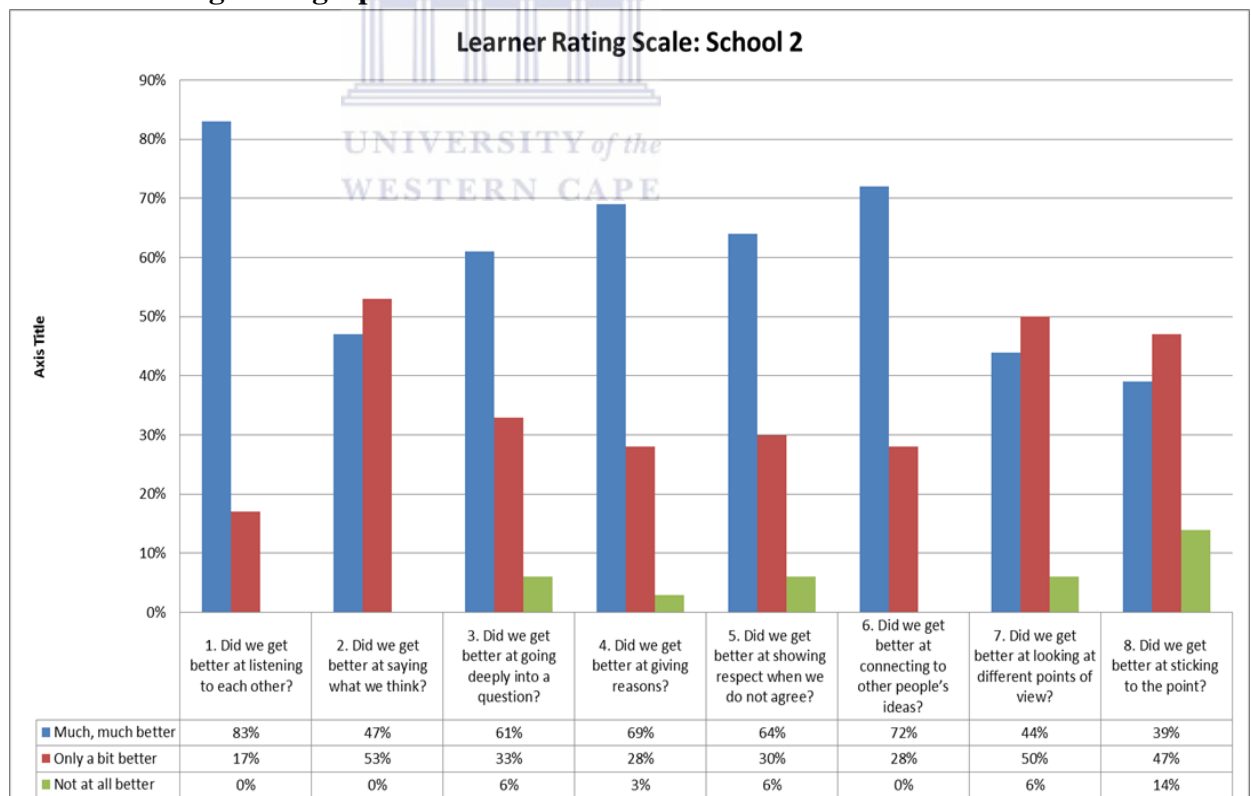
##### School 1 Rating Scale graph



## School 2 Learner Rating Scale

Learner Individual Rating Scale	Much, much better	Only a bit better	Not at all better
1. Did we get better at listening to each other?	83%	17%	0%
2. Did we get better at saying what we think?	47%	53%	0%
3. Did we get better at going deeply into a question?	61%	33%	6%
4. Did we get better at giving reasons?	69%	28%	3%
5. Did we get better at showing respect when we do not agree?	64%	30%	6%
6. Did we get better at connecting to other people's ideas?	72%	28%	0%
7. Did we get better at looking at different points of view?	44%	50%	6%
8. Did we get better at sticking to the point?	39%	47%	14%

## School 2 Rating Scale graph

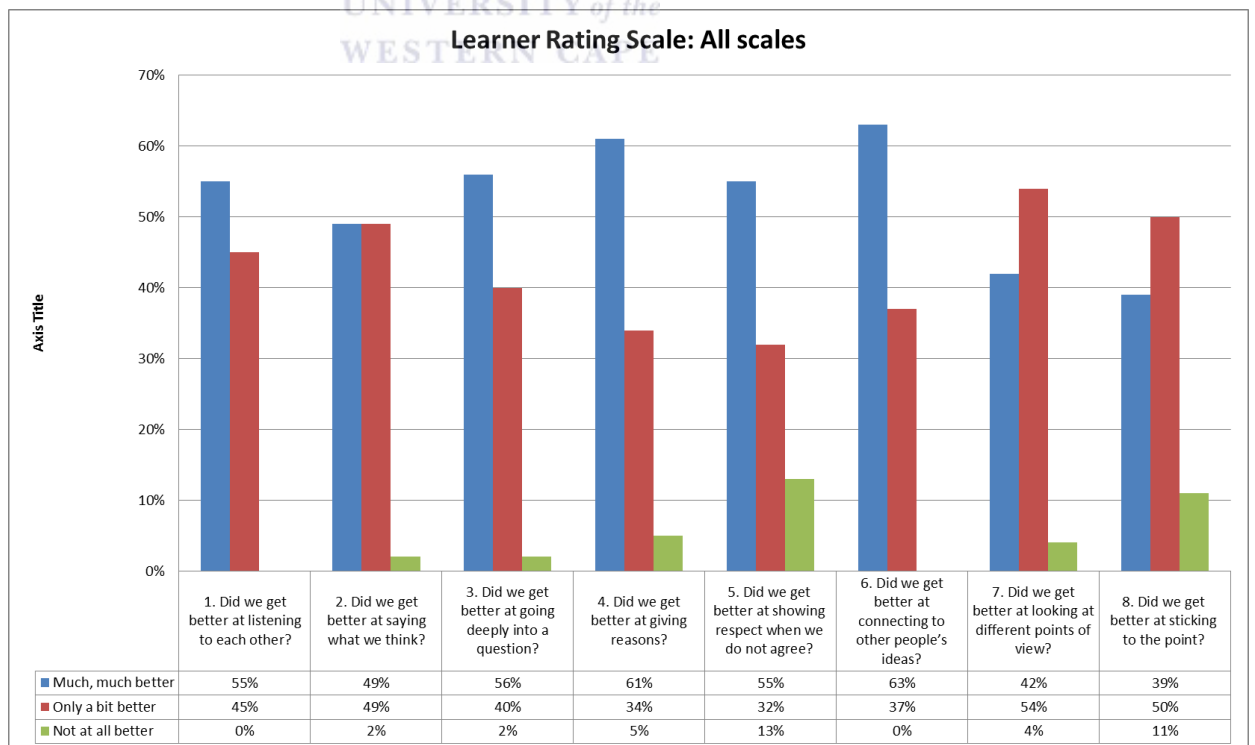




### Consolidated Learner Rating Scale

	Much, much better	Only a bit better	Not at all better
1. Did we get better at listening to each other?	55%	45%	0%
2. Did we get better at saying what we think?	49%	49%	2%
3. Did we get better at going deeply into a question?	56%	40%	2%
4. Did we get better at giving reasons?	61%	34%	5%
5. Did we get better at showing respect when we do not agree?	55%	32%	13%
6. Did we get better at connecting to other people's ideas?	63%	37%	0%
7. Did we get better at looking at different points of view?	42%	54%	4%
8. Did we get better at sticking to the point?	39%	50%	11%

### Consolidated Rating Scale graph



I report here on the integrated data. Everybody thought they got better at listening to each other and connecting to other people's ideas. This creditable finding suggests that approximately fifty percent of the participants thought they got much better at listening to each other and much better at connecting to other people's ideas. This might mean that they wanted to present themselves well and didn't want to put themselves in a bad light or it could be that they were trained well in the above-mentioned key elements. All the learners indicated that they got better at connecting to other people's ideas. Almost two-thirds of the learners indicated that they got much, much better and about a third indicated that they only got a bit better at connecting to other people's ideas.

Responses for key items 2, 3, 4 and 7 indicated that improvement is shown with results of 98%, 96%, 95% and 96% respectively. Learners indicated that they got better at saying what they think, going deeply into a question, giving reasons and looking at different points of view.

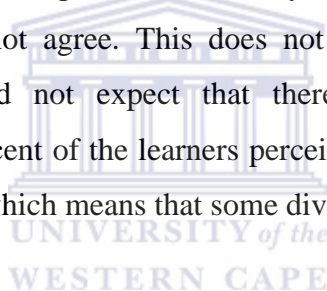
Key items 5 and 8 are the responses that show more discrimination. Learners were not so confident that they showed respect or could stick to the point.

The response to item 5 (respect) might be because of cultural differences amongst the learners since what is acceptable in one culture is not necessarily acceptable in another. They did not all believe they had got better at showing respect. Learners who participated in the study came from diverse cultural backgrounds and although the ground rules were laid down, their different upbringings cannot be ignored. Another speculation could be that the learners did not have enough exposure to the COE pedagogy. It was of note that they were aware of finding it difficult to stick to the point.

## 4.5 INTEGRATION OF DATA

### Perception of learner change

With regard to listening, both qualitative and quantitative data agreed that learners got better at listening to each other. All said that their listening skills improved. Very few learners (5%) thought that they did not improve in saying what they think. Learners noticed in themselves both qualitatively and quantitatively how they were able to go deeply into a question. All the learners claimed that they got better at connecting to others' ideas. This matches the qualitative data of the teacher perceptions of learner change. Only 4% of the learners perceived that they did not get any better at looking at different points of view. This matches the qualitative data as learners indicated that they adopted ideas of others. Thirteen percent (13%) of the learners perceived that they did not get any better at showing respect when they do not agree. This does not match the qualitative data of teachers but we should not expect that there would be hundred percent agreements. Eleven percent of the learners perceived that they did get any better at sticking to the point, which means that some diverted from the topic.



### Perceptions of teacher change

Teachers said that they thought more about their teaching and planned carefully. They noticed more changes within their learners than in themselves. This might be because the teachers did not see themselves as the main changing factor. They maybe perceived the COE pedagogy as an intervention strategy that would itself bring about change within their learners. It might also be that the teachers were not use to being evaluated. I noticed that the teachers did not mention anything about 4.4.1.4 which is motivation. This may be because motivation is more of an intrinsic change which is not always visible for others to see. I have mentioned in describing this section that motivation had to do with how learners developed the drive within themselves to learn. This desire for them to do things maybe was not visible to the teachers. I speculate that teachers were only able to notice the change within the previous section, which is 4.4.1.3, self-concept development as change was easily noticeable in previously withdrawn learners.

## 4.6 CONCLUSION

This chapter consisted of a presentation and an analysis of the interviews that were conducted as well as the rating scale that was administered. Thematic analysis was used to analyze the qualitative component and statistical analysis was used to for the quantitative component. In conclusion, the data suggest that learners generally got better at listening to each other. Their abilities to go deeper into a question as well as well as connecting to each other's ideas also improved. A significant finding was that teachers noticed more changes within their learners than within themselves. These findings will be discussed in greater detail in Chapter 5.



## **CHAPTER 5**

### **DISCUSSION AND RECOMMENDATIONS**

#### **5.1 INTRODUCTION**

In this chapter I summarize and discuss my findings and relate them to the relevant literature. Thereafter I acknowledge some limitations of the research process that may have influenced the data and make some recommendations for practice and for future research. Finally, I reflect briefly on my own research journey.

#### **5.2 SUMMARY OF RESEARCH FINDINGS**

The research question was: With reference to the teaching of Literacy and Mathematics in the Intermediate phase, what classroom changes were perceived after teachers had been trained in Community of Enquiry pedagogy? Sources of information were the teachers themselves and the learners in their classrooms. The results are reported in the following categories:

- Teacher perceptions of self-change
- Teacher perceptions of learner change
- Learner perceptions of self-change

As explained in detail in the previous chapter, teachers noted that they changed in metacognitive awareness as well as changed in professional activities. There was some caution from the teachers' side with regard to reflecting on their own development. Perhaps they were not used to self-evaluation or did not recognize the relationship between what they learned about Community of Enquiry and what they did in the classroom. It was interesting to see that teachers would not speak about themselves.

It was also hard for them to explain their ideas in practice. This was my experience during the interviews. They may have felt that they were being evaluated. The changes in the learners were much more persuasive. They noticed much more about their learners.

<b>Teachers saw the following within their learners</b>	<b>Learners noticed the following about themselves</b>
Use of thinking moves	Cognitive awareness
Self-concept development	Self-concept development
Social development	Interpersonal relations
	Motivation

I am more inclined to believe what was said by both the teachers and the learners. Learner perceived changes in various aspects of their thinking, in the way they related to each and in their own confidence and motivation.



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### **5.3 DISCUSSION OF FINDINGS**

*Firstly*, I will discuss the teachers’ perceptions of self-change. Teachers noted that they changed in metacognitive awareness as well as changed professional activities. They began to notice their own thinking. This is what I have found - the themes that captured what teachers said about themselves were: changes in metacognitive awareness and changes in professional activities. There was some caution from the teachers’ side with regard to reflecting on their development but it seemed to me that some teachers came to the realization that they needed to think about their own thinking and always be open to the enquiry process. Teachers were not used to self- evaluation, or did not change what they did. Green, Condy and Chigona (2012: 328) concluded that adequate training is essential if teachers are to create a Community of Enquiry in their classrooms. “... there needs to be sufficient training for the pre-service teachers to have internalized the concept and classroom community of inquiry.”

*Secondly*, I will discuss the teacher perceptions of learner change and the learner perceptions of themselves with regard to cognitive abilities. The National Curriculum Statement Grades R-12 (CAPS, Home Language Intermediate phase, 2011: 5) aims to produce learners that are able to “identify and solve problems and make decisions using critical and creative thinking”.

Both groups of teachers became aware of the learners’ cognitive abilities and the learners noticed these differences within themselves. Learners seemed to have acquired the use of thinking moves and benefited from it. Some teachers noticed some of their learners became skilled listeners and did that without interruptions. They found that learners could form their own opinion and would use the terms agree and disagree openly. Teachers saw change within their learners with regard to the way they would answer questions and how they were able to confidently answer why they gave that specific answer. The surprising elements to teachers here were the direction in which the conversations steered within their classrooms and the solutions that learners were able to come up with. Analysis revealed that some teachers started noticing how learners became more thoughtful after listening to what others had to say. Some teachers started noticing that learners became more aware about their thinking and gave clarification when needed. International publications that have noted that COE pedagogy equips learners with thinking moves are those of Sutcliffe (2003) and Trickey and Topping (2008). Local studies include Permall (2007) and the findings of this study were consistent with the above.

Learners perceived changes within themselves. It is evident that learners became better in reasoning and problem-solving activities. These are seen as important as they tend to make better decisions and their existing knowledge is improved. Learners started approaching problems more thoroughly and flexibly. These findings support the idea of Vygotsky who refers to the ZPD, a place where problem-solving occurs. New and refreshing ideas are discovered when seeing things from a different point of view. Learners explored the viewpoints of others to help them shape their own viewpoint. Learners discovered that they could

express and explain views that are not their own. We can see that learners started to understand and make sense of maths. Some could select different problem-solving strategies in maths. Some were even able to reflect on solutions. Learners could speak about the thinking vocabulary, how they use it and how they make sense of it. The learners developed strategies in order to understand and make sense of what is happening in class by questioning, evaluating and thinking about it. Prior studies that have noted the importance of cognitive moves, are those of Trickey (2008), Cassidy and Donald (2009), Permall (2007) and Green (2009).

*Thirdly*, I will discuss the teachers' perceptions of learner change and the learner perceptions of themselves with regard to social/ interpersonal relations. The National Curriculum Statement (Grades R-12) aims to produce learners that know how to: "work effectively as individuals and with others as members of a team"; (CAPS, Home Language Intermediate phase, 2011: 5). Teachers' responses indicated that learners seemed to have acquired confidence. Some of the less confident learners started blooming and they started feeling courageous enough to speak up. Speaking is an important content area within the English Home Language Curriculum. More learners started speaking and participated well in the conversations. The studies of Fisher (2003) and Borman (2005), also indicated that participating in a community of inquiry, develop self-esteem. Learners became more confident as they previously believed that they were not good at maths. Learners started feeling more competent and successful in the maths class.

Noticeable changes were observed by some teachers with regard to the learners' ways of getting along with each other. This finding is in agreement with those of Fisher's (1998), McGuinness (1999), Permall (2007), Trickey and Topping (2008) and Cassidy and Donald (2009). These findings corroborate the theory of Vygotsky that cognitive growth is a socially mediated activity. McCall (2012) explains that P4C emphasizes democratic practice in which children jointly create meaning. These findings further support the definition of Mathematics in the CAPS document (2011:8) - that it is a social phenomenon. They also align with the argument of Ernest (2004) that social empowerment is possible through



Mathematics and that of Kern (2000) that Literacy makes use of social practices. Learners taught themselves not to get easily distracted and engage in class activities. Learners started to play a more active role in class by actively engaging in discussion and in so doing, gained more knowledge. Learners could remember detail of the maths lesson by reflecting on others' valuable input. Learners realized that by working as a team, they would be able to achieve more. Even though their opinions differ, they would understand the person's reason behind that statement. Learners realized that the ability to co-operate and support each other would be beneficial. Learners realized that respect is basically seeing that the other person's opinion is of value even if it is different from theirs, and not putting others down. Learners became aware and considerate of other people's likes, interests and dislikes.

All of these remarks show that without respect for others, it is difficult to function in a society. In Lipman's P4C practice, every child's experience and thinking have equal value (McCall, 2012:104). Learners started to realize that by listening carefully, one could connect to other's ideas and built on them. The learners stated that listening requires patience and doesn't happen automatically and naturally. It must be cultivated. They discovered that valuable lessons can come from the person 'who is talking'. Learners could reflect on what they did and were no longer dependent on one another. Learners were able to set individual goals for themselves. *Lastly*, I will discuss the learners' perception of self-change. This is the only data revealed by the learners only. Learners started to develop a love for Mathematics and wanted to be more involved in this subject. Participation in class developed and they became motivated to learn.

Keeping all of these results in mind, I can ask myself if it is going to be sustainable because effects tend to wear off. My experience as a teacher made me realize that if training on a specific topic is given, by for example by the School Development Team (SDT) or district officials, follow-up sessions are vital. The 'seeing-through' of a project will ensure that the training is applied and sustained. Green (1997:22) reiterates this sentiment when stating that "To obtain optimal

benefit from P4C, teachers need training and ongoing supervision as with any carefully designed programme.”

## **5.4 LIMITATIONS OF THE RESEARCH**

The generalizability of these results is subject to certain limitations which will be explained in detail.

### ***5.4.1 Researcher***

- I took longer than anticipated to complete my study. This might have influenced my analysis.
- My limited exposure to COE practices might have influenced the results.
- At times I was unable to listen and at the same time take notes in the interviews.
- I didn't feel like an 'intruder', but might have seemed like one to the learners. I would have liked to have developed a relationship with the participants.
- At times, I did not probe the participants well enough within the interview sessions.

### ***5.4.2 Participants***

- Learners from both schools were taken from the same socio-economic backgrounds and they only talked about similar experiences.
- The teachers did not say much about themselves.
- The participants could not directly talk about their experiences in the maths classroom.

### ***5.4.3 Measure used to collect data***

- After completing my interpretation of the findings, I discovered that the way I gathered data, inhibited my ability to conduct a thorough analysis of the

results. Limited teacher interview information available. It might have been better to get more written data possible via a more structured open-ended questionnaire.

#### **5.4.4 Access**

- Access was limited. I would have liked to have observed learners during these Community of Enquiry sessions to have gathered ‘rich’ information. I could only speak to the teachers for a limited time after school as they all had busy schedules and were involved in extra-curricular activities.
- It was also not possible to access school records of examination results as the schools were not inclined to give this information to outsiders.

#### **5.4.5 Prior research**

- Local studies done focusing on its application in the Maths classroom. There was no available local research applied in Maths so I had nothing to build on.



## **5.5 RECOMMENDATIONS**

### **5.5.1 Practical recommendations**

- I would highly recommend that P4C be introduced at a pre-service stage
- Ongoing support is vital.
- Staff Development Team (SDT) should be more actively involved in the training and the following through of these COE sessions.
- Principals should steer this COE sessions which is a curriculum matter.
- The School Improvement Plan (SIP) should make provision for the COE pedagogy.

### 5.5.2 Recommendations for future research

- Time-off available to do in-depth research as stated in Babbie & Mouton (2010: 277) for “prolonged engagement.”
- A Co-researcher to help with written notes during interviews.
- Further studies to recommend how teachers think.
- P4C should be applied across the CAPS curriculum so that learners would be able to “practice more cognitive processes in the classrooms as different cognitive levels are required within the CAPS curriculum namely literal, reorganization, inference, evaluation and appreciation” (CAPS, English, Home Language Intermediate phase, 2011: 91, 92).
- More research needed in the fields of Literacy and Mathematics.

## 5.6 MY JOURNEY AS RESEARCHER

I started this research journey with great enthusiasm. I was always a person who wanted to ‘get more’ from education and bring about change.

Doing reflection I believe is an essential component of continuous learning. I have learnt to focus and persevere. I had to focus my attention, organize myself and get a sense of self-direction. You need to be somehow inquisitive. Completing this thesis required time and dedication. I did not always have sufficient time available to assign to my studies as I had to juggle between family, work and studies. As a result of this, I learned to manage my discomfort with one goal in mind. At certain stages of this journey though, I struggled with self-doubt because I made a few mistakes. Research for me was like sculpting a figure from wood - you need to chip away, scrape and polish. I began filling pages with content by writing, editing, deleting and inserting.

This journey of self-discipline made me realize that I am steering my own boat. I started off slowly, but eventually got into the swing of things. As a full-time

teacher, it was not easy to always get off from work in order to focus on the studies whether data collection or just the writing up of literature.

I can now confidently say that my faith in myself strengthened. This journey provided me with new insights into myself and it enhanced my understanding of others. The writing up of my thesis helped me to move beyond my fear of failure and allowed me to learn from experience. I am now able to explore my feelings about the work I have done as a scholar and as a person.

## **5.7 CONCLUSION**

The conclusion to this study is that P4C has the potential to affect teachers professionally and to influence learners positively. Ongoing support in cognitive education in whatever form is vital in order to reach the aims required for the new CAPS curriculum. COE is one avenue to be explored in order to bring about change within our learners' cognitive ability, self-concept development, and interpersonal relation as well as the learners motivation to learn.

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## APPENDIX: A

### Teacher Interview guidelines 1

a.	How did the training you have received affect you personally- as a professional?
b.	What do you do differently in Literacy classes?
c.	What do you do differently in the Mathematics classes?
d.	What do you think the school/ staff should do next to continue to make progress?
e.	Were there problems or difficulties?
f.	What worked well for you?
g.	What effects did the community of inquiry pedagogy have on: the learners' achievement in Literacy and Numeracy? the learners' ability to think and reason for themselves. the learners ability to connect effectively in discussion with others.
h.	To what extent did you develop your learning environment into a 'community of inquiry'?

## APPENDIX: B

### Teacher Interview Guidelines 2

a.	<p>I understand that you now encourage your learners to raise their own questions:</p> <p>Do you think that you value their questions more than you once did?</p> <p>If so, how do you indicate this to them during a lesson?</p> <p>Do you think this has had any effect on how they deal with understanding what they read/approach a reading comprehension task?</p>
b.	<p>What do you notice about them?</p> <p>What kind of questions do they raise?</p> <p>Anything else that you have noticed?</p>
c.	<p>And do you think this has any effect on how they deal with/approach a maths problem?</p> <p>‘Tell me a bit more about that’...</p>
d.	<p>I believe that you have taught the learners to use certain thinking moves and I would like to hear about how and when they use them, if they do, in both Literacy and Maths.</p> <p>Let’s imagine they are involved in a group discussion about something they want to understand (e.g. a passage they have read, or a maths task):</p> <p>Have you noticed that they listen well to each other? (Can you think of examples of times you have seen evidence of this – in literacy or maths or any other learning context?)</p> <p>2.) Have you noticed learners using the thinking ‘tool/move’ of agree/disagree</p> <p>(Please give me some examples of how and when they do this).</p>

3.) Have you noticed them using the thinking ‘tool/move’ of giving reasons and expecting reasons from others, and perhaps from you?

(Can you think of an example/examples of individual learners doing this? )

(In what kind of lesson might that happen?)

4.) Have you noticed learners trying to connect their own ideas to those of others?

(Any examples?)

5.) Have you noticed any learners being prepared to change their minds after hearing reasons put forward by others?

6.) Have you noticed that learners are more thoughtful, less impulsive and attend more carefully to detail?

Does this show at all in the way they answer comprehension questions?

Does this show at all in the way they respond to maths problems?

7.) Does it ever happen that learners at times try to go beyond the surface of a question/issue /problem – are not satisfied with information but probe it themselves e.g. in maths, or when discussing a specific topic?

What kind of things do they say?

## APPENDIX: C

### Individual Interview with Cognitive Education Co-ordinator

a.	In terms of your school development plan, how did Cognitive Education contribute to your school improvement?	
b.	What type of changes did you as a co-ordinator notice within the Literacy classes?	
c.	What type of changes did you as a co-ordinator notice within the Mathematics classes?	
d.	What challenges did the learners face in the Mathematics classes?	
e.	In which ways could the learners justify their thinking within these two learning areas?	
g.	What support did you get from the School's Governing body with regard to Cognitive Education?	
h.	Which cognitive tools and strategies have been incorporated within the school's curriculum?	
i.	How did the Community of Inquiry training develop your expertise?	
j.	Your staff has regular opportunities to discuss the process of cognitive education as well as how it can be maintained and improved. In which ways did this help you.	
k.	How does your school 'show' to its visitors that it is a 'thinking school'?	



## APPENDIX: D

### Focus Group Interview

“In the group work today we...”

Tell me about how you do things in your mathematics lessons.		
What kind of questions do you ask?		
How do you find out new things?		
What happens when you do not understand something?		
<b>In which way did or were you</b>		
1.	...gave full attention to one another	
2.	...did not interrupt when somebody was speaking	
3.	...discovered fresh ideas	
4.	...kept our aims as the centre of our attention	
5.	...assisted each other in learning	
6.	...encouraged each other	
7.	..taught something new	
8.	“The next time we do group work, we will learn and achieve more if we...”	

Adapted from Killen, R (2007)

## APPENDIX: E

### Learner Individual Rating Scale

School.....Class.....Date .....

	Much, much better	Only a bit better	Not at all better
1. Did we get better at listening to each other?			
2. Did we get better at saying what we think?			
3. Did we get better at going deeply into a question?			
4. Did we get better at giving reasons?			
5. Did we get better at showing respect when we do not agree?			
6. Did we get better at connecting to other people's ideas?			
7. Did we get better at looking at different points of view?			
8. Did we get better at sticking to the point?			

What else can you tell me about being a classroom community of inquiry in your literacy lessons?

.....  
 .....

What else can you tell me about being a classroom community of inquiry in your mathematics lessons?

.....  
 .....

## APPENDIX: F



Directorate: Research

[Audrey.wyngaard2@pawc.gov.za](mailto:Audrey.wyngaard2@pawc.gov.za)  
tel: +27 021 467 9272  
Fax: 0865902282  
Private Bag x9114, Cape Town, 8000  
[wced.wcape.gov.za](http://wced.wcape.gov.za)

**REFERENCE:** 20120705-0051

**ENQUIRIES:** Dr A T Wyngaard

Mrs Karen Petersen  
UWC  
Private Bag X17  
Bellville  
7535

**Dear Mrs Karen Petersen**

**RESEARCH PROPOSAL: COMMUNITY OF INQUIRY PRACTICES IN THE MATHEMATICS AND LITERACY CLASSROOMS: A STUDY OF TWO WESTERN CAPE PRIMARY SCHOOLS**

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Approval for projects should be conveyed to the District Director of the schools where the project will be conducted.
5. Educators' programmes are not to be interrupted.
6. The Study is to be conducted from **16 July 2012 till 28 September 2012**
7. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
8. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
9. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
10. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
11. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
12. The Department receives a copy of the completed report/dissertation/thesis addressed to:

**The Director: Research Services  
Western Cape Education Department  
Private Bag X9114  
CAPE TOWN  
8000**

We wish you success in your research.

Kind regards.

Signed: Dr Audrey T Wyngaard  
for: **HEAD: EDUCATION**

**DATE: 06 July 2012**

---

Lower Parliament Street, Cape Town, 8001  
tel: +27 21 467 2000 fax: +27 21 467 2996  
Safe Schools: 0800 45 46 47

Private Bag X9114, Cape Town, 8000  
Employment and salary enquiries: 0861 92 33 22  
[www.westerncape.gov.za](http://www.westerncape.gov.za)

## APPENDIX: G

### CONSENT FORM FOR PARENTS

I hereby give permission to Karen E. D. Petersen to conduct research, using my child \_\_\_\_\_ as participant in research regarding the COMMUNITY OF INQUIRY PRACTICES IN THE MATHEMATICS AND LITERACY CLASSROOMS: A STUDY OF TWO WESTERN CAPE PRIMARY SCHOOLS.

I understand that \_\_\_\_\_ (name of child) will be participating freely and without being forced in any way to do so.

The purpose of the study has been explained to me and I understand what is expected of my participation. I understand that this is a research project whose purpose is not necessarily to benefit me personally.

I have received the telephone number of a person to contact should I need to speak about any issues that may arise in this rating scale.

I understand that this consent form will not be linked to the rating scale and that my child's answers will remain confidential.

I understand that, if at all possible, feedback will be given to my child's school on the results of the completed research. The findings will be used in the M.ED PSYCH. RESEARCH REPORT.

\_\_\_\_\_  
Signature of Parent

\_\_\_\_\_  
Date

\_\_\_\_\_  
Signature of Researcher  
Karen E.D. Petersen

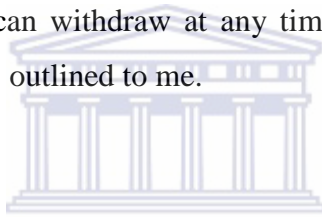
\_\_\_\_\_  
Research Supervisor  
Prof. Lena Green

## APPENDIX: H

### CONSENT FORM (Teachers and Co-ordinator)

**Title of Research Project:** Community of Inquiry Practices in the Mathematics and Literacy classrooms: a study of two Western Cape primary schools.

The aims of the study were communicated to me and I volunteered to be part of this study. I was made aware that I could withdraw from the study at any given time. I was assured of that my name or the name of my institution will not be mentioned and information that will be provided will be handled in a cautious manner. I understand I can withdraw at any time without prejudice. I agree to participate in the study as outlined to me.



Name of participant: .....UNIVERSITY of the

Signature of participant: .....WESTERN CAPE

Date: .....

Questions/ concerns regarding this study can be related to:

Professor L. Green

UNIVERSITY OF THE WESTERN CAPE

Private Bag X17

Bellville

7535

Email: lgreen@uwc.ac.za

## **APPENDIX: I**

### **PARTICIPANT INFORMATION SHEET**

**Project Title:** Community of Inquiry practices in the Mathematics and Literacy classrooms: A study of two Western Cape primary schools

#### **1. What is the study about?**

This is a research project that I am conducting at the University of the Western Cape in order to make the requirements for the M.ED Psychology degree. The study aims to explore the teachers' and learners' perceptions regarding the effects of teachers' Community of Inquiry practices on the teaching and learning of Mathematics and Literacy.

#### **2. Why have I been invited to participate in this study? Do I have to take part?**

I am inviting you to be part of this study because you had training in the Philosophy for Children programme. If you do decide to take part you will be given this information sheet to keep and will be asked to sign a consent form.

#### **3. What will I be asked to do if I agree to participate?**

You would be asked to be part of a group interview.

#### **4. What are the possible risks of participation?**

There are no risks associated with participating in this research project.

#### **5. What are the benefits of participation?**

There are no personal gains, but the results will improve the project as well as provide other teachers the opportunity to reflect on the project.

#### **6. Will my participation be kept confidential?**

All information will be kept confidential and how the data will be stored and retained. You will not be identified in any report as your identity will be protected.

### **7. What if I require further information?**

If you would like to discuss any aspect of this study please feel free to contact me or my supervisor.

Karen Elizabeth Debora Petersen  
072 512 1474

I would be happy to discuss any aspect of the research with you.

My supervisor:

Professor L. Green

UNIVERSITY OF THE WESTERN CAPE

Private Bag X17

Bellville

7535

Email: [lgreen@uwc.ac.za](mailto:lgreen@uwc.ac.za)



## **APPENDIX: J**

**Title of Project: Community of Inquiry Practices in the Mathematics and Literacy classrooms: A study of two Western Cape schools.**

### **Letter of Invitation to School Principals**

My name is Karen Peterssen, and I am a M. ED Psychology student at the University of the Western Cape. I am conducting research on Community of Inquiry Practices under the supervision of Professor L. Green. The Western Cape Education Department has given approval to approach schools for my research. A copy of their approval is contained with this letter. I invite you to consider taking part in this research. This study will meet the requirements of the Research Ethics Committee of the University of the Western Cape.

### **Aims of the Research**

The research aims to:

- Explore teachers' and learners' perceptions regarding the effects of training teachers in Community of Inquiry Practices on the teaching and learning of Mathematics and Literacy in two local primary schools.

### **Significance of the Research Project**

The research is significant in three ways:

It will provide information about the teaching and learning of Mathematics and Literacy and the thinking skills needed.

### **Benefits of the Research to Schools**

The results will be made available to the schools concerned as well as to the Western Cape Education Department.



## **Research Plan and Method**

Learner data will be obtained by means of two group interviews as well as a completion of a learner rating scale. Teacher data will be obtained by means of two group interviews and one interview with the co-ordinator. Permission will be sought from the learners and their parents prior to their participation in the research. Only those who consent and whose parents consent will participate. Permission will also be sought from the teachers who will participate in this study. I will administer all the interviews which will take approximately 30 minutes each. The completion of the rating scale will also be administered by me. All information collected will be treated in strictest confidence and neither the school nor individual learners will be identifiable in any reports that are written. Participants may withdraw from the study at any time without penalty. The role of the school is voluntary and the School Principal may decide to withdraw the school's participation at any time without penalty.

## **School Involvement**

Once I have received your consent to approach learners to participate in the study, I will

- arrange for informed consent to be obtained from participants' parents
- arrange a time with your school for data collection to take place
- obtain informed consent from teachers

Attached for your information are copies of the Parent Information and Consent Form, also the Participant Information Statement and teacher/ co-ordinator Consent Form.

Thank you for taking the time to read this information.

K. Petersen

**Researcher**

U.W.C

Professor L. Green

**Supervisor**

U.W.C