

**CONTINUING PROFESSIONAL TEACHER DEVELOPMENT: A CASE OF  
MATHEMATICAL LITERACY TEACHING IN SOUTPANSBERG NORTH  
CIRCUIT OF VHEMBE DISTRICT**

by

**FHUMULANI SUZAN RALUSWINGA**

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**SUPERVISOR: Prof M.P Mulaudzi**

**CO- SUPERVISOR: Dr T.E Tshiovhe**

**CO- SUPERVISOR: Dr B. Dube**

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## DECLARATION

I, **FHUMULANI SUZAN RALUSWINGA**, declare that:

**Continuing Professional Teacher Development: A Case of Mathematical Literacy Teaching in Soutpansberg North Circuit of Vhembe District**

...is my own work and has not been previously submitted in any form whatsoever by myself or anyone else, to this university or any other educational institution for any degree or examination purposes. All the sources that I have used have been indicated and duly acknowledged by means of complete references.

.....  
**FHUMULANI SUZAN RALUSWINGA**

.....  
**DATE**

## DEDICATION

I would like to dedicate this work to my late mother, Makana Selinah Mathavha, who raised, nurtured and laid the foundation for my education. I would also like to dedicate my work to my husband, Mr Godfrey Mashudu Raluswinga and my daughter Livhuwani Victoria Raluswinga, for their support and encouragement in this study.

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- I give thanks to the almighty God for giving me strength and determination to achieve my goal.
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## ABSTRACT

The purpose of this study was to investigate how continuing professional teacher development can improve learners' achievement and schooling in Mathematical Literacy. This study adopted a qualitative research design. The qualitative research method was used to collect data. Semi-structured interviews were used to collect data. The population comprised of all Mathematical Literacy teachers, heads of departments and principals of schools in the Soutpansberg North Circuit. Purposive sampling was used to select participants. The sample consisted of 3 school principals, 3 heads of departments' and 9 teachers. Data was analysed thematically. The study revealed that continuing professional teacher development improves learner achievement, teacher skills and knowledge. The study recommended that teachers should be supported by the community, schools and the department of Basic Education, in order to improve their knowledge, skills and learner achievement. In addition, Learners' needs, engaging parents, assessment strategies and teacher practice were used to measure the impact of CPTD on learner achievement. Of equal importance, teachers should further their studies and engage themselves in reading materials relevant to their profession.

**Key words:** Mathematical Literacy, continuing professional teacher development, pedagogical content knowledge, teaching, learning.

## LIST OF ACRONYMS

ACE	:	Advanced Certificate in Education
ACTEQ	:	Advisory Committee on Teacher Education and Qualifications
CAPS	:	Curriculum Assessment Policy Statement
CPTD	:	Continuing Professional Teacher Development
DAS	:	Developmental Appraisal System
DBE	:	Department of Basic Education
DoE	:	Department of Education
ELRC	:	Education Labour Relations Council
FET	:	Further Education and Training
IQMS	:	Integrated Quality Management System
NCS	:	National Curriculum Statement
NPF	:	National Policy Framework
OECD	:	Organization for Economic Co-operation and Development
PD	:	Professional development
PEU	:	Professional Educators' Union
PMS	:	Performance Management System
SACE	:	South African Council of Educators
SADTU	:	South African Democratic Teachers' Union
SPSS	:	Statistical Package for Social Sciences
WSE	:	Whole School Evaluation

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## CHAPTER 1

### INTRODUCTION AND BACKGROUND OF THE STUDY

#### 1.1 INTRODUCTION

This chapter discusses study background, problem statement, aims, objectives, research questions, background of CPTD in Mathematical Literacy, key words definition, research design, research methodology, trustworthiness, data analysis, significance of the study, delimitation and ethical considerations.

#### 1.2 BACKGROUND OF THE STUDY

Continuing Professional Teacher Development (CPTD) aims at cultivating the quality of education (Mitchell, 2013:387). This has been approved in many educational contexts. CPTD is a primary goal for improving teacher practice and learner achievements (Cohen & Hill, 2000:294). CPTD has an impact on learner achievement, maintenance and enhancement of teachers' knowledge and skills.

Some of the teachers who are teaching Mathematical Literacy have not specialised in Mathematics (Bansil, Webb, James & Khuzwayo, 2012:106). As a result, they have partial knowledge of Mathematical content and pedagogical skills. The majority of South African teachers need to increase their pedagogical content knowledge and teaching skills, while a large number of teachers need to advance in areas such as diversity, management and classroom management Koster, Dengerink, Korthagen and Lenenberg (2008:567).

Mathematical Literacy was announced as a subject in South African schools in 2006. According to the Department of Education (DoE, 2003:3), this subject is defined as life-related application of Mathematics. It was presented as an alternative to Mathematics. Christiansen (2006:10) states that the main reasons for presenting Mathematical Literacy was to equip a large number of learners who fail to attain some basic aspects of Mathematics. It is obligatory for all learners who do not take Mathematics in further education and training band. The addition of Mathematical

literacy in the school curriculum was meant to ensure that learners developed fundamental skills. It has an impact on general professional development, teaching skills and styles.

Department of Basic Education (DoE) states that enabling learners to reach their supreme prospective needs putting the goals to be achieved at the end of the learning process (DoE 2003:2). Efficiency of CPTD lies in its influence on teachers' skills and improvements on the learning outcomes. The significant investment of CPTD on teachers' skills has not been concluded yet. Howie (2003:1) concurs that South Africa faces the challenge of providing quality education. According to Donaldson (2009:18), the learning outcomes of CPTD are as follows:

- The growth in school, cluster and education authority-based on academic and helpful CPD activities.
- The sign of enhanced teacher competence and raised morale.
- The symbol of positive impact on children's learning using assessment learning programmes.
- Increase motivation and commitment towards personal learning
- Educators showing commitment and innovation in classroom.
- More staff taking on leadership roles, sharing of ideas and assets.

The National Policy Framework (NPF, 2007:20) is intended to support teachers in improving skills. It brings transparency to the complex ground of teacher education. Policy Framework aims at providing complete strategies for fruitful recruitment, preservation and professional development of teachers (NPF, 2007:20). On the other hand, NPF aims at ensuring:

- Teachers are properly trained to undertake their tasks.
- Enhancing teacher competency and performance.
- Ensure the availability of competent teachers devoted to providing education of a high quality (SACE, 2000:2).

According to Borko (2004:5), CPTD is significant for teachers to enable them to improve knowledge for the subject, in order to enhance learner performance.

It was for these reasons that this study was undertaken, to examine the effect of CPTD in improving the performance of learners in Mathematical Literacy.

### 1.3 STATEMENT OF THE PROBLEM

CPTD ensures that teachers are equipped with adequate competencies, which make them ready for the challenges of modern life. CPTD plays an important role in cultivating the excellence of classroom practice. According to DoE (2003:9), attainment of necessary skills permits learners to live and work effectively in today's world.

Notwithstanding the above expectations, arising from the introduction of Mathematical Literacy as a subject done by learners in Further Education and Training (FET) band in South Africa, Mathematical Literacy has resulted in many challenges for learners and teachers. Poor performance of learners in Mathematical Literacy has been a concern to teachers, parents and government (Adolphus, 2011:145). The chief Examiners annual reports in Mathematical Literacy in the National senior Certificate (NCS) Examinations diagnostic report are evidences of those facts (DoE, 2011:120). Sidoropoulos (2008:2) states that, Mathematical Literacy as a new curriculum challenges beliefs and understanding of teachers who for long time consider teaching Mathematics to be the capability of a few and were not trained to teach the subject. Professional development may be perceived differently Morewood, Ankrum and Bean (2010:202). Professional development workshop programmes for Mathematical Literacy teachers are scarce and of poor quality. Many of these activities do not produce the intended results. For example, they are not able to alter the classroom atmosphere of teaching and learning but focus on the problem of traditional teaching (Desimone, Porter, Garet, Yoon & Birman, 2002:102).

Furthermore, a number of professional development programmes which are not well-organised and scheduled are conducted (DoE, 2008:3). That is they do not object to meet teachers and schools' needs.



The intention of the study was to investigate if CPTD improves the teaching of Mathematical Literacy at the FET Band in Southpansberg North.

#### **1.4 PURPOSE OF STUDY**

This study examined how continuing professional teacher development in Mathematical Literacy improved learners' achievement and schooling.

The objectives of the study were to:

- 1.4.1** Determine how the CPTD enhances learners' achievement in Mathematical Literacy.
- 1.4.2** Examine if CPTD improves teachers' knowledge and skills in Mathematical Literacy.

#### **1.5 RESEARCH QUESTIONS**

The chief research question was: How does CPTD in Mathematical Literacy improve learners' achievement and schooling? In order to answer the chief research questions, the following subsidiary questions were developed.

- 1.5.1** How does CPTD enhance learners' achievement in Mathematical Literacy?
- 1.5.2** To what extent does CPTD enhance teachers' knowledge and skills in Mathematical Literacy?

#### **1.6 BACKGROUND OF CPTD**

Continuing Professional Teacher Development (CPTD) is a pre-arranged, continuous and life-long process, where-by teachers develop their personal and professional abilities, and increase their knowledge, attitude and skills, in order to improve classroom exercise (SACE, 2016:2). According to Advisory Committee on Teacher Education and Qualifications (ACTEQ, 2003:3), CPTD programmes facilitate the abilities of service delivery. The teachers' needs should be considered, which include mentoring, coaching, lesson studying and reflective reading.

Villagers- Reimers (2003:8) believes that CPTD is an extensive process which begins with early preparation that the teacher gets in pre-service training. Ganser (2000:6) argues that CPTD is comprised of formal experiences which are workshops and informal experiences. In the projected study, CPTD is the advancement of a broaden understanding.

According to Cohen and Hill (2000:294), CPTD often looks at improving the superiority of education. Kwakman (2003:153) concurs that excelling is an essential responsibility of professionals. This means that teachers should always be armed with new knowledge. CPTD gives new skills of teacher practice Walling and Lewis (2000:63).

## **1.7 DEFINITION OF KEY WORDS**

This segment defined the key words that were used in this study, so that readers may have a common understanding.

### **1.7.1 Mathematical Literacy**

Mathematical Literacy is a subject in the national curriculum statement that was introduced in the South African schooling system in 2006. It is compulsory for all learners who do not take pure Mathematics. According to Vithal and Bishop (2006:3), learners gain useful skills to enact their citizenry in a rapidly advanced scientific and technological world once they leave schooling.

Mathematical Literacy is described as basic competencies that permit teachers to contribute to the twenty-first century (DBE, 2011:8). The twenty-first century is a world categorised by numbers, numerically-based arguments and data represented and taken in a number of different ways. Learners acquire competencies such as reasoning, making decisions, solving problems, managing sources, scheduling events and applying technology.

In the present study, CPTD is believed to play a critical role in Mathematical Literacy, through equipping teachers, in order for them to assist learners to solve real world problems without relying on language literacy.

### **1.7.2 Continuing Professional Teacher Development**

According to the Organization for Economic Co-operation and Development (OECD, 2009:49), CPTD is a way of developing individual skills, knowledge, expertise and other characteristics. Kennedy (2005:236) states that improvements of workforces are vibrant aspects of professional development. CPTD is done formally or informally.

In the existing study, CPTD was used to refer to the way in which teachers are engaged in lifelong learning, to increase their services and information.

### **1.7.3 Pedagogical content knowledge**

Content knowledge refers to the way in which the subject is understood (Gumbo, 2000:15). It is described as the understanding desired by the teacher to successfully teach Mathematical Literacy (Borko, 2004:7).

Such understanding involves the ability to twist technique and content, including how subjects correlate with each another when presented in the classroom (Shuhua, Kulm & zhonghe, 2004: 147). It involves an understanding of teaching principles.

In the present study, pedagogical content knowledge refers to the knowledge that teachers use in the classroom in order to improve learner achievement.

### **1.7.4 Teaching**

Cooney (2002:144) states that teaching is a technique used to transfer knowledge and wisdom to learners. According to Swan (2006:44), teaching involves professional support and guidance.

Teaching in this present study, was considered as an approach used by a knowledgeable person to encourage learners in learning process.

### **1.7.5 Learning**

According to Driscoll (2000:11), learning means imitating and demonstrating what one has learnt. It is a life-long process of converting information and experience into practice (Cobb, 2009:1).

In present study, learning was done through co-operatively and mediating with peers. It is the way in which teachers gather knowledge and skills from CPTD programmes.

## **1.8 RESEARCH DESIGN AND METHODOLOGY**

This section discusses on the research design and methods of collecting data.

### **1.8.1 Research Design**

Research design refers to the overall strategies on how data was collected and the research instruments that were employed (Welma, Kruger & Mitchel (2005:52). This study adopted qualitative research design. The phenomena could be holistically and contextually investigated (Macmillan & Schumacher, 2010:13; Maree, 2007:68). According to Cresswell (2009:176), it is the interpretive form of inquiry where researchers interpret what they see, hear and understand. It supplied the researcher with insight into the problem by allowing the researcher to engage in their environment and drumming into their lived experiences.

### **1.8.2 Research Methodology**

Research methodology is a different technique and procedure that is used in research for methods implementing process (Cresswell, 2009:18). Data was collected through interviews.

- **Interview Schedule**

According to Denzin (2003:202), interview schedule is a set of planned questions with structured answers to guide the interviewer. Interview schedule led to more responses from the interviewee and was free from biasness. Face-to-face semi-structured interviews were used to collect data.

The semi-structured interviews were guided by an interview schedule to explore teacher's experiences in the subject. School principals, heads of departments and teachers were interviewed individually. According to Gray (2009:373), a semi-structured interview is useful because additional questions may be asked as new ideas arise and the researcher ends up gathering more detailed information.

## **1.9 SAMPLING**

In this section the researcher chose the appropriate population and determined the sampling procedures and the sample.

### **1.9.1 Population**

Population is a group of people that the study wants to draw conclusion from (McMillan & Schumacher, 2010:129). The population of this study comprised of principals, heads of departments and teachers.

### **1.9.2 Sampling Procedures**

Sampling procedure is a process of picking some individuals from the population to contribute to the study (Jupp, 2006:271). Purposive sampling was used to select participants. According to Neuman (2003:213), purposive sampling is a process that allows the researcher to select the sample with a specific purpose in mind. School principals were selected by virtue of leading schools with good performance in Mathematical Literacy; departmental heads were designated because they were leaders of teachers and curriculum in schools. Teachers were scheduled because they were teaching Mathematical Literacy.

### **1.9.3 Sample**

Sample refers to a portion drawn from a population of the study which is intended to lead to statistical estimates of the attributes of the whole population (Mcmillan & Schumacher, 2010:129). The sample for this study consisted of 3 school principals, 3 heads of departments and 9 teachers.

## **1.10 DATA ANALYSIS**

Data was analysed thematically. Thematic data analysis is a method of detecting and analysing patterns within the data Braun and Clarke (2006:79). It involved reading data in search of meaning. Further-more, it was easy to focus on and answered different types of research questions.

## **1.11 TRUST-WORTHINESS OF THE STUDY**

Trustworthiness of the study refers to truthfulness of the study findings (Anne, 2014:273). According to Bloomberg and Volpe (2008:85), trustworthiness is realised through credibility, transferability, dependability and conformability.

### **1.11.1 Credibility**

Credibility refers to the extent to which the results of the study are considered to be accurate and believable (Ary, Jacobs, Razaviel & Sorenson, 2006:504). In the present study, credibility was ensured by extended engagement in the field.

### **1.11.2 Transferability**

Transferability refers to the likelihood that the explorations of findings are meaningful when compared to others in similar situations (Ary *et al.*, 2006:507). Transferability was achieved through the rich descriptions of the research processes to reflect the relevance of the phenomena to other schools.

### **1.11.3 Dependability**

Dependability is the chance of producing similar results when the study is replicated (De Vos, Strydom, Fouche & Delpont, 2011:420). This was achieved through proper selection of research sites.

### **1.11.4 Confirmability**

Confirmability refers to the degree to which results of an investigation could be confirmed by other researchers (Ary *et al.*, 2006:511). Confirmability was achieved through member checking and giving meticulous description methods of audit trial.

## **1.12 DELIMITATION OF THE STUDY**

The study was conducted at 9 secondary schools offering FET phase under the jurisdiction of Soutpansberg North Circuit in Makhado Municipality, Vhembe District in the Limpopo Province.

## **1.13 SIGNIFICANCE OF THE STUDY**

This study is important as the following group of people benefited: the Minister of Education, Members of the Executive Council in Education Department. The Head of Department in education realised the importance of CPTD in improving learners' achievement and schooling around South Africa. Curriculum advisors, school principals, heads of departments and all teachers' organisations understand the difficulties that learners experience as well as the teaching strategies that can be employed to enhance learning.

## **1.14 OUTLINE OF THE STUDY**

The dissertation is organised into 5 chapters as follows:

## **Chapter 1: Introduction and Background of the Study**

Chapter 1 presents the background of study, problem statement, aims and objectives of the study, as well as the research questions; Conceptualising CPTD; definition of key words; research design; research methodology; trust-worthiness; data analysis; study significance; delimitation and ethical considerations.

## **Chapter 2: Literature Review**

Chapter 2 presents a review of literature on CPTD; discusses how CPTD enhance learner achievement; the enhancement of teachers' knowledge and skills; and CPTD in different countries.

## **Chapter 3: Research Design and Methodology**

Chapter 3 presents the research design and methodology.

## **Chapter 4: Interpretation of Data**

The chapter outlines the qualitative analysis and interpretation of data, which was analysed thematically. Research questions were looked at when analysing and interpreting the data.

## **Chapter 5: Summary, Limitations, Conclusion, Recommendations and Suggestions for further Study.**

Chapter 5 presents the summary, limitations, conclusion, recommendations and suggestions for further study.

### **1.15 CONCLUSION**

The emphasis of this chapter was to highlight the introduction of the study. The chapter provides an overview of the problem statement, purpose of the study and the research question. The background of CPTD and methodology were also discussed. Moreover, measures of quality control, data analysis, and significance of the study, delimitation of the study, ethical considerations and the research outline were deliberated.



## CHAPTER 2

### LITERATURE REVIEW ON CONTINUING PROFESSIONAL TEACHER DEVELOPMENT IN MATHEMATICAL LITERACY

#### 2.1 INTRODUCTION

This chapter gives a general overview of CPTD at secondary schools. The purpose of the literature review is to lay out a firm foundation, shaping and giving direction for the study (Webster & Watson, 2002:13). Research questions were used to put in context the literature review. The chapter highlights the three concepts related to CPTD; namely, in-service training, upgrading and staff development. The literature review looked at continuing professional development of teachers in developing, developed and international countries, with regard to enhancing learner achievement, teachers' knowledge and skills in South Africa and globally, especially in Tanzania and New Zealand.

#### 2.2 CONCEPTUALISING CPTD

CPTD is a serious ingredient for education transformation (Lee, 2001:12). It is designed to help teachers' build a new understanding of classroom practice (Lee, 2005:39). CPTD is presented in the form of workshops, courses, in-services training sessions and extension work meant to address teachers' needs. CPTD programs warrant that teachers cope with the rate of change around them and in their career. ACTEQ (2003:3) concurs that CPTD is intended to meet the rapidly changing needs of the curriculum. In this study, CPTD is an angle of meaning, improvement and change for Mathematical Literacy teachers.

The programme of CPTD is offered as a chief educational reform strategy, with a push to help schools and teachers to enhance curriculum standards, design, meaningful educational assessment, organisational change and guidance on school improvement plans and improve teachers' knowledge and skills (Education Policy Analysis Achievers, 2000:2). CPTD helps teachers to shape their dimensions to change as their educational institutions experience related transformations Birman,

Desimone, Porter and Garet (2000:31). In the present study, Mathematical Literacy teachers are capacitated with new knowledge in order to be confident when facing the new curriculum. The new knowledge gained helps them to understand the range of knowledge received through years of classroom experience.

CPTD is a process and an invention of developing a fresh vision of being a teacher that can potentially enrich the experience of teaching (Boaduo, 2010:82). This means that Mathematical Literacy teachers realise the importance of developing a fresh vision.

ACTEQ (2003:12) states that CPTD is directed by policy which is successfully understood when all teachers are effectively engaged on training. Teachers have the responsibility to participate in order to refresh and broaden their professional experience. This means that when Mathematical Literacy teachers participate in professional development, learners' achievements are improved too. Kelly and McDiarmid (2002:109) state that continuing professional teacher development provides teachers with the chance to update their skills, in order to be able to show their competence.

### **2.2.1 The Benefits of CPTD**

According to Desimone *et al.* (2002:86), reform type of CPTD allows teachers to be connected with the classroom, colleagues and community. It is seen as a collaborative process (Clement & Vanderberghe, 2001:43). In the present study, Mathematical Literacy teachers, administrators, parents and other stake-holders should have meaningful interactions for the final benefit of the teaching and learning process.

CPTD gives light through suitable program that improve their teaching practice and raise learners' performance. CPTD is most effective when it is an unceasing process that involves properly planned development and follow-up programs (Desimone, Smith & Ueno 2006:179; Desimone 2009:181; Drago-serverson 2007:70. Clotfelter, Ladder, Vigor & Diaz, 2004:251; Bolam 2003:103).

The South African Council of Educators (SACE) Act Number 31 of 2000, as amended by the Basic Education Laws Amendment Act (SACE, 2000:4), recommends professional development of teachers as a way of endorsing, developing and keeping the image of the profession, handling a system for promoting the CPTD of all teachers. SACE is responsible for running the CPTD system, recognizing all useful teacher development activities by:

- Admiring quality and credible professional development providers.
- Relevant professional development and programs.
- Assigning professional development point to such activities.
- Authorizing each teacher's CPTD account with the professional development points.

CPTD is a critical ingredient of education re-structuring and professional development experiences designed to help teachers figure out a new understanding of teaching and learning through direct experiences that help learners to learn (Heajin, 2001:2). The program of CPTD is offered as a main educational modification strategy anticipating helping schools and teachers develop more on hard curriculum standards, design, meaning-full educational assessment guide school improvement plans and advance teachers' knowledge and skills to enhance learners' learning (Education Policy Analysis Achievers, 2000:2). Effective professional development takes a keen role in professional activities including designing program (Steiner, 2004:7). In this study, improving is an essential responsibility of professionals; teachers should always be armed with new knowledge.

CPTD gives teachers opportunities for continuing learning in their careers. Earl (2002:5) states that teachers must shape their capacity to change as their educational institutions undergo change and they must be at the Centre of education. Teachers are responsible for their own professional evolution through lifelong learning. In this study Mathematical Literacy teachers further their own studies in order to be able to be confident when facing new curriculum.

According to SACE (2008:3), CPTD are activities taken individually by educators throughout their careers to enhance their professional knowledge, understanding,

competence and leadership capacity; in particular, to increase their mastery of the curriculum.

Teaching is at the heart of the school system, and the quality of teachers' professional practices is at the root of the quality of schooling. It is widely accepted that the Initial Professional Education of Teachers (IPET) is only the foundation of their professional education. SACE (2008:9) states that CPTD is a continuous process that lasts for the duration of a committed teacher. The underlying value is that teachers, individually and collectively, have a high degree of responsibility for their own professional development and the identification of their own professional needs.

The new CPTD system will be erected around significances identified by individual teachers, school leadership teams and staff members collectively, as well as priorities identified by SACE, the Department of Education, and other national bodies, for the profession as a whole (SACE, 2008:10). The benefits of CPTD are not merely personal. CPTD activities should lead to the improvement of learner achievements and schooling. The benefits should be most noticeable in the poorer and disadvantaged communities, thereby contributing to social justice.

CPTD is the provision of opportunities for qualified professionals to update their professional knowledge, to retain competent professional Ndhlovu and Lawrence (2012:12). CPTD is the provision of all forms of teachers' professional learning, within school or out of school, self-directed or externally prescribed (Boaduo, 2010:82). CPTD means developing Mathematical Literacy teachers in the way that enriches their teaching experience.

CPTD is the supplementation of school-based in-service and self-help programmes. It reflects change from the traditional in-service training to staff development. According to Hollard (2001:257), professional development and staff development are linked by means of having responsibility for the search of improvements within one's own teaching and commitment to the collaborative search for improvement within the school.

Teachers work as members of the school community and their CPTD contributes to the collective intelligence of the whole school. Teachers supply for both personal and school development needs; ranking of CPTD is a matter of an agreement between individual teacher and the school (ACETEQ, 2003:12). In this study CPTD means developing Mathematical Literacy teachers in order to enrich their teaching experiences and personal interests. Teachers are able to work as a team, as well as apply the stages of professional development they have reached in their careers.

The Department of Education (2007:20) states that SACE is the national body for the education profession. SACE is responsible for dealing with the CPTD system, sustained by the Department of Education. SACE also registers all qualified educators. One of the objects of the SACE Act 31, 2000 (2000:2) is “to sponsor the professional development of educators”. The Act endorses several duties on SACE for the promotion and development of the education and training profession, including researching and developing a professional development policy and promoting the in-service training of all educators.

### **2.2.2 Challenges that Arise when CPTD is Administered**

Desimone *et al.* (2006:182) state that CPTD enhances teachers’ services and raises learners’ achievements. CPTD provides a better understanding of the content (Wanzare & Ward, 2002:2). Mathematical Literacy teachers must have a way of developing themselves, in order to understand the content. The tactics of increasing knowledge are not effective because of insufficient contact time (Mewborn & Huberty, 2004:4). Mundry (2005:14) argues that policy makers and education managers should leave out-mode approaches to develop staff and invest in the more practice-based approaches.

Workshops, conferences and seminars are considered as traditional approaches and are not adequate (Boyle *et al.*, 2005:4 & Lee, 2005:40). Lee (2005:39) argues that the approaches adopted a technical and simplistic view of teaching and believed that teachers’ knowledge and skills could be improved by using knowledgeable teachers from outside the school.

Lee (2005:40) states that long-term professional development has been pre-meditated to assist teachers by means of directed practical experiences. Boyle *et al.* (2005:22) argue that CPTD is designed for teachers of a particular grade, so that they can discuss concepts and skills, observe colleagues, share practice and integrate what they learnt. Mathematical Literacy teachers should be able to work as a team. Working as a team develops and gives teachers an opportunity to identify their strengths and weaknesses.

Heaney (2004:43) concurs that CPTD programmes have an effect on teaching and learning in schools, positive interventions empathetic skills, effective appraisal processes and chance to improve their self-esteem and performance. The school curriculum is changing to make more effective of information and communication technologies for teaching. Teachers should always have in-service professional development in order to maintain high standards of teaching and to hold a quality work force. According to Cordingley, Bell Rundell and Evans (2003:10), CPTD is associated with the following improvement for teachers:

- Greater sureness among teachers, ability to take risks.
- Enhancing opinions among teachers in power and make a difference to pupils' learning.
- The development of passion for collaboration working.
- Greater assurance to changing practice and willingness to try new things
- Enhance knowledge and practice

Lack of CPTD is too well-known to keep assuming that CPTD'S has not been ineffective in terms of achieving change in teacher practice (Timperely, Wilson, Barrar & Fung, 2007:10). CPTDs' role is to alter schools, improve academic and school leaders learning from experts, mentors and their peers on how to become true instructional leaders (Darling Hammond, Wei, Andree, Richardson & Orphanos, 2009:3). Mathematical Literacy teachers ensure that they increase their academic profession.

## **2.3 THE BUILDING BLOCKS OF CPTD**

Some characteristics of CPTD are delineated here-under.

### **2.3.1 In-service Training of Teachers**

In-service training includes all that happens to the teacher from the first day of appointment until he gives up work (Boaduo, 2010:77). The main aim of in-service is: to license the teacher to monitor and shape his professional development. It focuses on the teacher alone and it is about capability building; recovers the competences of the teachers through presentations of courses, workshops, inter-school visits and staff development programmes. The aim of in-service training is to upturn the ability of teachers by surfacing potentialities of learners they teach; inspiring professional growth; expanding the status of the school; eradicating those teachers who were inadequately trained during their pre-service education (Ngobeni, 2002:4). In-service training is seen as the solution to Mathematical Literacy teachers in the acquisition of skills and knowledge.

According to Moloj and Strauss (2005:12), South Africa has developed a broad teacher development strategy to meet the needs in the demand, supply and utilization of teachers in the system. The strategy recognizes CPTD (in-service) training of teachers.

### **2.3.2 Upgrading Programme**

According to the Department of Arts and Culture (2013:2), an advancement programme is a programme that is scheduled to enhance the qualifications of under-qualified teachers. Elevation programme refers to all learning and training programmes prominent to qualifications and part of qualifications at levels 1 to 4 of the National Qualifications Framework (DoE, 2014:3; Ravhudzulo, 2006:26). The programme assists teachers who are not effectively qualified and those who want to improve their salary. It is undertaken in order to improve pedagogy, provide ample and appropriate instruction for the subject content. In this study, it is assumed that

Mathematical Literacy teachers need an upgrade programme through workshops and furthering their studies.

### **2.3.3 Staff Development**

Staff development is an intended process whereby the effectiveness of staff collectively and individually is upgraded in response to new knowledge, new ideas and changing circumstances, in order to improve directly or indirectly, the quality of learner's education (ACTEQ, 2003:11).

It includes empowering teachers to develop new copies for mixing learning into all aspects of the school. Furthermore, it is characterised by results-driven and job-embedded to collective and directly linked to what teachers do in the classroom (Hollard, 2001:254). In this study, staff development means new knowledge and ideas are improved to meet the schools' developmental needs

CPTD improves collaboration of teachers with co-workers. Cooperation for the betterment of teaching, learning and progressively takes a leading character in supporting the work of other teachers as well as in modelling (ACTEQ, 2003:39).

According to Mutshekwane (2004:12), staff development recognizes that CPTD is the key to superiority instruction; takes the initiative to pursue professional development activities that suit their own developmental needs. It gives support to student teachers and indorses whole-school mentoring practices and culture of collegial sharing among colleagues; provides professional guidance and assistance in organizing school-based staff development work. Mathematical Literacy teachers staff development means being supported in order to increase knowledge and skills and developmental needs.

Staff development is the scheduled process whereby the effectiveness of staff collectively and individually is improved in response to new knowledge, ideas and changing circumstances, in order to improve the quality of learners' achievement directly or in-directly (Mutshekwane, 2004:13). Teachers have the professional responsibility to design and achieve their own CPTD. School based CPTD only



continues well when schools include the individual needs for teachers in planning, facilitating and monitoring.

ACTEQ (2003:38) states that staff development keeps constant relationships with colleagues, showing respect for others and valuing the diversity of the school. It designs active support for and maintains close collaboration with colleagues in all aspects within school; takes the leading role in promoting pleasant and collaborative staff relationships in the school. Staff development may be completed by taking into consideration teacher, school and external activities.

## **2.4 KINDS OF CPTD ACTIVITIES**

The NPFTED (2007:18) recommends five categories of activities that broaden the straight idea of CPTD:

- School-led programmes;
- Employer-led programmes;
- Qualification programmes;
- Other programs presented by Non- Governmental Organisations, and
- Self-chosen activities.

However, CPTD activities will be grouped into three categories according to the main root of their priority (SACE, 2003:14). Mathematical Literacy teachers use different kinds of CPTD to improve their knowledge and skills.

## **2.5 FUNDING**

SACE requires funding to accomplish the CPTD system. According to the SACE Act (SACE, 2000:19), the education department provides that the money of the council consists of:

- Compulsory fees:
- Money received from assistances, contributions, interest or fines; and
- Other money established by the council from any other foundation.

According to SACE (2008:24), SACE is responsible for funding their activities. The Department of Education recognizes that the level of SACE's compulsory activities and cannot support the cost of managing the CPTD system. Thus the Department of Education provides funds to SACE for the management of the CPTD system and SACE will not use income from members' levies for this purpose (SACE, 2008:24). This means that lack of funds can be a problem.

## **2.6 GOVERNANCE**

The SACE Council carries the general responsibility for the successful management of the CPTD system. According to SACE (2008:24), SACE is ruled by the Department of Education.

## **2.7 MANAGEMENT AND ADMINISTRATION**

The head of the CPTD Unit is responsible for managing the system (SACE, 2008:27). SACE needs to work in handy union with each other but each carries responsibility for establishing the manner and style of the system.

## **2.8 MANAGEMENT SYSTEM**

The CPTD Management System is a new technique of organising and recognising teachers' professional development (SACE, 2013:7). The CPTD Management System will encourage and recognise:

- Advancement of teachers and improve teaching, learning, assessment and service to the community.
- Development of the community.

According to SACE (2011:2), CPTD Management system is a system for identifying all useful teacher development activities:

- Complimentary quality and credible PD providers.
- Approving relevant and good professional development.
- Giving professional development (PD) points to such activities.

- Trusting each teacher's CPTD account.

## **2.9 IMPLEMENTATION**

According to National Policy Framework for Teacher Education and Development in South Africa (NPFTED, 2000:22) and The South African Council for Educators (SACE, 2011:1), SACE is a legal body for professional educators that have overall accountability for the implementation, management and quality assurance of the CPTD system. SACE is provided with the necessary properties and support to undertake that role. According to SACE (2011:12), SACE simplifies the roles and responsibilities and identify areas of collaboration. According to SACE (2011:12), the CPTD system implementation was phased in to educators from January 2014.

## **2.10 MONITORING**

Monitoring means keeping a check on how the CPTD management system is working (SACE, 2013:15). Teachers monitor their own participation in CPTD activities, guided by their personal Professional Development Portfolio (PDP). According to SACE (2013:8), the PDP is a source document to support each teacher with professional growth. It contains instruction on understanding and analysing a teacher's professional development needs; teacher's analysis of professional development needs (PGP); direction on how the teacher can undertake or access professional development activities; information on the CPTD Management System; record of the teacher's CPTD activities and PD points and links between the CPTD activities and quarterly work schedule.

## **2.11 EVALUATION**

According to SACE document (2013:15), evaluation is a balanced assessment by an external body. Vincent and Ross (2001:37) argue that evaluation is the critical and important part of CPTD that focuses on the impact of teacher and learner outcomes. CPTD needs to be calculated effectively and extended to include learner outcomes. Guskey (2000:78) pronounces the level of effects and suggests ways to evaluate them as follows:

- Participant reactions – can be weighed by interview or group focus as it allows deep explanations of the outcomes.
- Participant learning – is gauged by pre- intervention questionnaires.
- Participants use of new knowledge and skills – is dignified by using classroom observation over a period of time
- Drawbacks – cost of training witnesses, the need for several observation to enable a fair profile of behavior to be constructed at teacher resistance to being observed.

The Integrated Quality Management System (IQMS), formulated by Education Labor Relation Council, embraces three integrated systems: Developmental Appraisal System, Whole School Evaluation and Performance Management System (ELRC, 2004:1). Its role is to identifying specific needs for teachers, schools and district offices; giving support for continued growth, promoting accountability, monitoring an institution's overall effectiveness and evaluating teachers performance (ELRC, 2003:2). Educators do on-going self-evaluations on the root of this instrument, which are then verified by a development support group (DSG). This evaluation records an educator's strengths and areas in need of development. This DSG evaluation serves as a standard to inform an educator's personal growth plan (PGP). All educators' PGPs inform the School Improvement Plan (SIP), and that total scores adjusted to reproduce educators' difficult school contexts and work constraints (ELRC, 2003:3). Mathematical Literacy teachers are evaluated at school by their peers and using self-evaluation.

## **2.12 THE IMPACT OF CPTD ON LEARNERS ACHIEVEMENT**

Professional development affects learner achievement through enhancement of teacher knowledge, skills, motivation and educating classroom teaching. All learners can learn and acquire useful skills and consequently succeed in life (Nakabugo & Siebörger, 2000:288). In the achievement of assistances, learners are exposed to several alternate learning methods and are projected to demonstrate what they have been able to attain in different ways through assessment (DoE, 2002:6). Teachers' failure to apply new ideas from professional development to classroom instruction

leads to poor achievement. In other words, the effect of professional development on learner learning is possible through two facilitating outcomes: teachers' learning and instruction in the classroom (Joyce & Shower, 2002:3).

### **2.12.1 Learners' Needs**

Lee (2007:139) states that the consent is that good teaching is always sensitive to individual differences, though it is not realistically possible to accommodate every difference in every lesson. It means that for learners' achievements to be enhanced learning materials should be available.

### **2.12.2 Engaging Parents**

According to Lee (2007:139), the popular views of teachers express a fear of teaching without parental involvement. However, they realize how important it is to educate parents and update them about how their children are taught. Ho and Toh (2000:2) argue that the plan on enhancing achievements needs community involvement.

Professional learning communities operate under the theory that the key to improved learning for students is continuous job fixed on learning for educators (DuFour, DuFour, Eaker & Many, 2006:6). Collaboration is of more importance in improvement process".

Teachers in learning communities tend to feel empowered when their learning is relevant to classrooms experience. This can lead to logic of ownership (Wenzlaff & Wieseman, 2004:123).

### **2.12.3 Assessment Strategies**

Assessment refers to any procedure that is designed to collect information about learner performance (Kellaghan & Greaney, 2001:19). Teachers use tests and diagnostic assessments, classroom assessments, and national in instructional planning and decision making. Also, teachers monitor student performance in

Mathematical Literacy by applying rubrics and keeping records of alternative assessment results.

According to Lee (2007:138), participant teachers express concerns regarding the growing state and national prominence on assessment.

#### **2.12.4 Teacher Practice**

According to Wallace (2009:573), teacher exercise is important for improve learner performance towards a particular subject. It means the way learners are taught has an impact on their achievement. The relationship between teacher practice and learner achievement is of equal importance.

Professional development programs share a common goal of increasing teachers' use of classroom practices (McCaffrey, Hamilton, Strecher, Klein & Bugliari, 2001:1). In order to be successful, teachers should have mathematical competence in conceptual understanding, procedural fluency, strategic competence, adaptive reasoning, and disposition (NRC, 2001:116). Teachers have direct, sustained contact with learners, as well as considerable control over what is taught and the climate of learning. It is reasonably assumed that improving teachers' services and dispositions is one of the most critical steps to improving student achievement (King & Newman, 2001:86). Mathematical Literacy teachers' knowledge is important for improved learners' achievement.

#### **2.12.5 Teacher Quality**

Clotfelter *et al.* (2007:673) states that qualified teachers help learners to improve their achievement. They use different techniques to the raise standard of performance among learners.

## **2.13 THE EFFECT OF CPTD ON THE ENHANCEMENT OF TEACHERS' SKILLS AND KNOWLEDGE**

In order to be effective, teachers are sustained by CPTD, in which they must continue to learn new ideas in addition to what they already know; study how students learn Mathematical Literacy; analyse issues in teaching and use new materials and technology" (NCTM, 2000:370). CPTD designed for enhancement of teachers practice must be sustained; contextualized and relevant to teacher classroom practice and be able to change teachers' knowledge as it affects learners' performance in Mathematical Literacy (Mewborn & Huberty, 2004:2).

Change in teaching will occur if teachers experienced consistent, high-quality CPTD (Desimone, Porter, Garet, Yoon & Birman, 2002:105). Powerful teacher education programs have to be based on knowledge about students and teachers. Teachers need to improve themselves and be able to educate their learners (McCaffrey et al., 2001:493). In order for teachers to implement their learning into teaching, a PD program should motivate teachers; customize professional growth plans and respond to teachers' personal and intrinsic needs.

### **2.13.1 Improvement of Teachers' Skills and Knowledge**

Professional development to improve teachers' services should be of a high quality in its theory of action, planning, design, and implementation. As follows:

- It should be based on a carefully created and empirically legalized theory of teacher learning and change (Richardson & Placier, 2001:905).
- It should promote and spread effective curricula and instructional models (Cohen, Raudenbush & Ball, 2002:89).
- It should be demanding, sustained, content-focused, coherent, well defined, and strongly implemented (Garet *et al.*, 2001:918).

Teachers apply their enhanced practices in classroom teaching, Borko (2004:5), supported by continuing school collaboration and follow-up consultations with experts. Organization for Economic Co-operation Development (OECD, 2009:41)

states that effective professional development is unceasing, including training, practice and feedback and provides adequate time and follow-up support. Fruitful programs involve teachers in learning activities that are similar to the ones they will use with their learners and encourage the development of teachers learning communities.

OECD (2009:41) concurs by giving the following points that personify effective CPTD:

- Teachers' pedagogical content knowledge
- Teachers' ability in the teaching of their subject.
- Classroom environment adequate for learning.
- Learners' fulfilment outcomes.

According to the Northwest Department of Education (2014:17), there are certain common features of continuing professional teacher development associated with changes in teachers' practice, and student achievement. These common features are:

- Content focus
- Active learning:
- Collective participation:
- Coherence
- Sufficient duration

#### **2.13.1.1 Content focus**

CPTD displays basic knowledge of the current curriculum objectives, pedagogy and subject content, able to impart basic, core subject matter to learners. Thus, teachers should make frequent attempts to strengthen own knowledge base for teaching and share pedagogical content knowledge with colleagues (ACTEQ, 2003:26). The term Mathematical knowledge for teaching as needed to improve learner achievement Ball, Thames and Phelps (2008:395). In this study, curriculum content focus means understanding particular topics, problems, how issues are organized, presented and adapted to diverse interest and abilities of learners presented for Mathematical Literacy instruction.



According to Guskey (2002:381), CPTD contributes to the growth and enhance their effectiveness in content focus. Teachers are encouraged to develop serious habits of inquiry and deeper understanding (Hardy, 2008:279). Content and processes are influenced by a general endorsement within the educational community. Teachers' broad and deep knowledge of the subject is necessary but not sufficient (Adler, Slonimsky & Reed, 2002:139). They also need to know how learners come to know a specific subject and how the context in which they are teaching shapes the teaching and learning of their subject.

Adler *et al.* (2002:139) state that the knowledge-in-practice is clearly linked to the teaching of a specific subject and should not be seen as a universal movement. Teaching requires knowledge of the content (Ho & Toh, 2000:2).

Leinhart (2000:333) highlights an example of teaching skills that may be useful in a general way across subject matter areas. The way subject matter is obtainable in the classroom, depends on teachers' understanding and his or her understanding of how students are taking it up. The importance of deep and strong subject matter knowledge depends on teacher-education or professional development. Teachers need to be developed skill-fully so that they may be able interpret learners' understanding, developing activities that support learners in exploring concepts and beliefs in guiding them on finding sources for additional formal knowledge.

#### **2.13.1.2 Active learning**

Active learning "is a process of increasing participation in the practice of teaching (Adler *et al.*, 2002:37). For teachers, learning occurs in many different aspects of practice, including classrooms, school communities, observing, being observed, reflective journals and workshops. It can occur in a brief conversation with a colleague or after school when counselling a troubled child. In this study Mathematical Literacy teachers are taken as learners in professional learning communities (Putnam & Borko, 2000:4). Professional learning opportunities that have little impact on learner outcomes do not check if there is active learning (Temperely & Lee, 2008:8).

This means that teachers learn in a variety of ways. Fraser *et al.* (2007:157) suggest that “teachers’ professional learning is the processes that result in specific changes in the professional action.

The main line to teacher learning is through formal workshops which are generally underpinned by a mental perspective of learning. The understanding is that teachers would un-problematically transfer their workshop learning to their classroom practice. However, in the last two decades there have been growing appraisals of once-off workshops for teachers (Knight, 2002:229). At a time of education reform, once-off workshops which focus on a particular new policy tend to dominate professional development. In the United States with the No Child Left Behind policy, and it has been true in South Africa also (Lieberman & Pointer, 2008:226). Teachers are often presented ‘one size fits all’ workshops where they are trained on how to implement the new policy and follow the official requirements (Bantwini, 2009:169; Pithouse, 2001:43). These have a negative impact on Mathematical Literacy teachers especially when it comes to classroom practice.

The difference to the focus on formal learning opportunities that usually take place outside the school, call for professional development that is school-based (Lieberman & Pointer, 2008:226; Shulman & Shulman, 2004:257). It is recommended that teachers learn best when they are members of a learning community, provided they are supportive working relationships (Lieberman & Pointer, 2010:77).

Teacher learning within school situations arises from industrialised countries and the United Kingdom (Knight, 2002:230; Lieberman & Pointer, 2008:228). However, there are some examples of programmes which are located within the perspective of teacher learning (Maistry, 2008:142).

### **2.13.1.3 Collective participation**

According to Tshiovhe (2017:71), teachers from the particular grades, subject and school, participate in collaboration of building an interactive learning community. Collective participation in a CPTD is done by recruiting teachers. This allows for

interaction among colleagues, which can be a powerful form of teacher learning (Borko, 2004:6).

Furthermore, the benefits increase when teachers from different schools collaborate. Teachers meet in clusters and through these get in contact with others and learn new skills (Desimone et al., 2003:613). Besides the specific content knowledge that the teachers discussed in their clusters, they also part and discuss their problems regarding pedagogy and classroom practice.

Marneweck (2002:123) and Muijs (2008:61) concur that cluster membership has several advantages. According to Hodkinson and Hodkinson (2005:124), collective participation means the way teachers learn through reflecting on their own individual teaching activities.

Restrictive learning environment and 'expansive' learning environments need to be encouraged (Hodkinson & Hodkinson, 2005:125). Short courses lead to effective learning if teachers value and improve practice. Off-site courses are valuable in enabling contact and collaboration with others in related but different working situations. Learning of Mathematical Literacy Teachers is influenced by personal characters and departmental principles.

In contrast to dominant views of learning as acquisition within an 'audit culture' which can create a skill is improved as members learn and solve problems collaboratively. These include the following characteristics (Hodkinson & Hodkinson, 2005:124):

- Close collaborative working.
- Colleagues mutually supportive in enhancing teacher learning.
- Focus on teacher learning, as a dimension of normal working practices.
- Supported opportunities for personal development that goes beyond school.
- Out of school educational opportunities.
- Opportunities to collaborate.
- Chance to extend professional identity.
- Support for local variation.
- Usage of wide range of learning opportunities.

For collective support to be seen, school environment should emphasize working within closed, isolated classrooms. Mathematical Literacy teachers should take part in activities outside school.

#### **2.13.1.4 Coherence**

Teachers learn in any professional development activity that is consistent (Kriek & Grayson, 2009:188). They are allowed to help teachers from other schools. Three dimensions of coherence are to report the extent to which the activity the teacher attended were consistent to the teacher's goals, followed by activities that built on what the teacher learned and the discussion they do with those who did not attend the activity. According to Tshiovhe (2017:72), the teacher's content knowledge and confidence are improved.

#### **2.13.1.5 Sufficient duration**

Longer activities, as noted by Desimone (2009:186), encourage in-depth discussions of content, student beginnings and understandings. Garet *et al.* (2001:921) suggest that teacher learning and professional development should be sustained over time.

According to Darling-Hammond (2010:21), flexibility make changes are necessary for learners' achievement. Mathematical literacy teachers should be given enough workshops that are effective in order to improve learners' achievements.

### **2.13.2 Continuing Professional Teacher Development and Teaching Strategies**

According to ACTEQ (2003:27), teaching strategies means providing lessons to learners using lesson plan; ability to give systematic explanations to learners; make use of communication skills to promote teacher-learner interaction.

Communicating mathematically demands training; learners need to be taught mathematical terms and how to validate their solutions (Walshaw & Anthony, 2008:2). Chapin and O'connor (2007:113) argue the importance of classroom communication. In Mathematical Literacy arguments must always be there so that common understanding must be reached.

According to Moon (2008:35), teaching strategies and critical thinking can help teacher to be able to solve Mathematics problems. Bean (2001:14) suggests the simple strategies like asking learners for written responses to a question at the beginning of the lesson, based on the chapter to be done. Giving learners the same Mathematics problem makes learners come up with different strategies to solve the same problem. Hattie (2003:4) argues excellent teaching is the single most powerful influence on achievement. Teaching strategies show a rich understanding of basic teaching; teachers maintain stimulating learning atmosphere for learners.

ACTEQ (2003:28) states that teaching strategies and skills means motivating learners learning differently; use of adaptive approaches and technologies to enhance learners' learning, show great flexibility and responsiveness and technologies that match learners' level of intelligence and interest. In this study teaching strategies are the way in which practice takes place in the classroom. Creating new instructional materials and strategies help teachers translate -theory into practice (Loucks-Horsley *et al.*, 2003).

Mundry (2005:10) states that quality teaching is a complex issue based on a profound pedagogical knowledge and teaching strategies. Mundry (2005:11) concur that professional development focuses on how learning area is taught. Attendance at professional development workshop does not necessarily guarantee professional learning by teachers (Van Eekelen, Vermut & Bezuijen, 2006:408).

### **2.13.3 Motivation**

Motivation refers to an individual's engagement in particular activities (Beltman, 2005:6). Persistence and implementation of professional learning should be motivated. Consistent individual motivational beliefs regarding the self and learning activities are inseparable from the social context (Järvelä & Volet, 2004:193; Winne, 2004:257). The theories of motivation were used to inform the present study.

The long-standing cognitive approach to motivation generated a large body of research (Watt, Richardson & Tysvaer, 2007:155; Wigfield & Tonks, 2002:53). This approach suggests that key factors in motivation to engage and continue in activities

are individual beliefs. Such factors would need to be considered when examining motivation for continuing professional learning.

Another cognitive approach to motivation is goal theory. This theoretical approach produced a large body of research, which includes an examination of the perception in which activities occur (Urdu, 2004:222). When professionals return to their workplace after off-site learning, it is important to consider how factors in that workplace might affect this. Goal theory provides ways of tapping into individual beliefs about their workplace.

## **2.14 RESPONSIBILITIES OF STAKEHOLDERS IN CONTINUING PROFESSIONAL TEACHER DEVELOPMENT**

Stakeholder refers to a framework of policies, principles, and techniques which ensure that communities, individuals, groups, and organizations have the opportunity to be engaged in a meaningful way in the process of decision-making that will affect them and in which they have an interest (Yee, 2010:3).

Stakeholder engagement fosters commitment into a project, promoting participatory and transparent decision making and as a result, reducing conflict between decision-makers and beneficiaries (Mwaikambo, Ohkubo & Cassaniti, 2013:68). In order to ensure effective stakeholder engagement, a number of methods can be used to ensure stake-holders engagement:

- Technical consultations;
- Baseline needs assessment.
- Joint review of summary.
- Documentation on roles and responsibilities;
- Development of work plan;
- Intentional planning and training workshops.

These methods are used to provoke stakeholder views and insights to guide project planning, increase transparency, reduce conflict over key topics, increase support for the CPTD Policy and e-learning courses

### **2.14.1 The Role of School Principals as Managers of the Institution**

The management at school level should be aware that increased learner performance and healthy school environment rely on good management plans and practices (DoE, 2000:5). This means that education managers are to be judged on the quality of education the school delivers. Bredeson (2000:393) states that the principals' role is to help create environments. It means that principals should always focus on the professional growth of teachers.

The school management team has the responsibility of professional and operational management of the school (DoE, 2002:24). This means making sure that all areas in the school function effectively. School leaders are accountable for student achievement, the working atmosphere of teachers, and the overall character of the school (Munonde, 2007:42). Strong school leaders excel through good personal leadership skills and the. Steyn (2001:47) argues that the role of school leaders is to take a lead in creating a suitable environment for professional development of Mathematical Literacy teachers by giving them generating harmony and reviewing annual based school objectives.

Principals are responsible for the implementation of policies (Moswela 2006:631). Principals, who create CPTD opportunities, support their growth and also enhance teaching (Drago-Severson, 2007:118). For the sake of effectiveness, this means that principals also have to monitor and evaluate the teaching processes. This however, implies that principals should be trained to be effective in implementing PD in their schools (Dymoke & Harrison, 2006:70; Moswela, 2006:631).

It is within the context of leadership that improving the quality of schools is identified as a crucial element (Chappuis, Chappius & Stiggins 2009:56; Olivier & Hipp, 2006:505). Effective leadership demands the active involvement of principals in the school developmental process (Donaldson, 2009:14; Dymoke & Harrison, 2006:70; Houle, 2006:142). Cardno (2005:293) believes that leadership in its broadest sense is the capacity of key individuals to exercise influence that results in positive change for the school, teams, individual staff and ultimately for the benefit of learners". This implies that principals have to be committed in identifying needs CPTD programs

that meet school needs (Heaney, 2004; Lee, 2005). Transforming the South African education system that addresses the needs and challenges is important (Republic of South Africa, 2007). The President's Education Initiative research project states that the critical challenge for teacher education in South Africa was limited conceptual knowledge of many teachers" (Republic of South Africa, 2007:4).

#### **2.14.2 The Role of Principals as Managers of CPTD**

According to SACE (2008:26), principals are accountable to the Council for all planning, budgeting and evaluating of the CPTD system. To make endorsements to Council (via the Professional Development Committee) about the commendation of CPTD activities and the allocation of PD points per activity; to make approvals to Professional development committee (PRODCO) about standardized points allocations as the need arises; to mention endorsement criteria to PRODCO, monitor their implementation and effectiveness (including their weighting and interpretation) and, recommend that changes in formulation of principal responsibilities are to oversee the establishment, growth, maintenance and sustainability of the CPTD system; evaluate and monitor the efficiency of the system on continuing basis and to prepare an annual report on the system for the Minister of Education (SACE, 2008:25).

#### **2.14.3 The Role of Heads of Department as Managers of Teachers and Curriculum**

Heads of department are middle managers who manage the curriculum (Rampersad, 2001:64). According to Kirsten and Clarke (2009:8), departmental heads are responsibilities for providing of CPTD to colleague and peers. Leadership work includes tasks that demonstrate ability to backing colleagues while focusing on improving learners' success.

In addition to developing a group identity in the department, departmental heads also improve staff and student performance through the capacity building of teachers and encouragement of self-evaluation (Francis, 2007:33).



The departmental heads' role is to build the capacity of those they work with and to foster self-evaluation (Francis, 2007:33). According to Lambert (2005:38), leadership capacity is an organizational concept, skillful participation that brings improvement in school. As a result, departmental heads work to foster capacity building amongst colleagues. This takes form in mentorship and collaborative efforts.

Departmental heads are leading professionals who act as exemplars to their department member (Aubrey-Hopkins & James, 2002:305). They are expected to be instructional leaders. In this capacity, the department head is an agent of change in schools (Kirsten & Clarke, 2009:33). They are keys to engaging teams and departments in innovations and policies. Departmental heads are empowered to be runners attending to administrative detail (Mayers & Zepeda, 2002:49).

Distributed leadership is the structure that facilitates teacher leadership (Harris, Leithwood, Harris, Day, Sammons & Hopkins, 2007:337; York-Barr & Duke, 2004:255). However, for it to be effective, departmental head need to be empowered and have the opportunity to contribute to whole school decision-making (Brown, Rutherford & Boyle, 2000:237).

Heads of departments have leadership roles of leading, mentoring and coaching new and struggling teacher (Kristen & Clarke, 2009:9; Gabriel, 2005:15). Departmental heads also link information between groups of people. They translate the school and district policies to teacher (Kristen & Clarke, 2009:35).

These administrative tasks are time-consuming and pull departmental heads away from their leadership role and meaningful collaborative efforts (DoE, 2002:24). According to Schmidt's (2000:832), some of departmental heads expressed frustration in connection with their roles, discovering that their headship positions are filled with "paperwork" and "meetings than assisting colleagues and learners. Collaborative work involves tasks that the department head completes with colleagues. Collegiality, co-operation, and cohesiveness are vital elements of cooperative efforts and, that is teacher leadership (MacTavish & Kolb, 2006:1378).

In addition to these collaborative elements, increased collaboration provides specific and appropriate professional development geared towards higher quality teaching. Subject leaders (Aubrey *et al.*, 2002:305) noted the importance of promoting a culture of collaboration as valuable tool. According to (DoE, 2002:24), HODs are the promoters of collaboration.

#### **2.14.4 Duties of Mathematical Literacy Teachers in Improving Learner Achievement through CPTD**

According to SACE (2013:4), teachers are entrusted by parents with profound responsibilities. Thus, they should continuously strengthen their capacity to help children along the path of learning. Teachers need to renew their professional commitment, to express their pride in its morals of service and increase dedication. It means Mathematical Literacy teachers have the role of improving each other through working as a team.

Fitzgerald and Gunter (2006:6) state that collaborative, collegial, and supportive environments foster a community learning. Parents rely on equal quality of practice across schools. Organizational stakeholders should be included in the decision-making processes Aubrey *et al.* (2002:305) noted the importance of promoting a culture of collaboration. In this study mathematical Literacy teachers should improve collaboration.

School practices act as implementation of educational policies, although on a different plane they have an impact on the thoughts and actions of parents and students. According to Brown *et al.* (2000:237), teachers play a key role in providing adequate information to families. In order to do this, teachers need to be provided with sufficient research-based knowledge concerning the possible consequences of their expectations and actions. They also need to be engaged in critical self-reflection in terms of their expectations and assumptions for students. Student teachers believe that they do not alter their expectations of devaluing the performance of student (Riley & Ungerleider, 2008:37).

When staff becomes involved in decision-making and obtain ownership, they become empowered (Printy, 2010:119; Day, 2009:72). However, the empowerment of staff depends on principals' devolution of power (Raihani, 2008:490). Once empowerment has taken place, teachers receive the opportunity to be responsible and also accountable for their attitudes regarding their professional development. Moreover, empowerment of teachers effectively engages them in change process and successfully revitalize of the school (Raihani, 2008:491; Printy, 2010:119). Empowerment implies that principals are responsible for power sharing.

## **2.15 CPTD IN DIFFERENT COUNTRIES**

This section addresses an analysis of CPTD in 3 different countries on how it is used to enhance learner achievement, teachers' knowledge and skills. The researcher makes reference to the situation in New-Zealand, Tanzania and South Africa.

### **2.15.1 CPTD in New Zealand**

In investigating factors that enhance learner achievement in Mathematical Literacy, variables that are related to school, learners and teachers are viewed. Wide investigation on learner, teacher and school variables should be considered (Malcom, Keane, Kgaka, Hoohlo & Oven, 2000:1).

#### **2.15.1.1 School-Related Variables**

The school itself contributes to reduced performance Mathematical Literacy. The environment of school affects the way learners learn.

#### **2.15.1.2 Learning environment**

Boaler (2008:167) states that learners learn in togetherness environment. The environment in which teaching and learning takes place must be conducive for teaching and learning, so that learners performance may be improved. Walshaw (2004:4) argue that teachers are the ones that influence the ways in which learners think of themselves in the classroom. Teachers' positive attitude and love for Mathematical Literacy thus increase learners' desire to learn and are able to make sense of the learning area.

Increasing challenges in the classroom get rid of information required in a particular representation (Sullivan, Mousley & Zevenbergen, 2006:117). The nature of the Mathematical Literacy classroom affects the nature of learning outcomes (Towers & Davis, 2002:313). This means if the environment is not conducive for learning, there will be poor achievement and vice-versa. Hiebert and Grouws (2007:371) state that a classroom is filled with complex, dynamic and many factors that could be responsible for increase learners learning. According to Hall and Kidman (2004:337), teachers manage the classroom, facilitate interaction and networking among learners, challenge learners through provision of stimulating assessment tasks and providing feedback. The teachers always have to be effective when teaching Mathematical Literacy in a way that will help learners to be actively involved and develop the love of Mathematics.

### **2.15.1.3 School management**

According to Robinson (2000:8), school management is leadership dimensions that establish goals and expectations. Teacher quality explains more variance on learners' achievements (Nye, Constant-o-poulos & Hedge, 2004:237). Well-intentioned non-strategic search for resources can have a negative impact for both staff and learners (Nweman, Smith, Allensworth & Bryk, 2001:298).

Marks and Printy (2003:370) state that stake-holders work together to review and improve teaching. Witziers, Bosker and Kruger (2003:398) argue that the leadership dimension of communication is important. Goal setting helps school leaders, staff and learners to do their work in record time and perfectly meeting the standards they want.

The New Zealand Educational Institute (2006:13) advocates that professional leadership is effective for student learning. The Ministry of Education (2002:15) identifies the action of tactical plan that provides leadership development programs to strengthen leaders. Marquardt (2004:31) argues that many leadership programs are ineffective, because experts are seen as a source of knowledge than practitioners.

Listening to what each person has to say marks the foundation of social interaction (Bryk & Schneider, 2002:23). Leaders who take into account other people views foster the social relationship and co-operative activity needed to teach learners. This means that increased relational trust is produced more by co-ordinated, mutually, supportive and more effective efforts engaged to learners learning.

#### **2.15.1.4 Learners' attitude**

Krause and Cotes (2008:493) state what motivates learners to engage in a constructivist view that education is about learners constructing their own knowledge (Ainnley, 2006:3910; Schuetz, 2008:24). Yorke and Knight (2004:25) concur that learners are their own learning agents; they are able to achieve their goals. Self-belief is a key attribution in motivation. Ghaith (2003:451) states that co-operative learning is mostly about the effect on achievement. However, anxiety, self-confidence and motivation may be both directly related to attitude. Shachar (2003:103) argues that both high and low achievers in class, where co-operative methods are used, develop positive attitudes towards their courses, teachers, schools and co-operative learning.

According to Hall and Kidman (2004:341), teachers must know learners collectively. Teachers should know where learners are coming from, what things they bring in terms of previous knowledge attitude and experiences.

#### **2.15.1.5 Teacher-Related Variables**

Teachers may impact positively or negatively on learners' achievement through the following important reasons:

#### **2.15.1.6 Teacher education**

According to the Organization for Economic Co-operation and Development (2009:28), teacher education is the arrangement of pre-service qualification and in-service training. The quality and quantity of teachers' initial education is important in shaping their work once they begin teaching in school and should influence their further education and training. The National Report of New Zealand (2008:12)

argues that teacher education encompasses being trained at all positions. It includes foundation education such as adult literacy.

OECD (2009:28) states that formal education increases the need for teacher CPTD once they enter the profession. Extensive formal education spurs greater interest in further educational training to further develop skills obtained during formal education. National Report of New Zealand (2008:18) states that priority goals for teacher education are:

- Increasing educational success.
- Growing literacy and numeracy levels.
- Advancement on trade achievements.
- Improving research connections and linkage to create economic opportunities.

#### **2.15.1.7 Teacher workload and class size**

Teachers sometimes are overloaded by stress, and if the staffs is overloaded or detracted from their existing improvements efforts then the extra resources are likely to negatively rather than positively impact learners' achievement. According to Ehrenberg *et al.* (2000:1), class size affects the time and attention of teachers to individual learner. There is a weak relationship between class size and learners' achievements, disciplinary climate or the teacher-learner relationship.

OECD (2009:392) states that evidence of support between smaller class size and teachers is visible; the working conditions and outcomes improve teacher morale and job satisfaction. Hattie (2004:9) concurs that achievement, attitude, teacher morale, student satisfaction are appreciable in smaller classes, as long as the class refers to 10-15 learners, there are negligible gains between 40 to 20 learners per class. In other words small classes are easily taught than large Mathematical Literacy classes.

#### **2.15.1.8 Teaching language**

Runesson (2005:69) states that Mathematical language needs to be modeled and used so that over time it can move from teachers to learners. Furthermore, the teacher must always foster the use of Mathematical language and terms in the

classroom. Words like ‘multiply’ must always be used together with the symbols, so that learners must get the underlying meaning. Language switching involves replacing home language words for Mathematical words to enhance learners understanding (Setati & Adler, 2001:34).

#### **2.15.1.9 Teaching and learning materials**

According to Blanton and Kaput (2005:412), teachers have to play a critical role in making sure that facilities are used effectively. Teachers have to care about how teaching and learning materials are used to make sense of the facilities in Mathematical way. Learners make their own pictorial representations (Chick, Pfannkuch & Watson, 2005:86).

The technological tools available for use in Mathematical classrooms are calculators and computer applications. The new technologies include presentation technologies, digital mobile technologies and the internet (Zevenberge & Lerman, 2008:107). Teachers’ knowledge should be determined in technology usage (Thomas & Chinnnap, 2008:165). Thus, teachers should carefully be able to select teaching and learning facilities.

#### **2.15.1.10 Web based problem solving**

Information Communication technology begins with a focus on awareness of problem-solving by teachers and enhancing learners’ achievements (Moore & Page, 2002:11). Todd (2001:1) argues that information technology is way of connective and interaction all over the world.

Oberg (2001:148) states that ICT development benefits schools; learners and communities. Butterworth (2000:166) states that parallel element of the information policy is the reform of educational system. Chan (2002:203) concurs with the above statements, that ICT improve learning and pedagogical practices.

#### **2.15.1.11 Reason for improving teacher knowledge and skills**

CPTD increases teachers’ knowledge deeper in the content of curriculum (Saxe, Gearhart & Nasir, 2001:61). The teachers’ understanding is greatly improved by efforts within the wider school community. It needs the materials systems, human as

well as emotional support provided by CPTD for enhancement of skills (Cobb & McClain, 2001:20; Sherin, 2002:119; Kazemi, 2008:209).

## **2.15.2 CPTD in Tanzania**

Tanzania has taken the education development plan from 2004. This has led to significant improvements in the provision of basic education in the country. CPTD is a procedure embracing all activities that enhance professional career growth according to Rogan and Grayson (2003:1171). Teachers have knowledge because they are adequately trained (Komba & Nkumbi (2008:69).

According to Borko (2004:4), teacher professional development is imagined as an organization of linked features which guide teachers. CPTD is necessary to meet certain demands like developing teachers' knowledge, changing teachers' practice and improving learners' achievements (Desimone *et al.*, 2002:81). It is assumed that increased teachers' knowledge improves teaching practices (Ingvason, Meiers & Beavis, 2005:91).

### **2.15.2.1 School-related variables**

School is one of the variables that contribute positively or negatively to learner achievements.

### **2.15.2.2 Learning environment**

Teacher preparation refers to the way teachers are trained to become teachers. Pre-service education provides the first step in the professional development. Teacher is the heart of classroom instruction (Galabawa & Agu, 2001:1). Teacher competence academically and pedagogically is thus very important on the learning environment. Sumra (2004:26) argues that the effectiveness of the teacher depends on the discipline in place of learning and teaching.

Gullahusseini (2013:3) says much of the classroom instruction is not effective. Professional development should thus emphasize practice that will turn learners into critical thinkers and problem-solvers. Ellis (2000:264) argues that classroom is a



correlation platform for effective learning and connection between teachers and learners.

### **2.15.2.3 School management**

School management is important for supporting teacher development and high quality of education. The way school is managed improves or decreases a supportive environment. School management capacity is the ability of the leadership to perform the duties, including supporting teacher professional development (Komba & Kumbi, 2008:71). The head teacher should be knowledgeable and skilled on management issues in order to improve teaching and learners' achievements. Quality management ensures that teachers are adequately motivated (Bennell & Mukyanuzi, 2005:46). Organizational effectiveness is the combined outcome of management systems, commitment and competence of individual managers.

### **2.15.2.4 Teacher workload and class size**

Sumra (2004:23) states that class size is a measure of the average number of pupils in classroom. Large classes, lack of teaching and learning materials, make teaching stressful. It is easy to teach in an average or small class than in large classes. Rajani and Sumra (2006:30) argue that an increase in the enrolment should match with improvements in the infrastructure and number of teachers.

### **2.15.2.5 Learners' attitude**

Learners' attitude refers to learner behavior and reaction. Sowell (2005:74) states that when learners feel defeated, they are unable to learn in school. Mathematical Literacy learners are able to contribute to their achievements, depending on their attitude and belief.

Teaching is difficult when learners have negative feelings about their own abilities and their willingness to participate in improving their performance. Learners perform adequately if proper values attitudes and morals are part of their learning roles (Ngussa, 2015:47; Guskey, 2000:55). Teachers, regardless of their gender, are able to apply effective knowledge to the learners. They are also able to groom their learners on how to behave.

Sowell (2005:75) states that learner attitude influences their behavior in class discussions, social interaction, positive preferences for activities and citizenship. Thus, behavior and values should be cultivated in the learning environment. Schools are social organizations and should develop learners' attitude. Educational aims should address the intellectual, effective and productive aspects (Ornstein & Hunkins, 2009:224).

#### **2.15.2.6 Teacher-related variables**

Hereunder are the ways in which teachers contribute towards learner achievement.

#### **2.15.2.7 Teacher education**

Teacher education is the skill teachers acquire in pre-service and in-service training; it is used to perform their tasks effectively in the classroom (Ishuma, 2009:1). This means that pre-service training for Mathematical Literacy teachers is done academically and professionally and is the responsibility of teacher training institutions.

Tanzanian teachers have opportunities to participate in professional development course. The effectiveness of the initial education is important. For teachers to continue to learn more, their basic foundation should be laid at pre-service education (Bezzina & Camileri, 2005:2001). According to Roy (2005:80), professional developments done through traditional workshop is not effective in changing teacher practice. This is many workshops involve teachers as passive learners.

Rogers (2007:631) states that new paradigms of PD information are transmitted by an expert to a group of participants. Teacher education is effective based on the recognition of learning which takes place over time and there is linkage between active learning and understanding (Komba & Nkumba, 2008:71).

#### **2.15.2.8 Teacher workload**

Sumra (2004:18) states that teacher burden includes all hours specified in condition of service, actual teaching time, statutory hours to administrative related activities such as lesson preparation, correction in-service training, staff meetings, learners

support and extra mural activities. Thus, teacher load has an impact on classroom practice.

#### **2.15.2.9 Teaching language**

Language of teaching has a positive impact on student learning and achievement. Tanzanian primary, learners are taught in the home language (Swahili) and at the secondary level they communicate in English (Rajani & Sumra, 2006:6). Learners are unable to understand what is written and taught in English and this contributes to poor achievement by learners.

#### **2.15.2.10 Teaching and learning materials**

Teaching and learning facilities are things that the teacher uses to interact during practice time, in order to achieve certain objective in the classroom situation, such as maps, models and board (Nghambi, 2014:19). Teachers cannot teach productively in the absence of teaching and learning materials, even if she is well-qualified and developed (Komba & NKumbi, 2008:72). Classrooms furnished with facilities like furniture, books and visual aids are suitable for teaching. Tanzania lacks textbooks, furniture and teaching and learning facilities. Classroom practice is thus affected by un-availability of materials.

Nghambi (2014:20) say that teaching and learning materials are part and parcel of the elements in teaching which enable learners to get set for the lesson, arouse their interest and provoke inquiring minds. He further says that teaching and learning materials help to develop concepts among the learners and standardize the information being presented by teachers as well as their needs. Sumra (2004:24) further argues that, only two per cent of teachers stated that their schools had adequate facilities. Textbook shortage affects many schools, and this affects learners' performance.

#### **2.15.2.11 Web-based problem solving**

Ndibalema (2014:2) describes web-based problem-solving as way of using computers to provoke learners' capabilities. Sitta (2007:2) defines information communication technology as the form of skill that is used for communication, transmission, and exchanging information. It includes equipment such as radios,

televisions videos, telephone, computers and network hardware and software, as well as equipment and services associated with all technologies such as electronic mail, text messages and broadcasts.

Ndibalema (2014:11) states that ICT is pedagogical tool that improves the quality of teaching. There seems to be a critical situation among teachers in Tanzania, as teachers are not able to use ICT to get information and make sure that teaching and learning become effective. Furthermore, there is no evidence that ICT has been successfully used at schools. It is important for teachers to have personal initiatives towards the available digital learning tools, in order to improve service process and their professional development.

There is a lack of skills in the use of information communication technology as a pedagogical tool in classroom practice (Bingimlas 2009:235; Nihuka & Voogt 2011:63). As a result, learners are still taught in the traditional way (Knight & Teghe, 2006:2734). Some teachers are reluctant to engage themselves in new technology. Technology makes things easy (Condie & Livingston, 2007:337).

#### **2.15.2.12 Learner motivation**

Inspiration is important. Learners' intrinsic motivation is a driver towards self-improvement and cannot match any amount of pressure from the learning environment (Komba & Nkumbi, 2008:71). The learner should thus perceive positively towards success. There is room for teachers to learn from each other in order to be motivated (Galabawa & Agu,(2001:6). Learner motivation should be enhanced to ensure better performance (Bennell & Mukyanuzi, 2005:46).

#### **2.15.3 CPTD in South Africa**

According to the National Policy Framework for Teacher Education and Development (NPFTED) Republic of South Africa (2007:25), the ultimate aim of the Continuing Professional Teacher Development is to enable learners to learn well and be equipped for satisfying lives as productive citizens. The document, prepared by SACE DoE CPTD document task in South Africa (2010:4 & 2008:9), states that teaching is at the heart of the school system. The quality of teachers' professional

practices is root of the continuing process that last for the duration of the career of a committed professional teacher. CPTD is an essential component of teacher development in the education system of high quality.

Barrett (2008:3) CPTD is defined as the need for individual to keep inform with rapidly changing knowledge. CPTD is a commitment to professionalism, personal responsibility to warrant that the necessary skills are met in the changing world. This process benefits the individual, colleagues, student external sponsors and clients and the institution as a whole.

In keeping with the National Policy Framework, the document presents the prolonged concept of CPTD activities. The underlying principle is that teachers individually and collectively, should be responsible for their own professional development and identification of their own professional needs. The benefits of teacher professional development lead to the improvement of learner achievements. The image of the CPTD is to restore the teaching profession (SACE, 2010:4).

#### **2.15.3.1 The impact of CPTD on the enhancement of learners' achievement**

According to Chisholm (2004:4), matric results in 2003 showed an improvement that had not been achieved since 1994, but the validity results and standard of the examinations were disputed by prominent analysts. The Human Research Council in partnership with Stanford University (2008:1) asserts that enhancement of learners' achievements refers to how well the learner accomplishes her tasks and studies. However, there are a number of factors that contribute to the learners' enhancement achievement.

In investigating factors that facilitate achievement in Mathematical Literacy are variables related to the school, learners and teachers. Investigating factors that facilitate achievement in Mathematical Literacy, study should consider the three variables mentioned above (Malcom, Keane, Hoolo, Kgaka & Oven, 2000:1).

#### **2.15.3.2 School-related variables**

Several studies have shown a positive correlation between the secondary school environment and the learners' achievement. Some under-privileged learners perform

better than privileged learners. In this regard, a September 2002 issue of the *Sunday Times* put a spotlight on successful rural schools that are from disadvantaged communities (*Sunday Times*, 2002).

### **2.15.3.3 The learning environment**

Reform initiatives motivation is that, the teacher is the key for improving learners' achievement (Knight & Wiseman, 2005:387; Mashile, 2002:174). This is because teachers have the most direct, sustained contact with learners. It is assumed that improving teachers' practice is important for improving learners' achievement (King & Newman, 2001:86). It means that the environment in which learners find themselves must also be conducive for learning.

### **2.15.3.4 School management**

Darling–Hammond (2009:47) states that schools face the greatest challenge to provide quality education. Moswela (2006:631) shows that school effectiveness and professional development are inseparably linked. It is within this context that the importance of leadership improving the quality of school is identified as a crucial component. Leadership comprehensive intellect is the ability to utilize skills that bring positive results (Chappius, Chappius and Stiggins 2009:56; Cardno (2005:293).

Hearney (2004:37) and Lee (2005:39) state that principals are committed to identifying the professional needs and provide appropriate professional development program. The needs based on professional development are also supported by people who believe that principals need professional development (Desimone, Smith & Kieno, 2006:206). If the principal becomes the one who determine the type of professional development needed by teachers. It may not become effective because of its top-down approach. Professional development is the most effective when based on teachers' needs.

### **2.15.3.5 School and class size**

School and class size have been seen as having an impact on learners' achievements. In 1996 the Department of Education introduced a policy of rationalization and re-deployment of teachers based on resolution 3 of Education

Labor Relations Council (Crouch & Perry, 2003:480). In essence rural school classes are overcrowded, and therefore learners' achievements are affected. Learners from low class size resulted in higher academic achievements (Tahira, Dahar & Ahmad, 2010:1991). Onwu and Stoffel (2005:82) argue that the following characteristics would spot effect of class size.

- Physical space for movement.
- Opportunities for all learners to participate actively in the learning.
- Making teaching personal.
- Teachers' resorting to pre –dominantly lecture and teachers' demonstrations.
- Workloads.
- Self –activity and inquiry.

#### **2.15.3.6 Attitudes and beliefs**

The learners themselves are able to contribute towards achievement in Mathematical Literacy. Stuart (2000:330) states that peer and family attitudes towards Mathematical Literacy may influence learners' confidence. Learners' positive attitudes towards their teachers, learning area and learning result in high achievement levels.

#### **2.15.3.7 Teacher-related variables**

Teachers' knowledge and skills are important to enhance learner achievements. Here-under are some important features that contribute to the improvement of learner performance.

#### **2.15.3.8 Teacher education**

CPTD lies at the heart of every educational effort to improve teacher practice (Supovitz & Turner, 2000:693). However, it is not a remedy for all problems. Many copies of professional development do not achieve their ambitious learning goals. Professional development is still seen as the best means to change teaching practice. Darling-Hammond (2001:1) suggests that policy investment in the quality of teachers may be related to improvements in learners' performance. Effective CPTD has to be a continuous process. Teacher qualification is intimately connected to PD and is considered as a process of accrediting training. Frost (2008:8) argues that

initial education helps to put together an effective lesson plan, prepare for and begin the career, navigate ones first year of teaching. A lesson plan helps the teacher effectively, which results in the learner achievement improvement.

### **2.15.3.9 Teacher workload and class size**

According to Govender (2002:60), teacher heavy workload with little time affects classroom practice. Teachers who do not have enough time to achieve the standards of exercise would not meet the needs of the learners.

The Republic of South Africa (2007:4) states that a critical challenge for teacher in South Africa is concrete knowledge.

### **2.15.3.10 Teaching language**

According to the Department of Education (2003:21), Policy Document states that it is the responsibility of the teacher to make sure that the language of teaching and learning does not become a barrier to learning. The Republic of South Africa (2000:15) assumes that teachers are able to approximately explain the key concepts in the particular learning area phase.

Brock-utne (2003:12) states that classroom and behavioral management facilitate the level of proficiency. Teachers are able to use learning language and the learners' home language in a systematic, purposeful process of code switching. Code switching allows for meaning to be negotiated for ideas to be clarified. Teachers and learners' communication is hindered and slanted when learning is used improperly and without clarity of meaning (Evans, Daniel, Mikovch, Metze & Norman, 2006:6).

Apart from obvious introduction, it is suggested in the Norms and Standards for educators document Republic of South Africa (2000:12) that language support programs for learners should be considered. English is the learning language in South Africa. Gay (2010:77) argues that communication is a fundamental aspect of classroom practice. Learners' achievements depend on communication abilities. For the teacher to produce excellent outcomes on Mathematical Literacy, communication must play a role in the classroom premises. South Africa is a multi-lingual country of 11 languages, in-adequate in mandated curriculum context.



### **2.15.3.11 Teaching and learning materials**

The above materials refer to all facilities that are used in the classroom environment. Lack of classroom practice resources, lack of desks and textbooks have a negative impact on learners' achievement (Schroeder, Akotia & Apekey, 2001:92). Legoto *et al.* (2002:116) argue that inadequate textbooks, shortage of learning and teaching aids, lack of and overcrowded classrooms, shortage of relevant and qualified educators and inadequate teacher preparation contribute to poor teaching and learning in some schools. Zinn (2000:219) states that implementing teaching aids enhances learning and independent thinking.

### **2.15.3.12 Web-based problem solving**

Learners' problem-solving ability is facilitated through strategies and computer technologies (Ferreira & Santos, 2009:173). Furthermore they stated that a combination of collaborative learning theories and problem-solving theory brings changes on learner interest. Learners improve their problem-solving competences through well-structured collaborative activities guided by the teacher. Computational thinking and creative thinking are viewed as cognitive tools that are used to form computational activity (Soh, Shell, Ingraham, Ramsay & More, 2015:34). In Mathematical Literacy learners' way of capturing ideas for data representation and probabilities can lead to new data structures and solution procedures.

### **2.15.3.13 Learner motivation**

The critical difference between motivating learners and developing their motivation is necessary in the classroom (Dormyei & Ushioda, 2011:136). Inspiring them is an investing effort in learning Mathematical Literacy outside the classroom in their own time of their own desire, when the teacher is no longer a direct influence. Secretan (2005:14) argues that motivation is done using incentives to achieve our short-term goals, while inspiration is something that a result of soul relationship that changes a person's emotions and behaviors.

Guilloteaux (2013:12) states that teachers are good motivators. Giving courage to work to work harder and building their self-confidence are strategies used by teachers every day.

## 2.17 SUMMARY

The chapter discusses the current state of CPTD in South Africa. The way professional development is done in South Africa; teachers do not grab what the Department of Basic Education and Training does not fully equip those who are trainers. Teachers just attend the workshops as passive listeners, when they are given information. The situation shows that the Mathematical Literacy teachers are not fully engaged in the in-service training as they should, and most of them were not trained to teach the subject during pre-service training. Furthermore, conducted workshops that are done are not fruitful, as they are done mostly after twelve in the afternoon, when teachers have started their day by going to work. In this professional development, the topics are mostly selected by the curriculum advisors who are in charge, not by teachers themselves as they are the ones facing difficulties. In addition, the support given to teachers is not enough to enhance learner's achievements, teachers' knowledge and skills. Thus, South Africa and Tanzania are facing problems of professional development in the same way. There are many workshops that are helping improve teachers' knowledge and skills; this affects learners' achievements. Their teacher education ranges from three years to four years and there be no teacher induction at schools. New Zealand as an international country does its professional development in a way that improves teacher knowledge and skills. Contrary to situations in the developed countries, like New Zealand, it is different. Developed countries have serious plans to support teachers so that learner's achievement and teachers' skills and knowledge are improved. South Africa as a developing country should learn from international countries on how professional development of teachers is done.

## 2.18 CONCLUSION

Chapter 2 deliberated on the review of literature. Conceptualizing CPTD was outlined deeply in the previous chapter. The benefits, challenges, CPTD building blocks, kinds of CPTD, funding, governance, management, administration, implementation, monitoring, evaluation, impact of CPTD on learner achievement, CPTDs' effect on teachers' knowledge and skills and the roles of stake-holders.

Furthermore, CPTD in three different countries was compared, New-Zealand, Tanzania and South Africa.

## CHAPTER 3

### RESEARCH DESIGN AND METHODOLOGY

#### 3.1 INTRODUCTION

The chapter presents design and data collection methods, research instruments, population, sampling procedure, sample, data collection procedures, data analysis and ethical considerations. The researcher used qualitative strategies to explore how CPTD enhances learner achievement, teachers' knowledge and skills in the Vhembe District.

#### 3.2 RESEARCH DESIGN AND METHODOLOGY

This section outlines the research design and methods of collecting data.

##### 3.2.1 Research Design

Research design refers to the overall strategies on how data was collected and the research instruments that were employed as intended means for analysing the collected data (Welma, Kruger & Mitchel, 2005:52). This study adopted qualitative research design. The phenomena could be holistically and contextually investigated (Macmillan & Schumacher, 2010:13; Maree, 2007:68). According to Cresswell (2009:176), it is the interpretive form of inquiry where researchers interpret what they see, hear and understand. It supplied the researcher with insight into the problem by allowing the researcher to engage in their environment and drumming into their lived experiences.

##### 3.2.2 Research Methodology

Research methodology is a different technique and procedure that is used in research for methods implementing process (Cresswell, 2009:18). Data was collected through interviews.

- **Interview Schedule**

According to Denzin (2003:202), interview schedule is a set of planned questions with structure answers to guide the interviewer. Interview schedule led to more responses from the interviewee and was free from biasness. The interviews were guided by an interview schedule to explore teacher's experiences in the subject. School principals, heads of departments and teachers were interviewed individually.

Face-to-face semi-structured interviews were used to collect data. According to Gray (2009:373), a semi-structured interview is useful because additional questions may be asked as new ideas arise and the researcher ends up gathering more detailed information.

### **3.3 SAMPLING**

In this section the researcher chose the appropriate population and determined the sampling procedures and the sample.

#### **3.3.1 Population**

Population is a group of people that the study wants to draw conclusion from (McMillan & Schumacher, 2010:129). The population of this study comprised of principals, heads of departments and teachers.

#### **3.3.2 Sampling Procedures**

Sampling procedure is a process of picking some individuals from the population to contribute to the study (Jupp, 2006:271). Purposive sampling was used to select participants. According to Neuman (2003:213), purposive sampling is a process that allows the researcher to select the sample with a specific purpose in mind. School principals were selected by virtue of leading schools with good performance in Mathematical Literacy, departmental heads were designated because they were leaders of teachers and curriculum in schools and teachers were scheduled because they were teaching Mathematical Literacy.

### **3.3.3 Sample**

Sample refers to a portion drawn from a population of the study which is intended to lead to statistical estimates of the attributes of the whole population (Mcmillan & Schumacher, 2010:129). The sample for this study consisted of 3 school principals, 3 heads of departments and 9 teachers.

## **3.4 INSTRUMENTATION**

Three interview schedules were established as instrument to gather data, namely; (i) an inventory of school principals' views on Continuing Professional Teacher Development in Mathematical Literacy (See Appendix A). (ii) An inventory of Heads of Departments' views on Continuing Professional Teachers Development in Mathematical Literacy (See Appendix B). (iii) An inventory of teachers' views on Continuing Professional Teacher Development in Mathematical Literacy (See Appendix C).

### **An Inventory of School Principals' Views on Continuing Professional Teacher Development in Mathematical Literacy**

An inventory of school principals' views on Continuing Professional Teacher Development in Mathematical Literacy was used to implore evidence on how CPTD in Mathematical Literacy improved learners' achievement and schooling in Soutpansberg North Circuit. An inventory embraced two sections namely; (i) the biographical information and (ii) contextual questions. The biographical information uncovered the following; age in years, gender, highest educational qualification, professional qualification and teaching experience in years. 8 contextual questions were used to gather data from the principals on the following extents; explaining the meaning of CPTD, how they create a supportive environment, improvement of monitoring through CPTD, how self-development can be done for effective supervision, collaboration of all stake-holders to improve learner achievement, support principals get to improve their knowledge, attitude and skills, how the support improve motivation and role played in ensuring full compliance and implementation of CPTD policy.

## **An Inventory of Heads of Departments' Views on Continuing Professional Teacher Development in Mathematical Literacy**

An inventory of Heads of Departments' views on Continuing Professional Teacher Development in Mathematical Literacy was used to implore evidence on how CPTD in Mathematical Literacy improved learners' achievement and schooling. An inventory embraced two sections which are biographical information and contextual questions. The biographical information uncovered the following; age in years, gender, highest educational qualification, professional qualification and teaching experience in years. From the second section, 7 contextual questions were asked to find answers on the following points; explaining the meaning of CPTD, improvement of monitoring through CPTD, managing teaching and learning in the FET band, how self- development can be done for effective supervision, collaboration of all stakeholders to improve learner achievement, support principals get to improve their knowledge, attitude and skills and how the support improve motivation.

## **An Inventory of Teachers' Views on Continuing Professional Teacher Development in Mathematical Literacy**

An inventory of teachers' views on Continuing Professional Teacher Development in Mathematical Literacy was used to find biographical Information and contextual questions on how CPTD improves learner achievement and schooling. Biographical information showed age in years, gender, highest qualification, professional qualification and teaching experience in years of participants. 6 contextual questions were used to find evidence on the following areas: explaining the meaning of CPTD, ways how CPTD improves teaching, teachers' self-development in order to teach effectively, how teachers collaborate with the community, visualised support teachers receive from school and community and how the support improve teachers' impetus in Mathematical Literacy. Principals, Heads of Department and teachers' interviews were recorded through a tape recorder.

### **3.5 DATA COLLECTION PROCEDURES**

The researcher obtained an ethical clearance certificate from the University, sought permission from the Department of Education in the Vhembe District (See Appendix D) and the circuit office (See Appendix F) to conduct the study. The researcher was given permission to collect data from schools by Soutpansberg North Circuit Manager. Each school was approached by letter writing on which ethical clearance from the university, permission from Department of Education in the Vhembe District and circuit office were attached. The purpose of the study was clarified to contestants.

### **3.6 DATA ANALYSIS**

Data was analysed thematically. According to Braun and Clarke (2006:79), thematic data analysis is a method of detecting and analysing patterns within the data. It involves reading data in search of meaning. Further-more, it was easy to focus on and answered different types of research questions.

### **3.7 ETHICAL CONSIDERATION**

In this study, ethical consideration is an accumulation of values and principles that address the behaviour in human affairs (De Laine, 2000:87). The purpose of Ethical procedures was to safe guard the welfare of the research participants.

To conduct research, the researcher was granted the ethical clearance certificate from the University. Permission was sought from the Vhembe district Senior Manager and Soutpansberg North Circuit Manager. Consent was also secured with school principals to conduct research in their schools. The participants were given consent form to sign, which described the aims and rights, such as the right to withdraw from participation should they wish to do so, without being forced. This served as a root of assurance that the study was purely for academic reasons. Furthermore, permission form was given to the participants and interview arrangements were made.



### 3.8 CONCLUSION

Preceding chapter discussed the design and data collection methods. The qualitative research approach was discussed. Population, sample and sampling procedures were underlined as research methods. Research instruments used were interview schedules. The next chapter discusses analysis and interpretation of data. Qualitative data analysis was used to collect data. The biographical information, how CPTD enhances learner achievement in mathematical Literacy, improvement of teachers' skills and knowledge and summary of findings of participants were detailed in this chapter.

## CHAPTER 4

### ANALYSIS AND INTERPRETATION OF DATA

#### 4.1 INTRODUCTION

The chapter presents an analysis and interpretation of the data collected through interviews. The qualitative data comprises of data collected from three principals, three heads of departments and nine teachers. The aim of the study was:

- To determine how the CPTD enhances learners' achievement in Mathematical Literacy.
- To examine if CPTD improves teachers' knowledge and skills in Mathematical Literacy.

#### 4.2 QUALITATIVE DATA ANALYSIS

This section deliberates on the qualitative data analysis (see Appendix A, B and C)

##### 4.2.1 Biographical Information

The investigation was conducted through face to face interviews with 15 contestants in Soutpansberg North Circuit. 3 principals, 3 departmental heads and 9 teachers were interviewed. Among them there were 9 males aged 40-55 and 6 females aged between 40-55. Their typical teaching experience went from 5 to 27 years. The participants' qualifications ranged from the secondary teachers' diploma (STD) to a master' degree.

##### 4.2.2 How does CPTD Enhance Learner Achievement in Mathematical Literacy?

Here-under are the summary of how CPTD enhances Learner achievement in Mathematical Literacy.

#### 4.2.2.1 What are the forms of support that Mathematical Literacy teachers receive from both schools and community?

The majority of participants indicated that, in order to get good results, stakeholders offer support through supplying teaching and learning materials. Business people donate the money which is used to buy important materials and out-source expert's teachers in different learning areas. This is what one of the principals said, that it is the responsibility of the principal to create a supportive environment.

**P1:** *Principals create an atmosphere of good human relationship amongst the staff, an atmosphere of cohesion and stability. Principals provide resources, motivation, vision and leadership skills, mentoring education, support professionally and emotionally (Appendix D line14).*

One of heads of departments indicated that, learners need knowledgeable teachers in order to increase their understanding of the subject. When teachers receive full support from both schools and community learner performance is increased.

**H1:** *When the community is involved, business people around the school are able to donate funds for the school which helps to out-source knowledgeable teachers to become resources for the school (Appendix E line 90).*

In this regard teachers concur with the heads of departments. One teacher said that:

**T9:** *Business people from the community help the school with funds to buy useful teaching and learning materials (Appendix F line 205).*

*Teachers are developed professionally in staff meeting and in school workshops (Appendix F line 206). Professional Legislative: Being guided by school laws teachers create learning environment responsive to learners and community needs (Appendix F line 207). Academic Support: Teachers offer support to each other by team work and encouraging one another to upgrade (Appendix F line 208).*

The statements show that learners' needs are important for classroom practice. This is because availability of resource materials improves learner achievement (Lee, 2007:139).

#### 4.2.2.2 In what ways would teachers collaborate with the community to improve learner achievement in Mathematical Literacy?

The participants shared the same reviews, that school should work with the parents to improve learners' achievements. Without the parental involvement schools cannot achieve good results, this means active involvement of parents to their children's' education has a positive effect on performance. This is what one of principals said:

**P1:** *Principals should encourage teamwork, they must be transparent and be able to consult the community members for anything they want clarity on; they must involve the community by calling parents meetings (Appendix D line 33). They must be able to create community platforms, where parents are able to express their views in connection with school problems and ways to uplift the standard of the school (Appendix D line 34).*

In this regard the most common ways suggested by participants were to engage the community, by having a parental component in the school governing body, having parents-learners' meetings and involving business people from the community. Participants indicated that partnership between the school and the community impact learners' performance positively. One of the heads of department said that:

**H1:** *Parents and community must be involved in working with the school. Engaging parents and inviting stakeholders foster partnership between school and the community, and it results in improved learner performance (Appendix E line 89). When the community is involved, business people around the school are able to donate fund teachers who can help to outsource knowledgeable teachers to become resources for the school. Partnership can even help in learners' behavior; learners whose parents are actively involved have good behavior (Appendix E line 91).*

Teachers supported what the principals and heads of department said. One of teachers indicated that:

**T9:** *Teachers collaborate with the community by involving parents through School Governing Bodies; by giving learners home activities that their parents may help them to complete and lastly by allowing parents to check the progress of learners' performance (Appendix F line 168).*

The above statements show that parents should be engaged in their children's' education. They must check their books, to help them with homework activities and to be able go and seek for clarity from the school where they do not understand (Dufour *et al.*, 2006:3). Principals are the ones who address many meetings that are

held by the school, parents and learner component. They are the ones that should encourage an effective partnership between the community and the school. Parents have to be treated with respect in order to work with them effectively to improve learner achievements. A sound relationship between parents and the school has a positive impact on learner performance.

#### **4.2.2.3 In what ways does CPTD improve teaching?**

The majority of participants indicated that continuing professional teacher development is able to improve teaching. When teachers attend different workshops, seminars and subject meetings they are trained on how Mathematical Literacy can be taught in an understandable way to learners. They help each other in how to deal with the difficulties they encounter in teaching the subject and this has the positive impact on the classroom practice. One of heads of department indicated that:

**H2:** *Continuing professional teacher development is an on-going development which keeps the teacher up-to-date on how children learn (Appendix E line 66).*

In this regard, two teachers supported the heads of department by showing the in which how teachers can be kept up-to-date.

**T3:** *Teachers of Mathematical Literacy can develop themselves by studying further, which is by registering with colleges and Universities (Appendix F line 147).*

This is what the second teacher said.

**T7:** *CPTD improves teaching by helping teachers acquire professional skills that are relevant to their teaching demands in a modern and ever changing educational environment. It equips teachers with the new necessary professional knowledge for effective classroom delivery (Appendix F line 140).*

This means that continuing professional teacher development helps teachers to be always up-to-date with the changing curriculum. They are kept up-to date and are the ones who are the source of knowledge for learners (Mcffarey *et al.*, 2002:1). The

above statement shows that CPTD increases teacher classroom practice, which is believed to improve learner achievements.

#### **4.2.3 To what Extent does CPTD Improve Teachers' Knowledge and Skills in Mathematical Literacy?**

The participants reported the same experiences regarding development of skills and knowledge through CPTD in Mathematical Literacy. It was also found that in CPTD teachers are able have ability to develop themselves personally by reading different books, magazine and many materials related to their profession. One principal said that:

**P1:** *Continuing professional teacher development is a program that creates opportunities for educators to continuously develop their skills and knowledge in the teaching fraternity (See Appendix D line 7).*

This is what one of heads of department said supporting what the principal have said.

**H1:** *Continuing professional development is a means by which teachers as professionals maintain, improve and broaden their knowledge and skills to develop their personal qualities and competencies require in their working environment. Educators must continue to learn to be kept up-to-date. Continuing professional teacher development includes development in content, Personal development, school as whole and professional relationships between different stakeholders (See Appendix E line 63).*

Teachers concurred with the above statements:

**Respondent 3:** *Continuing professional teacher development is life-long learning, educators continue to learn, and they are developed in seminars and workshop to become more skillful and knowledgeable (See Appendix F line 125).*

The preceding statements show that continuing professional teacher development improves teachers' knowledge, skills and practice, which has an impact on learners' achievements. The reviewed literature found similar experiences on how Continuing

Professional Teacher Development improves teachers' knowledge, skills and learner achievement (Mewborn & Huberty, 2004:2).

#### 4.2.3.1 What is Continuing Professional Teacher Development?

In this section, the majority of the participants indicated that it is important for teachers, heads of department and principals to focus on increasing their content knowledge. In other words, they should be more knowledgeable and skilful than the learners they are teaching. Principals are ones that give support to heads of departments, teachers, learners and school governing body. They have to attend workshops and study further. One principal believed that:

**P3:** *In order to develop themselves, principals should be scholars, that is they must further their studies through educational management, reading motivating and inspiring books (Appendix D line 30).*

In this regard, heads of department said that: Circuit workshops and seminars offer content-based workshops to increase heads of departments' content knowledge.

**H1:** *Continuing professional teacher development includes development in content, personal development, school as a whole and professional relationship between stake-holders (Appendix E line 65).*

One of the teachers supported the above statements by giving examples of how to improve content knowledge.

**T7:** *Mathematical Literacy teachers may study further to improve themselves academically; could attend workshops for curriculum updates; relate mathematical literacy to real life situations; familiarize themselves with topics in the work schedules and prepare their lesson to include concrete examples that will help consolidate learners' understanding. They may organize educational trips which enhance learners' understanding in Mathematical Literacy (Appendix F line 154).*

The above statements indicate that when principals, heads of departments and teachers further their studies as well as read books which are relevant to their profession, attend workshop and all sorts of things they can do, their content knowledge and skills are enhanced (Adler *et al.*, 2002:139). It means if school managers are sure of the knowledge and skills they are imparting to other stakeholders, they become role models and good leaders.

#### **4.2.3.2 How do school principals, departmental heads and teachers improve themselves?**

The most notable ways mentioned by participants were teachers' engagement in continuous learning by furthering their studies and reading books related to their profession. One principal asserted that:

**P1:** *Principals should attend workshops, seminars and furthering their studies (Appendix D line 26).*

Heads of department supported principals by stating that:

**H2:** *Heads of departments develop themselves by furthering the studies, when they enrol with different Universities seeking for more knowledge on how to supervise (Appendix E line 84). They also develop themselves by reading different books (Appendix E line 85).*

In this regard, teachers concur with the principals and heads of departments.

**T3:** *Teachers of Mathematical Literacy can develop themselves by studying further, which is by registering with colleges and universities. They can even learn to work as a team, where they help one another to teach the subject; by attending subject meetings, where specifically they are helped on the content knowledge (Appendix F line 147).*

The above statements indicate that if principals, heads of department and teachers are not always learning, sharing ideas and reading books, they will not have adequate knowledge and skills to work more effectively (Putnam & Borko, 2000:4). Therefore, it is important for them to be engaged in active learning.

#### **4.2.3.3 In what ways would school principals, departmental heads and teachers collaborate with one another to improve learner performance?**

The participants shared the view that continuing professional teacher development improves team work since principals, heads of departments and teachers should work together in order to attain good learner performance. For collective participation to be successful there must be respect and shared responsibilities among stakeholders. One of the principals said that:



**P1:** *Principals should encourage teamwork, they must be transparent and be able to consult the community members for anything they want clarity on (Appendix D line 33).*

Heads of departments supported the principal in this regard. This is what they said:

**H2:** *Team work raises teachers' skills which may results in high learner performance in schools (Appendix E line 107).*

One of the teachers said that sharing ideas helps improve teachers' knowledge and skills. He added that:

**T2:** *CPTD helps the teachers to maintain and able to improve their knowledge and skills by means of sharing ideas in the workshops, clusters and subject meetings (Appendix F line 136).*

From the above statements, it is clear that principals, heads of department and teachers' team work knowledge is increased by helping each other. They gain knowledge and skills by working together as a team, managing and sharing responsibilities (Borko, 2004:6).

#### **4.2.3.4 What are the forms of support that school principals, departmental heads and teachers get to enable them to improve their knowledge, attitudes and skills?**

In section, participants echoed that motivation given to principals and departmental heads boosts their confidence after they are appointed as curriculum managers. They are mentored on how to face challenges and leadership position without fear. Heads of departments must be computer literate; it helps them to download useful materials for the school. Curriculum advisors offer motivation on what they were inducted on by visiting school. One of the principals said:

**P2:** *Principals are trained and developed. School leaders require greater leadership skills for strategic-resource management for guiding teaching and learning. The skills needed for such role cannot be developed solely in any program, but rather in a combination of learning, coaching and practicing that develops formally and informally. Induction workshops for newly appointed principals increase their knowledge. These programs may be short or two days courses organized by local authorities. In-service training this help principals to adapt, expand and intensified the profession (Appendix D line 50).*

A head of department stated that:

**H3:** *The department of education conducts an induction workshop to assist the newly appointed Heads of Departments (see Appendix E, line 112). Roles and responsibilities are discussed during these workshops, heads of departments are trained and equipped to do their work better. Their professional confidence is increased, they do not shy away from challenges instead they provide leadership skills to the educators (Appendix E line 113).*

One of the teachers concurs with the above statements from principals and heads of departments. The teacher indicated that they are motivated by workshops that help them increase their knowledge and skills.

**T3:** *Teachers receive the following support by the school. They are developed at school (staff development), they are encouraged to attend workshops and cluster meetings. From the community they are supported in parents and stake-holders' meeting and by being given donation (Appendix F line 172).*

The preceding statement indicated that principals and departmental heads are motivated at their appointment to principal-ship post by the department. Three respondents indicated that they receive enough motivation from the department. They are encouraged to work with others. It means that the principals' motivation helps improve their service delivery; they gain skills that should be imparted to teachers in order to improve learner performance (Beltman, 2005:6). Teachers are motivated socially and financially, which means that the community is providing full motivation for schooling to take place.

#### **4.2.3.5 How do school principals create a supportive environment in which teachers work effectively?**

Participants expressed the experience that when every person is valued as important in teaching and learning, they are able to carry the mandate of their responsibilities. When that happens, the mission and vision is accomplished easily. It means that if the principal cares for the sub-ordinates, communicates, motivates and is always transparent. Teachers, heads of department, teachers and learners are free to learn. The principals stated that:

**P1:** *Principals create an atmosphere of good human relationship amongst the staff, an atmosphere of cohesion and stability. Principals provide resources, motivation, vision and leadership skills, mentoring education, support professionally and emotionally (See Appendix D line 14).*

One of the heads of department indicated that:

**H3:** *Networking helps the heads of departments to improve their way of monitoring; they are also able to assess themselves by comparing their works with that of others (Appendix E line 74).*

The teachers' responsibilities are to teach and help others where it is needed as illustrated in the following statement:

**T6:** *teachers are responsible for mentoring others. When it is their time to give back, they help new teachers by taking things off plate. Help build their lessons; slip the subject plan on the desk; give tips for classroom management and give advice on handling parents meetings (Appendix F line 152).*

The above statements indicate that where the principal does not support his subordinates, the working conditions are not conducive for learning. There will be no respect, people will do as they wish, and the learners' education will be jeopardized. It means it is the responsibility of the principal to create a supportive environment where teachers' skills and knowledge are enhanced. When teachers receive in-school training and are supported by the school management team, improved performance on learner achievement becomes automatic (Yee, 2010:3). One of the principals also indicated that:

**P3:** *Principals ensure full compliance and implementation of Continuing Professional Teacher Development policy by working together with the Heads of Department who monitor teachers' progress in terms of curriculum coverage, class visits and promotion of strict monitoring tool (Appendix D line 61).*

From the preceding statements indicates that principals are the ones responsible for compliance and implementation of educational policies. It also means when there is full compliance with the policy, principals, heads of departments and teachers'

knowledge and skills are improved, and the work is done appropriately (Yee, 2010:3). That is, when principals comply with what policy says, all sub-ordinates will comply too. Knowledge will flow from top to bottom.

### **4.3 SUMMARY OF FINDINGS**

This unit outlines the summary of data outcomes that were collected through interview schedule.

The findings show that contributors were more experienced in teaching, as the respondents had been teaching for many years. Their experience authorizes the trust-worthiness of the data.

Content data were offered per research question. Research questions were addressed thematically. From research question number 1, (how continuing professional teacher development improves learner achievement), three sub-topics emerged. Learner achievement is improved by supplying their needs, engaging parents and through teacher practice.

The second theme was how continuing professional teacher development improves teachers' skills and knowledge. The findings show that workshops, active learning, collective participation, motivation and responsibilities by stake-holders motivate teachers to improve their skills and knowledge.

### **4.4 CONCLUSION**

The above chapter discussed analysis and interpretation of data on how CPTD enhance learner achievement, teachers' knowledge and skills. Qualitative data analysis and summary of findings were fully reflected.

## CHAPTER 5

### SUMMARY, LIMITATION, CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS FOR FURTHER STUDY

#### 5.1 INTRODUCTION

This chapter outlines analysis and interpretation of data information regarding continuing professional teacher development was presented in chapter four. The chapter outlines the summary, limitations, conclusion, recommendations and recommendations for further study.

#### 5.2 SUMMARY OF THE RESEARCH FINDINGS

Summary of the study outlines research question, literature and empirical finding.

##### 5.2.1 How the Study Addressed the Research Questions

The study addressed the research questions as follows:

##### 5.2.1.1 Findings pertaining to research question No 1 (How does continuing professional teacher development enhance learners' achievement in Mathematical Literacy?)

5.2.1.1.1 Forms of support that Mathematical Literacy teachers receive  
Discoveries showed that for learner achievement to improve there must be good supply of materials to use during classroom practice (See paragraph 1 page 66). Participants indicated that the learners' needs such as books, calculators and all other useful resources should be provided for active learning and achievement.

5.2.1.1.2 Ways through which teachers collaborate with the community  
Participants revealed that active parental involvement in their children's' education enhances learner achievements (See paragraph 2 page 65). They further indicated that, learners whose parents can be involved behave and perform better than learners whose parents are involved. The findings indicated that parents should be

involved by forming part of School Governing Bodies, attend parent meetings and help the school where there is a need.

#### 5.2.1.1.3 Ways through which CPTD improves teaching

The findings from participants have made reference to how continuing professional teacher development can improve teaching and learning, and also improve classroom practice learner achievement (See paragraph 1 page 69). The teachers revealed that CPTD ensures that the methods of teaching and approaches are discussed and put to test. At different workshops that teachers attend, they are guided on specific topics and classroom difficulties; and these help in the improvement of learner achievement. All participants indicated that teacher development has a positive impact on learner achievement.

#### **5.2.1.2 Findings pertaining to research question No 2 (To what extent is continuing professional teacher development able to enhance teachers' knowledge and skills in mathematical literacy?)**

The findings indicated that teachers' services are enhanced by on-going CPTD (See paragraph 2 page 70). Participants indicated that teachers should read relevant materials, work as team, motivated to become responsible in playing their roles, in order for their knowledge and skills to be enhanced.

#### 5.2.1.2.2 Meaning of CPTD

The outcomes on this aspect showed that some of the workshops that teachers attend focus on the learning areas (See paragraph 1 page 68). The participants revealed that it is always good to be more knowledgeable than the learners they are teaching. Therefore principals, heads of departments and teachers must increase their content knowledge, by attending content-based workshops. They must always be engaged in the ways of improving themselves, that is, personal development.

#### 5.2.1.2.3 Self-improvement

The results showed that participants should engage themselves in active learning. They must update themselves with changing curriculum by becoming scholars (See paragraph 1 page 69). Participants specified that as professional they have to further their studies in order to keep themselves within the changing world and improve their

knowledge and skills. As we are living in the technological world, we must be well conversant with technological skills.

#### 5.2.1.2.4 Collaboration among stake-holders

The findings showed that working together as a team enhances teachers' knowledge and skills (See paragraph 2 page 71). Participants revealed that it is through team work that they are able to learn from each other. This is because they are able to help one another on some specific topics. Collective participation improves knowledge and skills for new appointed principals, heads of departments and teachers.

#### 5.2.1.2.5 Forms of support

Motivation forms an important aspect of life. The study findings indicated that principals, heads of departments and teachers are given sufficient motivation (See paragraph 1 page 70). Participants revealed that motivation is given in the form of support from different stakeholders. The community support the school by giving donation where it is needed. Some parents form part of School Governing Bodies; some assist by helping learners do homework and in extra lessons. The principal motivates other stakeholders in order to work towards common goal of improving performance; supply of some relevant resource material is done by the Department of Education.

#### 5.2.1.2.6 Creating supportive environment

When all stake holders take their roles and responsibilities, the teaching and learning environment becomes conducive for learning (See paragraph 1 page 72). Principals, heads of departments and teachers have some different roles apart from teaching. The results indicated that if each stakeholder knows its role, there is a smooth running of the institution. Participants indicated that all stakeholders should work together towards the improvement of learner achievement, enhancement of teachers' knowledge and skills.

### **5.2.2 Summary of the Literature Review**

Summary from the literature is discussed in this section. Prose shows that continuing professional teacher development enhances learner achievements, teachers' knowledge and skills (See paragraph 1 page 64). Teachers should therefore be trained so that their knowledge and skills can be improved, through which they are going use when teaching learners.

The literature depicts that for learner achievement to be enhanced the following should be considered: learners' needs, engaging parents, assessment strategies, teacher practice. It indicates that parental involvement in their children's education improves learner commitment and performance (See paragraph 2 page 65).

However, teacher training enhance classroom practice.it means that teachers' skills and knowledge should be enhanced through an on-going professional development programme (See paragraph 2 page 68).

Teacher workload and class size hinders teachers from executing different teaching strategies as individual attention is mostly needed when teaching Mathematical Literacy. Reviewed literature depicted that continuing professional teacher development enhance teachers' knowledge and skills to an extent that they become leaders of curriculum and experts. It is suggested that teachers' skills and knowledge should be enhanced through an on-going professional development (see paragraph 1 page 68)

### **5.2.3 Summary of the Empirical Findings**

The qualitative results indicated that an understanding of continuing professional teacher development improves teaching; creates supportive environment and improves monitoring support, motivation, competencies, effectiveness and collaboration of all schools' stakeholders. Finally, this chapter show that the improvement of skills and knowledge in teachers provide may enhance learner achievements. The following were the key findings:



### **5.2.3.1 Understanding of CPTD**

Qualitative findings revealed that continuing professional teacher development improve teachers' understanding on how to teach, monitor, be effective and be able to work with the community. Learner achievement is increased when every stakeholder takes its responsibility.

### **5.2.3.2 CPTD and teaching**

Collected data showed that continuing professional teacher development improves teaching and has an impact on classroom practice. When teachers attend the content-based meetings, their skills and knowledge are enhanced. This means that mathematical literacy teachers should attend workshops, in order to be able to teach effectively and learn from others.

### **5.2.3.3 Supportive Environment**

The findings indicated that for supportive environment to be created, principals should be able to treat their sub-ordinates with respect, value them as individuals. This means that principals should know their role as managers of the institutions. The principal should support the staff by having regular meetings, having motivational talks, mentoring, and teacher support professionally and emotionally. It means the sound relationship between the teachers, heads of department and principals is important.

### **5.2.3.4 Continuing professional teacher development and monitoring**

Heads of department and principals revealed that continuing professional teacher development in the form of seminars and workshop improve their way of monitoring. They are given the monitoring tool and shown how to use them. They pointed out that, induction the program that is held after their appointment into a new position eliminates fear and makes them leaders. It means that they have to be committed to do their work effectively.

### **5.2.3.5 Support and motivation**

The qualitative findings indicated that teachers, heads of departments and school principals receive support from department of education. Community support is given in the form of donations from business people and through parental

involvement; parents support schools by becoming part of school governing bodies and attending meeting. It means community and school relationship improves learner performance, in the sense that learners whose parents are actively involved in their education perform better than those whose parents are not involved. The department of education supports the school by running workshop, seminars, school visits, providing teaching and learning materials.

Principals indicated that principals are not fully supported. They are encouraged to write yearly and quarterly reports on learner performance. It means that the under-performing school are always accountable for poor performance of their learners, whereas at top performing schools, only principals are seen to be hard working, not the teachers. The motivation for teachers, heads of departments and principals is given in the form of words appreciation and awards, which are given to grade twelve teachers and school principals only. However, Grade 11s' and under are not considered.

#### **5.2.3.6 Compliance and implementation of CPTD policy**

The findings indicated that, principals as the managers of the institutions should advocate for all educational policies. They should train and monitor the compliance and implementation of the policies.

#### **5.2.3.7 Competencies and effectiveness of teachers**

The further depicted that heads of departments as curriculum leaders. The effectiveness and competence of teachers depend on type of leadership that is leading and how teachers personally develop themselves). One head of department suggested that teachers should become more effective when they are led by knowledgeable leaders, who lead by example.

#### **5.2.3.8 School and community collaboration**

The findings showed that there must be a healthy relationship between the school and the community, as a school is not an island. Parental involvement in education of their children reduces laziness and increases learner achievement. The school that is operating under conducive social with the community relationship performs better than one where the community is not involved. It is suggested that the school

should involve the parents by letting be part of school governing body, calling learners and parents meetings to discuss learner performance. Furthermore, parents must be given a chance to express themselves during those meetings.

### **5.3 LIMITATION OF THE STUDY**

Punch (2006:69) defines limitations as the preventive conditions which are unavoidable. Vithal and Jansen (2010:35) state that, allowing restraints allow the reader to escalate restrictions that forced the study to understand the framework in which the research claims are fixed. Consequently, it is necessary for the researcher to explain the characteristic border.

The study focused on CPTD of Mathematical Literacy teachers in Vhembe District. Nonetheless, researcher focused on Soutpansberg North Circuit only. Even though Vhembe is composed of by five clusters, a small sample was used in this study. It means research with larger sample might have yielded different result.

The researcher observed CPTD in Mathematical Literacy. The effects of the research might result in different outcomes if the investigation could have been steered in other subjects. The Second limitation was the meeting time with the respondents. Often, the arrangements had to be re-scheduled due to unanticipated circumstances. The researcher rescheduled the contact time to meet contributors during school holidays.

The research period might have also been affected negatively. Researcher concentrated on the data collected in the academic year 2017. If the study period had been longer, it would have produced altered results.

Furthermore, becoming part of education system, with enormous practice in educational matters caused bias in the researcher's judgemental possibilities. Researcher was aware of potential influence and tried her best to be subjective.

## 5.4 CONCLUSION

Assumptions of the study were as follows:

- The study showed that CPTD can improve teacher exercise to an extent of increasing active learning, improve collective participation, motivate and improvement of stakeholders' roles. The researcher concludes by saying, CPTD is able to improve learner achievement, teacher skills and knowledge.

## 5.5 RECOMMENDATIONS

The recommendations below are delineated per research question.

The researcher endorsed that:

- Continuing professional teacher development should be an on-going process, so that it can improve teachers' knowledge and skills.
- Implementation of what is learned from the workshops should be supported by follow-up programmes.
- Teaching Mathematical Literacy should be harmonized with continuing professional development to improve knowledge, skills and understanding of the subject matter.

## 5.6 SUGGESTIONS FOR FURTHER STUDY

CPTD is a wide concept, the researcher realised that CPTD can be studied further in South Africa. In this study, settings are mainly from other countries such as Tanzania and New Zealand. New Zealand is much radical with research on the effect of CPTD. CPTD and its impact on learners' achievement is a universal concern. Therefore, there is a need to explore further on this topic.

In South Africa, the Department of Education emphasizes the CPTD application. Therefore, there is a need to probe how and the degree to which teachers apply it at school level.

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## APPENDICES

### APPENDIX A

#### AN INVENTORY OF SCHOOL PRINCIPALS' VIEWS ON CONTINUING PROFESSIONAL TEACHER DEVELOPMENT IN MATHEMATICAL LITERACY

##### SECTION A

###### Part 1: BIOGRAPHICAL INFORMATION

- 1.1 Age in years:-----
- 1.2 Gender:-----
- 1.3 Highest educational qualification:-----
- 1.4 Professional qualification:-----
- 1.5 Teaching experience in years: -----

###### Part 2: CONTEXTUAL QUESTIONS

- 2.1 In your own understanding, what is Continuing Professional Development?
- 2.2 How do school principals create a supportive environment in which teachers work effectively?
- 2.3 In what way does continuing professional teacher development improve monitoring?
- 2.4 In your own experience, how do school Principals develop themselves in order to supervise more effectively?
- 2.5 In what ways can school Principals collaborate with the community, Heads of departments and teachers to improve learners' achievement?
- 2.6 What kind of support does school Principals get to enable them to improve their knowledge, attitude and skills?
- 2.7 How does each form of support improve principal's motivation?
- 2.8 How could school principals ensure full compliance and implementation of the CPTD policy?

THANK YOU

## APPENDIX B

### AN INVENTORY OF HEADS OF DEPARTMENTS' VIEWS ON CONTINUING PROFESSIONAL TEACHER DEVELOPMENT IN MATHEMATICAL LITERACY

#### Part 1: BIOGRAPHICAL INFORMATION

- 1.1 Age in years:-----
- 1.2 Gender:-----
- 1.3 Highest educational qualification:-----
- 1.4 Professional qualification:-----
- 1.5 Teaching experience in years: -----

#### Part 2: CONTEXTUAL QUESTIONS

- 2.1 In your own understanding, what is Continuing Professional Teacher Development?
- 2.2 In what ways does Continuing Professional Teacher Development improves monitoring?
- 2.3 How do heads of department ensure that Mathematical Literacy teachers are competent and effective in their teaching?
- 2.4 In your own experience, how do Heads of Departments develop themselves in order to supervise more effectively?
- 2.5 In what ways can Heads of Department collaborate with community and teachers to improve learners' achievements?
- 2.6 What kind of support do Heads of Department get to enable them to improve their knowledge, attitude and skills?
- 2.7 How does each form of support improve Heads of Departments motivation?

THANK YOU

## APPENDIX C

### AN INVENTORY OF TEACHERS' VIEWS ON CONTINUING PROFESSIONAL TEACHER DEVELOPMENT IN MATHEMATICAL LITERACY

#### Part 1: BIOGRAPHICAL INFORMATION

1.1 Age in years:-----

1.2 Gender:-----

1.3 Highest educational qualification:-----

1.4 Professional qualification:-----

1.5 Teaching experience in years: -----

#### Part 2: CONTEXTUAL QUESTIONS

2.1 In your own understanding, what is Continuing Professional Teacher Development?

2.2 In what way does Continuing Professional Teacher Development improve teaching?

2.3 In your own experience, how do teachers of Mathematical Literacy develop themselves in order to teach more effectively?

2.4 In what ways can teachers collaborate with the community to improve learners' achievement in Mathematical Literacy?

2.5 What are the forms of support that Mathematical Literacy teachers receive from both schools and community?

2.6 Please explain how each form of support improves teachers' impetus in Mathematical Literacy?

**THANK YOU**

**APPENDIX D**  
**LETTER OF REQUEST TO CONDUCT RESEARCH IN THE VHEMBE**  
**DEPARTMENT OF EDUCATION**

Enq: Raluswinga F.S  
Cell: 0711286764

P.O Box 2563  
Dzanani  
0955  
18 September 2017

The District Manager  
Vhembe Department of Education  
Private Bag x1406  
Thohoyandou  
0950

Dear Sir / Madam

**REQUEST FOR PERMISSION TO COLLECT DATA FOR RESEARCH PURPOSES**

I, Raluswinga Fhumulani Suzan, student number 16023557 hereby affirm that I am a registered student of University of Venda under the school of Education. My supervisor is Professor M.P Mulaudzi while my co-supervisors are Mr B. Dube and Mrs T.E Tshiovhe. I am currently doing my research as a requirement in partial fulfilment of the Master's degree program.

My research topic is:

**CONTINUING PROFESSIONAL TEACHER DEVELOPMENT: A CASE OF MATHEMATICAL LITERACY TEACHING IN THE SOUTPANSBERG NORTH CIRCUIT OF VHEMBE DISTRICT.**

I am kindly requesting your prompt response regarding this matter.

Kind regards  
Raluswinga Fhumulani Suzan.



**APPENDIX E**  
**PERMISSION TO COLLECT DATA FOR RESEARCH**



**LIMPOPO**  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF  
**EDUCATION**

**VHEMBE DISTRICT**

CONFIDENTIAL

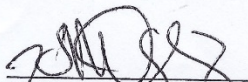
REF: 14/7/R  
ENQ: MATIBE M.S  
TEL: 015 962 1029

RALUSWINGA F.S  
P.O.BOX 2563  
DZANANI  
0955



**REQUEST FOR PERMISSION TO COLLECT DATA FOR RESEARCH  
PURPOSE**

1. The above matter bears reference.
2. Your request for permission to conduct research on the topic: "continuing professional teacher development: A case of mathematical literacy teaching in the Soutpansberg North Circuit of Vhembe District" has been granted.
3. Kindly inform the circuit manager and the principals of selected schools prior to your visits.
4. It is expected of you to ensure that your interaction with educators will not disrupt the normal teaching and learning activities.
5. Wishing you the best in your studies.

  
DISTRICT DIRECTOR

05/10/2017  
DATE

Thohoyandou Government Building, Old Parliament, Block D, Private Bag X2250, SIBASA, 0970  
Tel: (015) 962 1313 or (015) 962 1331, Fax: (015) 962 6039 or (015) 962 2288

**The heartland of southern Africa - development is about people!**



**APPENDIX F**  
**LETTER OF REQUEST TO CONDUCT RESEARCH IN THE SOUTPANSBERG**  
**NORTH CIRCUIT**

Enq: Raluswinga F.S  
Cell: 0711286764

P.O Box 2563  
Dzanani  
0955  
23 October 2017

The District Manager  
Soutpansberg North circuit  
Private Bag x1406  
Thohoyandou  
0985

Dear Sir / Madam

**REQUEST FOR PERMISSION TO COLLECT DATA FOR RESEARCH**  
**PURPOSES**

I, Raluswinga Fhumulani Suzan, student number 16023557 hereby affirm that I am a registered student of University of Venda under the school of Education. My supervisor is Professor M.P Mulaudzi while my co-supervisors are Mr B. Dube and Mrs T.E Tshiovhe. I am currently doing my research as a requirement in partial fulfilment of the Master's degree program.

My research topic is:

**CONTINUING PROFESSIONAL TEACHER DEVELOPMENT: A CASE OF**  
**MATHEMATICAL LITERACY TEACHING IN THE SOUTPANSBERG NORTH**  
**CIRCUIT OF VHEMBE DISTRICT.**

I am kindly requesting your prompt response regarding this matter.

Kind regards  
Raluswinga Fhumulani Suzan.

**APPENDIX G: PERMISSION GRANTED FOR CONDUCTING RESEARCH IN  
SOUTPANSBERG NORTH CIRCUIT**



**LIMPOPO**  
PROVINCIAL GOVERNMENT  
REPUBLIC OF SOUTH AFRICA

Soutpansberg North Circuit  
Private Bag X 1001  
DZANANI  
0955  
Telefax: 015 970 4927

**DEPARTMENT OF EDUCATION  
TSHIPISE SAGOLE DISTRICT  
SOUTPANSBERG NORTH CIRCUIT**

Enq: Mr. Radzuma F  
Cell: 072 995 2993

27/11/2017

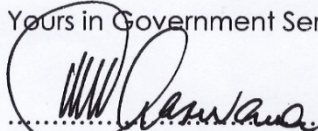
Ms F.S. Raluswinga  
P.O. Box 2563  
Dzanani  
0955

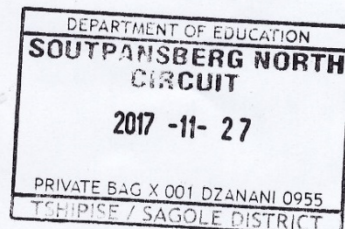
Dear Madam

**Request for Conducting research in Soutpansberg North Circuit:  
Yourself**

1. Your letter dated the 23<sup>rd</sup> October 2017 refers.
2. Permission is hereby granted for you to conduct research at this circuit.
3. Kindly ensure that learning and teaching is not disturbed by your intervention.
4. We want to take this opportunity to wish your well in your studies.

Yours in Government Services

  
.....  
Circuit Manager: Soutpansberg North



## APPENDIX H EDITOR'S LETTER

### SCHOOL OF HUMAN AND SOCIAL SCIENCES

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8 May 2018

Department of Education  
University of Venda  
Thohoyandou  
0950

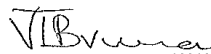
Sir/madam

This serves to certify that I have proof-read F.S. Raluswina's dissertation titled, "Continuing Professional Teacher Development: A Case of Mathematical Literacy Teaching in Soutpansberg North Circuit of Vhembe District"

The proof-reading entailed editing some parts from it; for example, to avoid wordiness, redundancy; sub-dividing sentences, and so on, to make the document more understandable. However, I have not tampered with the content of the document, except where this constituted repetition or made the document confusing.

The research is presently ready for examination.

Sincerely



V.T. Bvuma  
083 423 9227



University of Venda

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#### UNIVERSITY OF VENDA

PRIVATE BAG X5050, THOHOYANDOU, 0950, LIMPOPO PROVINCE, SOUTH AFRICA  
TELEPHONE (015) 962 8172 FAX (015) 962 8416  
E-mail: [Vincent.Bvuma@univen.ac.za](mailto:Vincent.Bvuma@univen.ac.za)

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