

**AN EXPLORATORY STUDY OF HOW LEARNERS COMMUNICATE WHAT THEY KNOW DURING
MATHEMATICS LESSONS**

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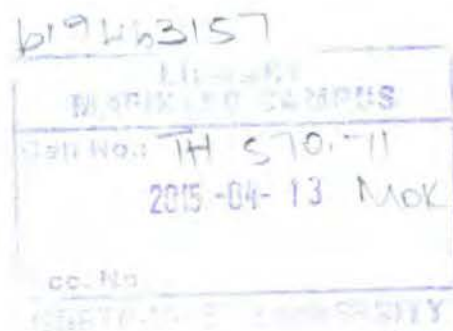
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**Mini Dissertation submitted in partial fulfillment of the requirement for the
Degree of Masters of Education (Mathematics Education) at the
North West University Mafikeng Campus**

Supervisor: Professor L. T. MAMIALA

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DECLARATION

I declare that this dissertation is my own unaided work. It is being submitted for the degree of Master of Education (Mathematics Education) at the University of North West, Mafikeng. It has not been submitted before for any degree or at any other University.

Lolo Florence Mokgomo

Signature . 

September 2010

DEDICATION

This is dedicated to my mom Dimakatso Eunice Mokgomo and my three angels Nyakallo Nthabiseng Madisa; Mpho Keabetswe Madisa & Lerato Paballo Madisa.

ACKNOWLEDGEMENT

Firstly I am humbly thanking my Almighty "GOD" who knew me before I was born, He is still "GOD" who protected, guided, strengthened and blessed me in all days of my life.

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My Mom Ausi Dimakatso Eunice Mokgomo (Molefe). If you had not been there for me, I would not be who I am today. You are a great 'Mom' and I feel so blessed to have you. My aunt Nomathemba Thembi Kgampepe Malatola, mosetsana ya mosehlana, hofejana ha Mmamongalo ngwana wa bo "mme" ke lebohela tsohle tseo o nketseditseng tsona bophelong baka mmangwane waka. Uncle Lawrie malome Lawrence Mokgomo eo mme a mo sietseng letswele, when I grew up I used to tell my friends when they asked me who my "DAD" is that you are the one. Malome Nosi Phillip Ramotshewa Kgampepe mora Mmamongalo mohlahlami wa malome Lawrence, may your soul rest in peace. Malome Fish Mpale Madongolo Motaung malome waka, ke a o leboha ka tshehetso eo o mphileng yona hofihlela ha jwale, ke sa lebaleng le nkgono Nnuku, Ndiba le nkgono (mangwane) Sarah, le nkgodisitse, kajeno ke mosadi ka lebaka la lona. Ke a leboha. Abuti Pitso Molefe, ke lebohela lerato la bo ntate leo o mphileng lona le ho thusana le mme kgudisong ya bana baka ha ke ntse ke le dithutong tsaka. Modimo a mpolokele lona bohle.

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ABSTRACT

South Africa teachers who are teaching Mathematics were faced with challenges of implementing a new curriculum (National Curriculum Statement). They are expected to be innovative and have the ability to make connections between Mathematics and language and also in other learning areas.

The research explored learners' abilities to communicate what they know in Mathematics in written language. It was important that teachers gain insight into what learners' know in Mathematics and how learners were able to communicate what they know. Knowledge and communication of knowledge (Mathematical expression) were important aspects in National Curriculum Statement - Mathematics in South Africa within the context of Outcomes- Based Education principles.

This study aimed at investigating the following critical research questions:

- What Mathematics do grade seven learners know in relation to concept of numbers?
- To what extent were these learners' able to communicate what they know about numbers?
- What were the implications for teaching given what learners' know about numbers? How teachers were able to communicate their knowledge of numbers?

The design of the research study was focused on a class of grade 7 learners' abilities to write Mathematically and to communicate the Mathematics knowledge that they had done in their written form. Van Hiele's categories were used as a framework of informal task documented following learners participation that concerned numeric thinking, visualization and writing which report learners' descriptions of images that they were thinking as seen from their written - up responses.

The qualitative analysis portrays how learners at early levels of learning were able to think and represent Mathematical ideas that they know in a way that others could access them. Findings of this research were important in two ways: (a) it demonstrate how learners think about basic Mathematical ideas of number and how they represent their thought about number concepts, (b) it also demonstrate that learners written work were documented to form useful resource for teachers and other learners in the teaching and learning of Mathematical and numeracy skills

TSHOBOKANYO

Go a itshupa ka ditsela tse dintsi fa barutabana ba le bantsi ba serutwa sa Mathematics mo Afrika borwa ba lebagane le dikgwetlo tsa go tsenya mo tirisong lenaneo thuto le lefika (NCS). Barutabana bane ba gwetlwa go nna le boithamedu le go gokaganya Mathematics le tirisong ya puo le dirutwa tse dingwe.

Dipatlisiso tse, e ne ya nna tsona tsa go upulola maitlomo a go tlathoba bokgoni jwa barutwana le tlhaeletsano ya go bona seo baithuti ba setseng ba se itse mo Mathematics le tirisong ya puo. Go ne go le botlhokwa go bona gore a barutabana ba tlaloganya boteng jwa seo baithuti ba se itseng mo Mathematics, le gore ba kgona go tlhaeletsana go le go kana kang le go itlhalosa mo botlhaming jo boswa jwa NCS mo Mathematics mo Africa borwa ka tlhagiso ya OBE.

Maikalelo a patlisiso le boleng tlathoba

- Gore baithuti ba keriti ya bosupa ba itse eng ka thuto ya dipalo?
- Ke go le go kae seo baithuti ba ka tlhaeletsang ka dipalo?
- Ke diphithelolello dife tsa go ruta tseo di bontshang fa baithuti ba ka kgona go tlhaeletsana ka kitso ya dinomere.
- Bothata bo tlhagella fo kae?

Tebego ya patlisiso e, e maleba le bokgoni jwa go itse go kwala dipalo le go tlhaeletsana ka kitso mo go seo barutwana ba se dirileng mo tirong ya kwalo. Ditiro tsa manane a Van Hiele a tlhagisitswe ka go tsaya karabo ga baithuti mo, go akanyeng ka dipalo, go bona, le go kwala kanelo eo baithuti ba tlhalosang ditshwantsho tsa tshedimosetso eo e kwadileng.

Dipatlisiso di bontsha gore barutwana mo dithutong tsa bona tse di kwa tlase ba kgona go nagana le go bontsha dikakanyo tsa bona ka serutwa sa Dipalo le kitso eo bongwe ba ka ba tlathobang ka yana. Diphithelolello le dipatlisiso di mosola ka mekgwa e mebedi. (a) Di bontsha ka mekgwa yoo e leng gore barutwana ba nagana ka kitso eo ba nang le yona ya dipalo le ka moo ba tlhagisang kitso ya bona ka dipalo. (b) e bontsha le ka moo tiro ya bona eo ba e kwalang e bolokwang gore e tle e nne sediriswa se se mosola mo bangwe go kgontsha go tswelletsana go ruta Dipalo le mo go bao ba fatlhogang mo nakong ee tlang.

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ACRONYMS

DoE – Department of Education

GET- General Education and Training

LiEP- Language in Education Policy

LO- Learning Outcomes

LoLT- Language of Learning and Teaching

MML- Mathematical Mediated Language

NCS- National Curriculum Statement

NCTM – National Council of Teachers of Mathematics

NRC- National Research Council

OBE- Outcomes Based Education

QIDS – UP – Quality, Improvement, Development, Support & Upliftment Programme

SACMEQ- Southern African Consortium for Monitoring Educational Quality

SGB- School Governing body

TIMSS- Trends in International Mathematics & Science Study

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CHAPTER 1

INTRODUCTION AND CONTEXT OF THE STUDY

1.1 INTRODUCTION

South Africa has undergone a process of transformation after a new democratic government was formed in 1994. The National Government realized that the standard of education in South Africa needed to be transformed and balanced. Outcomes-Based Education (OBE) was introduced with the purpose of promoting learner active participation, which was a change from the traditional teacher-centred approach that dominated the old curriculum (Kramer, 2007:1). In 2005 the National Curriculum Statement (NCS) was introduced which relied on OBE principles in order to promote effective teaching and learning. Outcomes-Based Education (OBE) and the National Curriculum Statement (NCS) as a new curriculum were also aimed at creating lifelong learning and encouraged a learner-centred approach. Such a change in education made it possible for more learners to have access to more adequate training opportunities than was the case in the past (Kramer, 2007:3).

A current thrust in Mathematics education concerns reforms of classroom instruction, changing from the traditional drill and practice memorization approach to adoption of constructivist approaches. Teacher driven approach has been the traditional method of trying to ensure that learning takes place. In the new system of education, the teachers role changes from that of telling to that of being a guide and facilitator of knowledge acquisition in a classroom situation. Current research demonstrates that learners in the OBE classrooms tend to learn better than those in traditional classrooms because in the reformed system, learners have the opportunity to freely explore and construct their own knowledge (Rosalind, 2005:14). Sotto (2007:58) stated that real learning is not what happens when we are fed with information; learning is what happens when we realize that we do not know something that we consider worth knowing, form a hunch about it, and test that hunch actively.

Within the context of the new curriculum, teachers are expected to be more innovative as facilitators. According to Department of Education Policy Document

A facilitator is not limited to use only one method in one session, but should juggle methods to put them to more effective use so as to bring about successful learning. Participants must be encouraged to extend knowledge base and skills to embrace the wide repertoire of facilitation methods which tend themselves to the implementation of the National Curriculum Statement (DoE, 2002b:4).

National Curriculum Statement Grade R-9 (Department of Education (DoE), 2002a:4), further states that:

Mathematics is introduced as “a human activity that involves observing, representing and investigating patterns and quantitative relationships in physical and social phenomena and between mathematical objects themselves. It is through processes such as representing that “new mathematical ideas and insights are developed”.

DoE (2002a:1) further noted that “Mathematical ideas and concepts build on one another to create a coherent structure”. According to DoE (2002a:1) teaching and learning of Mathematics is supposed to enable learners to “develop deep conceptual understandings in order to make sense of Mathematics”. It is clear that the OBE and NCS demanded the development in the learner of a sound knowledge of Mathematical relationships to create learners who have “a critical awareness of how Mathematical relationships are used” in various contexts (DoE, 2002a:1). There is a demand for learners to “communicate effectively”. In terms of the aims of this research, there are demands for Mathematics instruction to make visible in students “an understanding of the world as a set of related systems by recognizing that problem-solving contexts do not exist in isolation” (DoE, 2002a:1).

1.2 STATEMENT OF THE PROBLEM

Teaching that promotes deeper understanding among learners is what is required by the new curriculum. Effective teaching now requires the development of “Mathematical power” as a central occupation of Mathematics teaching. Mathematical power involves “reasoning, solving problems, connecting Mathematical ideas, and communicating Mathematics to others” (Kilpatrick, Swafford & Findell, 2001:1). The development of Mathematical power is highly linked to growth in “Mathematical proficiency”, the latter being a necessary attribute for any learner to learn and engaged in Mathematics successfully. Conceptual understanding is a key aspect of Mathematical proficiency. It is also involved in the comprehension of Mathematical concepts, operations on these concepts and relations between concepts and operations. Clearly conceptual understanding entails learners having access to concepts, their relationships and processes, and understanding these concepts particularly how they are used in Mathematical thought and action (Kilpatrick et al., 2001:1).

Most teachers are qualified in the primary phase but their qualifications are general and not specific to any learning area, nevertheless there are those who are unqualified in the foundation phase. Most unskilled Mathematics teachers find themselves teaching Mathematics even though they did not have proper training. As highlighted earlier, teachers were expected to implement OBE and NCS and yet did not acquire proper training. Most teachers are still implementing the traditional methods of teaching Mathematics and it becomes difficult and almost impossible for them to implement NCS and OBE where learners are supposed to acquire their own information. Teachers needed enrichment through workshops and further

specialized studies in the teaching of Mathematics in order to assist learners who are lacking skills.

Because of changes in the curriculum, many educators have difficulty in implementing the new curriculum because of the inadequate training to promote the learner-centred approach as well as how to make the connections by integrating Mathematics and Language with other learning areas such as Art and Culture, Technology, Social Sciences and Natural Sciences, so they are not familiar with the new curriculum. They also feel that assessing learners whilst teaching is too much for them to implement and manage in the every day teaching situation. Zadjia, Daun & Saha (2009:118) state that language is what permits our being to be, to occur, to be explored, carried out and carried on. It is where what we refer to as our historical, cultural and personal identities are not simply formed, but, more significantly, performed. It was noted that the Language-in-Education Policy (LiEP) in the South African curriculum, envisages a system of education which, starting with the circumstances of the community, aims at meeting the requirements of the community and which will be given to the learners in their mother tongue (Zadjia et al.,2009:159).

Effective implementation of the new curriculum is highly dependent on the recognition on the part of teachers that they need to build more on what learners know before they can effectively learn new and more challenging content. This means that teachers need to know more about what learners think about the subject, in this case Mathematics. Such a way of thinking about teaching, i.e. teaching that begins with learners in mind, is a new approach that is not yet mastered by teachers such as myself. Given this context, I became interested to know more about my learners.

According to Van Der Horst & McDonald (2005 :48) 'Learning Outcomes' are derived from the critical and developmental outcomes which describe what knowledge, skills and values learners should know, demonstrate and able to do at the end of the General Education and Training band. For example in the second Language Learning Area , Learning Outcome (LO 4) states that the learner will be able to read information and respond critically to the aesthetic, cultural and emotional values in texts (DoE, 2002b:34).The challenge is how a teacher may facilitate communication among learners to achieve the outcomes.

The problem that had been identified by the researcher was that many learners in the senior phase were unable to read, write, and count. The researcher wanted to build confidence in learners to express themselves in English as it was regarded as a medium of instruction and to assist learners on how to use numbers for communication because language and numbers were used daily in everything . For example when buying, the seller and buyer needed to

negotiate about the price of goods so language and numbers has a significant role in the universe.

1.3 RESEARCH QUESTIONS

Mathematics teachers were expected to implement the NCS innovatively and be able to make connections between Mathematics and language in other learning areas. In the new curriculum it was for educators to enable learners to express what they know and understand in written language.

This was an exploratory study which was aimed at investigating the following research questions:

- What Mathematics do grade 7 learners know in relation to concepts of number?
- To what extent are these learners able to communicate what they know about number?
- What are the implications for teaching given what learners know about number and how they are able to communicate their knowledge of number?

This research was exploratory in nature as it investigated learners' abilities to communicate what they knew in Mathematics. It is important that we as educators gain insights into what learners know in Mathematics and whether and how they are able to communicate what they know. Knowledge and communication of knowledge (expressing Mathematics) are important aspects of the new formation of the curriculum in Mathematics in South Africa under the guidance of Outcomes Based Education (OBE) and the National Curriculum Statement (NCS).

1.4 GOALS AND OBJECTIVES OF THE STUDY

The main goals and objectives of the study were to develop a citizenry that was aware of and concerned about the implementation of Outcomes Based Education (OBE) and the National Curriculum Statement (NCS) and the significant role of language in the teaching and learning of Mathematics. Following the objectives the researcher considered the following to be valuable in the study:

1. Awareness – language forms an integral part in all learning areas and that numbers and language are being used in our daily activities such as paying for food we eat;
2. Knowledge – from the experience we had, communicating with numbers is used almost everywhere;
3. Attitude – develop learners' interest in working with numbers;
4. Skills – help learners to acquire skills in Mathematics and to reveal the creativity of their thinking ability;

5. Participation – provide social groups and individuals with an opportunity to be actively involved in the task given.

1.5 ASSUMPTIONS OF THE STUDY

It was assumed that language and numbers complemented each other because we use them in every day life. The following assumptions were made to support the study:

- The researcher has complete control of the learning situations including what learners will learn and how;
- Teaching is sequential; there is a definite beginning and ending to teaching activity;
- Outcomes of the teaching activity can be predicted and can be measured in terms of learners' performance;
- What learners learn is external to them;
- Learners must be able to perform something as an indicator that learning has occurred.

1.6 SIGNIFICANCE OF THE STUDY

In this study, Grade 7 learners in one of the local rural schools in North West Province were used. Mathematics teacher may gain more knowledge about what learners know and think about Mathematical concepts involving numbers during Mathematics lessons. They may also gain information on being creative thinkers and learn how to integrate Mathematics with other learning areas as well as reflecting on various styles of teaching that have the potential to make teaching more interesting and effective. The method used to gain access to learners' thinking would also be useful for other teachers as well as researchers in the field of assessment. There is a need for the teachers to be appropriately trained on how to assess learners so that the assessment may yield information that may help educators to promote teaching that develops deeper understanding as required by the new curriculum.

The written Mathematics was documented by the researcher following learners' engagement in an informal activity concerned with numerical thinking, visualisation and writing. The research presents images of their written Mathematical thinking, and portrays how learners at the early levels of learning are able to think and represent the Mathematical ideas that they know in ways that others may access them.

1.7 LIMITATIONS AND DELIMITATIONS OF THE STUDY

This study was conducted in one of the rural schools. Findings from the study would be useful for thinking about the nature of knowledge that learners in a school are able to demonstrate with respect to the area of number. That knowledge may only be specific to the conditions of learning at the school and so might not relate directly to learning in other schools with different

schooling conditions. However, the researcher anticipated that the knowledge gained from this study might be useful for thinking about learners' knowledge in other contexts in South Africa that may be similar to conditions in my school. The aim of this study was to understand more about the nature of the knowledge that my learners were able to demonstrate. So the aim was not necessarily to generalize to learners in other schools.

1.8 DEFINITION OF TERMS

According to Creswell (2007:39) definition of terms in this study may be used to specifically define terms and concepts that individuals outside the field of study may not understand and that go beyond common language. The following key terms were used and explained using special references as indicated below:

1.8.1 Mathematical - is seen as a cultural knowledge derived from humans engaging in the five universal activities of counting, locating, measuring, playing and explaining in a sustained and conscious manner (Gates, 2001:1009).

1.8.2 Language - language is being defined as a tool for the teaching of Mathematics and able to shape and guide conversations to help learners' development of Mathematical concepts (Rudd, Lambert, Satterwhite & Zaier, 2008:75).

1.8.3 Teaching- Involves inspiring critical thinking and active engagement in the learning process (Seo & Ginsburg, 2004:104).

1.8.4 Learning - Is linked to an ability to use senses, in particular our ability to see with our eyes (Sotto, 2007:75).

1.8.5 Grade R – GRADE 9 - Can be described in terms of the contexts that require quantitative literacy practice, the Mathematical content that is required when activities are practiced. Grade R – Grade 9 are being regarded as the General Education and Training Band which is started at the entry (Preschool) until the exit (Senior Phase) which is Grade 9 (Bohlmann & Pretorius, 2008:44).

1.9 ORGANIZATION OF THE STUDY

Chapter one presents an overview and contextual background of the study. It outlines the research questions and the significance of the planned study.

In chapter two, a review of the key research literature is presented. It provides a motivation for the exploration of the research questions that have been focused upon in this study. A theoretical framework that governed the research is also outlined.

Chapter three describes the research design and plan for conducting the research. The sample and the data collection procedures as well as methods for analyzing the data for this research are documented in chapter three.

In Chapter four, the data that was collected is analyzed using a qualitative approach. Insights into the key issues that emerged from the analysis are also highlighted in this chapter.

Finally, chapter five presents the conclusion of the research. Key findings and answers to the research questions are presented. Recommendations for teaching of Mathematics in terms of number concepts are given. Implications for research into learners' thinking and to the development of Mathematical knowledge in relation to numbers are outlined.

1.10 SUMMARY

The focus in this chapter is on changing from the traditional drill and practice memorization approach to adoption of constructivist approaches. Outcomes-Based Education (OBE) and the National Curriculum Statement (NCS) as a new curriculum were also aimed at creating lifelong learning and encouraged a learner-centred approach. Such a change in education change made it possible for more learners to have access to more adequate training opportunities than was the case in the past.

Mathematical power involves "reasoning, solving problems, connecting Mathematical ideas, and communicating Mathematics to others (Kilpatrick, Swafford & Findell, 2001:1). The study was exploratory in nature as it investigated learners' abilities to communicate what they knew in Mathematics. It is important that we as educators gained insights into what learners knew in Mathematics and whether and how they are able to communicate what they know. In Chapter 2, the focus was on the theoretical framework which informed the study.

CHAPTER 2

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2. INTRODUCTION

The study was conducted in the senior phase of the GET band specifically in grade 7. According to the South African National Curriculum Statement (NCS), in this band, teachers were expected to be innovative and learners were encouraged to show their skills and abilities of communicating with numbers using Mathematical thinking in which language plays a significant role. The researcher used the theoretical background of Van Hiele's sequential levels of development.

2.1 LEARNERS' MATHEMATICAL KNOWLEDGE AND THINKING

This research focused on Grade 7 learners' abilities to write Mathematically and communicate the Mathematical work that they have done and written up. The research presents images of learners' written Mathematical thinking, and portrays how learners at the early levels of learning are able to think and represent the Mathematical ideas that they know in ways that others may access them. The study is informed by review of research studies that focus on learners' learning of Mathematics and their ability to communicate their learning, and how one can capture or assess learners' Mathematical knowledge and thinking. The research literature review related to this study was therefore in the areas of: (i) The nature of Mathematics; (ii) Communication and Socials skill; (iii) Counting Ability.

2.1.1 The Nature of Mathematics

How is Mathematics perceived? It is important to note that how one perceives Mathematics influences what one identifies to be Mathematics in situations that are presented. In the conventional Mathematics education, Mathematics is seen as a cultural knowledge derived from humans engaging in the five universal activities of counting, locating, measuring, playing and explaining in a sustained and conscious manner (Gates, 2001:109).

Learning is linked to an ability to use our senses, in particular our ability to see with our eyes. According to Sotro (2007:75) there is a connection between how we see and how we learn. He said if one recalls that the word "see" can refer to our ability to see with our eyes, and also to our ability to understand with our brain, one might be prompted to examine how we see. Sotro proposes that "seeing is primarily a matter of testing what we perceive the world around us against the schema already present in our brain" (Sotro, 2007:78).

2.1.2 Communication and Social Skills

When learners and teachers interact with each other in the classroom context, various interpersonal modes can be seen in action which is evident in structural verbal interactions between learners and their peers, or learners and teachers (Shayer & Adey, 2002:80). David, Sandy & Peliwe (2008:86) further refer to Vygotsky on the construction of knowledge as a social process of learning in which the teacher as a mediator encourages learners to talk their thoughts out so that both the speaker and listeners can interact to modify each other's ideas, in a group consisting of a teacher and learners, where teachers play a leading role of helping learners to construct new meaning.

2.1.3 Counting Ability

Brannon & Van der Walle (2001:81) accept the idea that humans are born with number sense. A toddler can have a sense of numbers and it can already deal with limited arithmetic operations (e. g simple addition and subtraction) before the age of one year. By the age of two years, most toddlers can recognize the 'greater than' and 'less than' relationships (the concept of ordinality) between numerical values as large as 4 and 5, even though they have not yet learned the numbers' verbal labels (Brannon & Van der Walle, 2001:81).

Recent cognitive research supports the notion that learning is more likely to occur when learners can observe, engage in, discuss, reflect upon and practice the new learning promoting learners' independence in the process of learning to become more effective in the successful performance of social related tasks (Sousa, 2007:35). Sousa states that ultimately, responsibility for strategy use needs to shift from teachers to learners (thus learner centredness) and promote independent learners with the cognitive flexibility to address learning challenges in their life (Sousa, 2007:35).

By learning how to learn, learners can ultimately become independent, lifelong learners which is one of the priority goals of an education curriculum that motivates learners to be competitive in the 21st century (Sousa, 2007:35).

According to Gans, Kenny & Ghany (2003:295), teachers need to address the issue of presenting information on the strategies of learning by modeling positive self esteem to convince learners to strive for success. Shayer & Adey (2002:119) state that the Mathematical knowledge that teachers need to teach Mathematics is different from the knowledge that teachers need in order to teach Mathematics. Clearly, teachers need to know not only the basic ideas in school Mathematics but also ways in which learners understand concepts in Mathematics.

2.2 MATHEMATICAL LANGUAGE IN THE EARLY CHILDHOOD SETTING

Rudd, Lambert, Satterwhite & Zaier (2008:75), state that for many years, experts have supported the concept that learners are capable of using complex Mathematical thought to explore and understand the world which surrounds them. A teacher should be able to teach and instruct in the learning environment (Rudd et al., 2008:75).

Teachers need not only develop methods for teaching learners, they also need to have an understanding, a plan and a method for teaching learners what they need to know about the world, including Mathematics and other content areas. They must also be able to assess what learners know and what they do not know, and be able to communicate the content in a meaningful way which inspires critical thinking and active engagement in the learning process (Seo & Ginsburg, 2004:104).

Skilled teachers recognize the importance of language as a tool for the teaching of Mathematics and are able to shape and guide conversations using language to help learners develop Mathematical concepts. In addition to recognizing the importance of language as a tool for teaching Mathematics, it has been suggested that teachers must plan experiences that connect new Mathematical terms to ideas that learners already know (Rudd et al., 2008:77). When teachers focus on the Language of Mathematics and present Mathematical concepts in fun, engaging ways, learners become motivated to learn beyond what is traditionally expected of them. The dialogue between the teacher and the learner concerning Mathematics is referred to as Mathematical Mediated Language (MML), which serves to link conceptually related linguistic and Mathematical knowledge (Rudd et al., 2008:77). They also state that the implications of instructor's interpretations of the basic Mathematical terminology combined with their use of everyday language may influence their ability to see the opportunities for teaching Mathematical concepts, not only in the context of an explicit Mathematics lesson but throughout the broader curriculum (Rudd et al., 2008: 77).

2.3 MATHEMATICS AND LITERACY

Reading now becomes the concern of Mathematics achievement rather than language proficiency, and the new curriculum suggested for Mathematics learning will be negatively affected if learners lack adequate reading skills (Bohlmann & Pretorius, 2008:42). South Africa's poor performance in large national and international studies such as Teachers in Mathematics and Science Study (TIMSS) and the Southern African Consortium for Monitoring Educational Quality (SACMEQ) is impacting critically on Mathematical performance in the Language of Learning and Teaching (LoLT) (Bohlmann & Pretorius, 2008:42). In spite of poor trends in both Mathematics and literacy, the relationship between numeracy and literacy in any multilingual

country such as South Africa needs to be explored since learners' proficiency in the LoLT will undoubtedly affect their understanding of Mathematics (Bohlmann & Pretorius, 2008:42).

For the majority of learners in South Africa, the LoLT for Mathematics is not the Home Language which is used as the LoLT in the first three years of schooling. The crossover to English as a medium of instruction is typically made in Grade 7 (Bohlmann & Pretorius, 2008:42). To contextualize this study within a larger South African picture, the following issues will be related to the teaching and learning of Mathematics and are outlined as *follows* : (i) The importance of language and reading in Mathematics learning; (ii) Mathematics in the General Education and Training (GET) Band; (iii) Curriculum in Context (Bohlmann & Pretorius, 2008:42).

2.3.1 The Importance of Language and Reading in Mathematics Learning

According to Bohlmann & Pretorius (2008:43), Mathematics learning is highly dependent on literacy. The five Mathematics Learning Outcomes for the Senior Phase highlight those activities that depend significantly on Language and reading. Learning Outcome 1 (LO 1) states "The learner will be able to recognize, describe and represent numbers and their relationships, and to count, estimate, calculate and check with competence and confidence in solving problems (Department of Education, 2002a:6).

The above outcome includes activities which aim to develop learners' understanding of how numbers relate to one another which implies that learners are confident with expressions such as 'less than', 'twice as much as', etc. (Bohlmann et al., 2008:43).

This research is significant to the work of Mathematics teaching and learning at the senior phase in two ways : (i) It demonstrates how learners think about basic Mathematical ideas of number and how they communicate and represent their thinking about number concepts, (ii) It demonstrates that learners' written work can be documented in order to form a valuable resource for use by educators and other learners in the development of Mathematical and numeracy skills.

2.3.2 Mathematics in the General Education and Training (GET) Band

According to Bohlmann & Pretorius (2008: 44) the General Education and Training (GET) band state that Mathematics can be described in terms of the contexts that require quantitative literacy practice, that is, the Mathematical content that is required when activities are practiced. However, the practice in many Mathematics classrooms in South Africa still focuses on chalk-and-talk rather than engagement with the content in relevant contexts. Doing Mathematics requires the use of authentic contexts which need to be understood as clearly as the

Mathematical content that is being applied. There is a challenge for the GET Band to find contexts that are sufficiently available, accessible and relevant (Bohlmann & Pretorius, 2008: 44).

2.3.3 Curriculum in Context

Chairelott (2006:4) states that the curriculum (NCS) does not operate in a vacuum nor is it an abstraction that can be imposed on a learning environment that exists both within and outside the school setting. One of the learning environments used extensively in contextual teaching and learning is cooperative learning. This stems from the goal of creating classroom contexts amongst individuals and groups, which emphasizes cooperation over competition, such as the jigsaw model where learners must work interdependently rather than independently to complete the learning task (Gunter, Estes & Schwabs, 2003:257).

OBE is widely considered to have its roots in educational approaches to beliefs or philosophical ideas that influence the way people think about things, but which the traditional curriculum did not adequately prepare learners for the present reality. Moreover, OBE strives to produce successful citizens of the global community in the 21st century by promoting learners' active participation (Kramer, 2007:1).

According to Kramer (2007:3) criticisms of educational innovation came from many professional teachers who have opposed OBE as being challenging, unmanageable and confusing: a view which is to be expected whenever change is made. However, NCS was introduced as an important learning process about OBE in South Africa whereby teachers make themselves part of the process by putting plans into action, and by offering a loud, fair and clear critique of policy (Kramer, 2007:3).

2.4 VAN HIELE' S FRAMEWORK

This research was framed within the theory of learning that outlines 4 sequential levels of geometric reasoning in Mathematics, namely: visualization, Informal deduction, formal deduction, and rigour. A comparison of learners' assessment standards of South African Mathematics curriculum with descriptors suggests that in terms of geometry South African learners who have completed primary school should have reached Van Hiele's thinking Level Two i.e., they should be able to describe and represent the characteristics and relationships between 2-D shapes and 3-D objects in a variety of orientations (Department of Education, 2002a:6). This study investigated whether a sample of grade seven learners who had recently completed their intermediate phase of schooling in the previously disadvantaged primary schools met both assessment criteria for geometry as stated by the Intermediate Phase Revised National Curriculum Statement (Department of Education, 2002a:6). The following

were considered: (i) Van Hiele and the development of Geometrical thinking; (ii) Van Hiele levels and the National Curriculum Statement.

2.4.1 Van Hiele and the Development of Geometrical Thinking

Van Hiele hypothesized sequential levels of geometric reasoning. They are visualization, informal and formal deduction, and rigor that describe the characteristics of the thinking process (Feza & Webb, 2005:37).

2.4.1.1 Level 1: Visualization

Through observation and experimentation, learners begin to discern the characteristics of figures to conceptualize classes of shapes. Learners at this level cannot explain the relationships between properties, interrelationships between figures which are still not seen, and definitions which are not yet understood (Feza & Webb, 2005:37).

2.4.1.2 Level 2: Informal Deduction

Feza & Webb (2005:37) state that at this level, learners are able to establish the interrelationship of properties both within figures (e.g. in a quadrilateral, opposite *sides* being equal) and among figures (a square is a *special* rectangle because it has all the properties of a rectangle). Thus learners can deduce properties of a figure and recognize classes of figures. Class inclusion is understood and definitions are meaningful. Informal arguments can be followed and given but the learner at this level does not comprehend the significance of deduction as a whole. Formal proofs can be followed, but learners do not see how to construct a proof starting from different or unfamiliar premises.

2.4.1.3 Level 3: Formal Deduction

According to Feza & Webb (2005:37) learners understand the significance of formal deduction as a way of establishing geometric theory within an axiomatic system. Learners are able to see the interrelationship and role of undefined terms, axioms, postulates, definitions, theorems, and proof. Learners at this level can construct, not just memorize, proofs; they accept the possibility of developing a proof in more than one way. The interaction of necessary and sufficient conditions is understood; distinctions between a statement and its converse can be made.

2.4.1.4 Level 4: Rigor

Feza & Webb (2005:37) state that the highest level of Van Hiele's theory is rigour. At this level learners' can work in a variety of axiomatic systems, that is, non Euclidean geometries can be studied, and different systems can be compared. Geometry is seen in the abstract. Consequently, when a teacher is trying to communicate with learners at lower levels, their intentions may be completely misunderstood. A major purpose for distinguishing learners' levels

of understanding is to recognize obstacles that they may experience in the learning process, and to allow teachers to develop strategies which will enable learners to progress in terms of conceptual development.

Feza & Webb (2005:37) said that the major difference in mental preparation for Mathematics learning between learners whose Language makes use, in some recognizable form, of international Greek – Roman terminology, and its prefixes (pre -, post-, anti-, sub-, co-, mono-, etc.) suffixes (- action, - or, - ant, - ise, etc.) and roots (equ, arithm, etc.), and a learner whose language contains neither these items nor translation equivalents of them would be sufficient in assisting learners to understand Mathematical language (Feza & Webb 2005:37).

2.4.2 Van Hiele levels and the National Curriculum Statement

The intermediate phase assessment standards for geometry as expressed in the South African National Curriculum Statement (NCS) documents require that learners are able to name shapes, describe and classify shapes using properties, and construct shapes correctly in order to attain Learning Outcome Three, i.e., that :

The learner is able to describe and represent the characteristics and relationships between 2-D shapes and 3-D objects in a variety of orientations and positions (DoE, 2002a: 6).

At Van Hiele level zero the learner identifies, names, compares and operates on geometric figures according to the appearance. Similarly the NCS assessments standards which are guided by Van Hiele's levels are characterized by naming and visualizing shapes and objects in natural and cultural forms. As such, both Van Hiele and the NCS assessment standards characterize the level of recognition of shapes as a whole (Feza & Webb, 2005:38).

Van Hiele level one: is characterized by the analysis of figures in terms of their components and their relationships. According to Feza & Webb (2005:38) this stage allows learners to discover properties of a class of shapes empirically.

The characteristics of the NCS's assessment standards are the definition of shapes and objects in terms of properties such as faces, vertices and edges of the Van Hiele level and the assessment standards that are concurrent in defining shapes and objects using some properties (Feza & Webb, 2005:38) .

Van Hiele level two: Feza & Webb (2005:38) state that learners logically relate previously discovered properties by giving informal arguments such as drawing, interpreting, reducing, and locating positions which will fit well with the NCS assessment standards which state that

learners must be able to provide informal arguments such as drawings, interpretations, and reducing and locating the positions.

The first three Van Hiele levels (levels zero to two) cover all the assessment standards of the intermediate phase as stated in the NCS. Therefore the exit level outcomes for learners in the intermediate phase of the South African curriculum can be related to the expectations of Van Hiele level two (Feza & Webb, 2005:38).

2.5 WHAT MATHEMATICS KNOWLEDGE IS NEEDED FOR TEACHING MATHEMATICS?

The improvement of learners learning Mathematics depends on skillful teaching and also on the capability of teachers which requires justification and definition. Knowing Mathematics for teaching entails more than knowing for one how to unpack ideas (Ball, 2003:1).

In this study the researcher considers the move from meaningless to the meaningful case as a search for meaning from the errors of words made by learners in order to bring about meaning from their written words. To add to my statement, according to Ball (2003:1), it has been discovered by a number of cognitive Science studies that self explanation is an effective metacognitive strategy to help learners with greater understanding thus the more errors learners made the greater the chance for them to understand.

2.6. COMMUNICATING MATHEMATICALLY

Communication is a vehicle for creating meaning, influencing thoughts and making decisions

2.6.1. Creating Meaning

Huang, Normandia & Greer (2005:35) state that language is a socializing concept that provides useful insight into the relationships between learning of Mathematics content and the acquisition of Mathematics language. Connection between knowledge construction and learners learning has an impact on the process of building an understanding. Huang et al. (2005:35) state that few studies approach communication in and about Mathematics from a linguistic perspective and explore the relationships among selected aspects of Mathematics performance to various linguistic skills, while other studies reinforce the claim that language plays a crucial role in Mathematics teaching and learning (Huang et al., 2005:35).

2.6.2. Influencing Thoughts

Reasoning refers to the capacity to think logically about the relationships between concepts and situations to develop adaptive reasoning where learners need to be given opportunities to practice how to communicate in Mathematics (National Research Council (NRC), 2001:129)).

Many research studies support the idea that through communication ideas become objects of reflection; refinement; discussion and amendment when learners are challenged to think and reason about Mathematics and to communicate the results of their thinking to others orally or in writing, listening to other explanations gives learners opportunities to develop their own understanding (National Council of Teachers of Mathematics (NCTM), 2000:59).

Writing Mathematics may also help learners to consolidate their thinking because it requires learners to reflect on their work and clarify their thoughts about the ideas developed in the lesson (NCTM, 2000:60).

2.6.3 Making Decisions

Faux (2004:10) *believes* that all perceptions of Mathematics arise from the fact that Mathematics provides a means of communication that is powerful, concise and unambiguous. Faux (2004:11) further states that ambiguity is built as follows: when learners say words or numbers aloud and discover that in the spoken word, that the space, in each of them, between four and the next symbol carries a very different meaning. Each time the space is concise to Mathematicians. In the first 'four and half', so space contains a hidden plus sign. In the second one we say either 'four x', so the space contains a hidden multiplication sign. In the third one we say 'four- ty five'. The space contains multiplying the digit on the left by ten and adding the digit on the right. In the last example four point five or possibly four and five tenths (Faux, 2004:11).

Mathematics teaching at all levels includes opportunities for exposition by the teacher; discussions between the teacher and the learner and learners themselves; appropriate practical work; consolidation and practice of fundamental skills and routines; application of Mathematics to everyday situations and investigational work (Faux, 2004:11).

2.7. THE IMPLICATIONS OF LITERATURE REVIEW

In the conventional Mathematics education literature, Mathematics is seen as a cultural knowledge derived by humans, engaging in five universal activities of counting, locating, measuring, playing and explaining in a sustained and conscious manner (Gates, 2001:371).

Sotto (2007:78) proposes that seeing is primarily a matter of testing what we perceive in the world around us against the schema already present in our brain. The extent to which learners learn effectively is linked to their perception of what they are learning i.e. the way they think of Mathematics in the new curriculum.

Recent changes in Mathematics education in South Africa have begun to present pedagogical knowledge demands on teachers. Modes of communication have also been reviewed to

promote the use of oral and written Language, and engage learners in writing to learn Mathematics (Gates, 2001:371). Teachers need to be aware of ways in which Language is used in Mathematics in order to assist learners to acquire the specialized vocabulary and Language skills needed for success in their Mathematics learning. From what has been reviewed, there is not much that is known in South African Mathematics education that documented how learners demonstrate what they know through written activities that focus on Language and Mathematics. This study therefore attempted to address the following research questions:

- What Mathematics do grade 7 learners know in relation to concepts of number?
- To what extent are these learners able to communicate what they know about number?
- What are the implications for teaching given what learners know about number and how they are able to communicate their knowledge of number?

2.8. SUMMARY

The focus is on Grade 7 learners' abilities to write Mathematics and communicate Mathematically about the works that they have written up. The research presents images of learners' written work that depicts their Mathematical thinking, and portrays what they know in ways that others may access them.

How is Mathematics perceived? It is important to note how learners perceive Mathematics and what factors influence what they identify as Mathematics in situations that are presented to them. In the conventional Mathematics education literature, Mathematics is seen as a cultural knowledge derived by humans engaging in the five universal activities of counting, locating, measuring, playing and explaining in a sustained and conscious manner (Gates, 2001:1009). In chapter three the focus is on the methodological design used to guide the study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In this chapter the researcher outlines the research approach for the study and a justification for the approach adopted in the study, explains how the study was incorporated with Van Hiele's sequential level of development framework when through observation and experimentation, learners begin to discern the characteristics of figures to conceptualize classes of shapes. A major purpose for distinguishing learners' levels of understanding was to recognize obstacles that they may experience in the learning process, and to allow teachers to develop strategies which would enable learners to progress in terms of conceptual development. Learners logically relate previously discovered properties by giving informal arguments which will fit well with the NCS assessment standards which state that learners must be able to provide informal arguments such as drawings, interpretations, and reducing and locating the positions. The researcher also explained the steps taken to ensure that the study was trustworthy in terms of validity and reliability. The instrument used in collecting data and sampling methodology were elaborated. The chapter also addresses ethical issues and made explicit the design of the study.

3.2 RESEARCH DESIGN

A research design was a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems. The plan was the complete scheme or programme of the research. It includes an outline of what the investigator was doing from writing the hypotheses and their operational implications to the final analysis of data (Ranjit, 2005:84). Through the research design the researcher:

- Conceptualized an operational plan to undertake the various procedures and tasks required to complete the study;
- Ensured that these procedures were adequate to obtain valid, objective and accurate answers to the research questions.

The overall design of this study was a case study. Opie (2004:74) describes a case study as an in depth study of the interactions of a single instance in a closed system. According to Opie (2004:74), the essential features of a case study were:

- Data collection was systematic;
- The focus was on a real situation with real people;
- The researcher was familiar with the environment;
- It provides a picture of an activity in a particular setting.

The study showed work of learners as it allowed the researcher to explore learners' knowledge of their Mathematics associated with numbers and how they were able to communicate that knowledge.

3.3. CONTEXT OF THE STUDY

The research was conducted at one of the local Primary Schools where the researcher taught since it was easily accessible. The researcher had taught at the school for 13 years and was familiar with the setting and the sample. The principal and the Mathematics teaching staff were receptive to the request to conduct the study at the school. Also learners that formed the sample served as a basis for the establishment of a relationship to facilitate an effective implementation of the study. The classroom culture was focused on teaching and learning. Hence learners were also receptive to the study. The school was located in a rural area. All the learners came from the local black communities with low socio – economic background. The school was poorly resourced in terms of teaching staff, learning support materials, and furniture and library resources.

3.4 DATA COLLECTION METHOD

The study involved one class of 36 Grade 7 learners who were attending Mathematics classes. The Grade 7 learners were chosen because they had at least three years of explicit instruction on number concepts and relationships (Learning Outcome 1) and so it would be enlightening to see what kinds of knowledge about number they were able to demonstrate and communicate. *The researcher* negotiated time at the end of the teaching period to ask learners to do the task. The researcher ensured that the task did not interfere with the normal activities of the school.

Baumard & Ibert (2001:69) see data collection as a way in which information collected can be processed using methodical instrumentation to produce results and to improve on or to replace the existing theories. This information can be presented in such a way that it implicitly carries the status of truth which essentially enables the researcher to construct and to test propositions (Baumard & Ibert, 2001:69).

3.5. EXPLORATORY CASE STUDY

According to Babbie (2001:91) exploration is a start for the researcher to familiarize himself to the new topic that is to be studied. Data collection was divided into two parts. The focus of the first phase was on creating a talk on numbers by learners, the second was the task.

The overall design of the study was a case study. Thomas (2004:127) describes a case study as "an in-depth study of interactions of a single instance in an enclosed system" or as the

detailed examination of a single example of a class of phenomena, or a research design that takes a single or few selected examples of social entity (Thomas, 2004: 127).

The researcher has showed that the above feature of a case study was evident in this study. The researcher is a Mathematics educator who had taught Grade 7 Mathematics for 13 years and was familiar with the environment of the study. The researcher initially undertook a pilot study with a group of grade seven learners, 12 learners were chosen randomly from the class register and the activity was successfully treated. A pilot study can also be viewed as the dress rehearsal of the investigation (de Vos, 2005:206).

The researcher was aiming at giving learners an opportunity to start working with numbers in two ways and learners who could not express themselves in English were allowed to use their mother tongue to promote flexibility. The researcher used code switching for learners to understand the concept of numbers and words: (i) starting from names (words) to numbers (ii) starting from numbers to names (words), the following task was given which was also supported by the lesson plan: this was about personal communication between the teacher and the learners.

Teacher : Is it possible to use numbers to words?

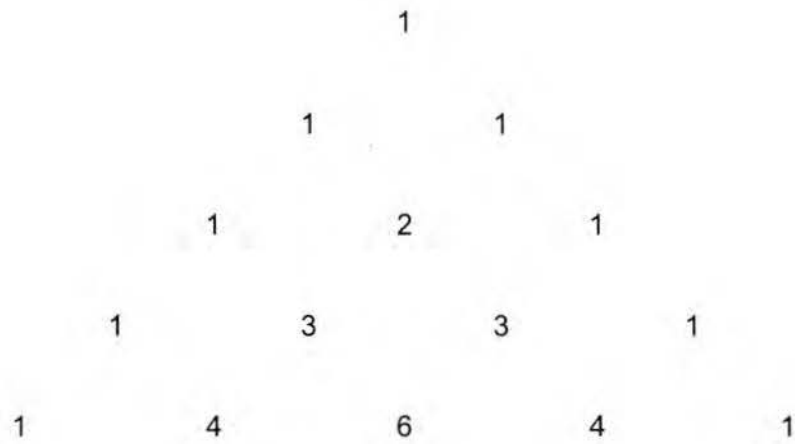
Learner A : I don't think so.

Learner B : No.

Learner C : How could that be possible?

Learner D : I don't know?

Teacher : Let us see how it may be possible. Let's take a symbol 1 which is a number and put it into a word "ONE", the word have three letters and can be represented as follows:



Teacher : *What do we call the above pattern?*

Learner E : A triangle.

Teacher : Yes it is a triangle, but it has a special name called "Pascal triangle".

Learner F : AHA!! Now I can see, the more the number is added the larger the pattern becomes.

Teacher : *Let's look into another example in starting with words where we shall do experiments in using the following names:*

Lolo

Evah

Eve

NOTE: The use of names was very deliberate because theory and practice of learning suggested that it would be better to start from known to unknown when teaching new concepts, especially if those concepts are abstract. The idea was to do something and explore what happens next. The ability to use words and numbers required knowledge of the learning environment. In this study the researcher describe how she set about collecting the data and to answer the research questions. In other words it gave a clear and specific explanation on how data was collected, how themes and categories were derived, and reasons for decisions made

(Creswell, 2003:131). Data for this study was collected by using the following task where the researcher used the face map and letter writing.

Starting from numbers to names (words).

- Lolo: 1. it counts in four letters
2. Find the position of each letter in the alphabet
- | | | |
|---|---|----|
| L | - | 12 |
| O | - | 15 |
| L | - | 12 |
| O | - | 15 |

Lolo ≡ 12 15 12 15

3. Spelling the name backwards

LOLO - does not make LOLO to "feel good" because the name has changed its meaning.

POP - spelt backwards makes POP to "feel good" because the name does not change its meaning.

Getting back into counting of letters. We have learnt that LOLO has 4 letters when we count.

Figure 1: Mind Map

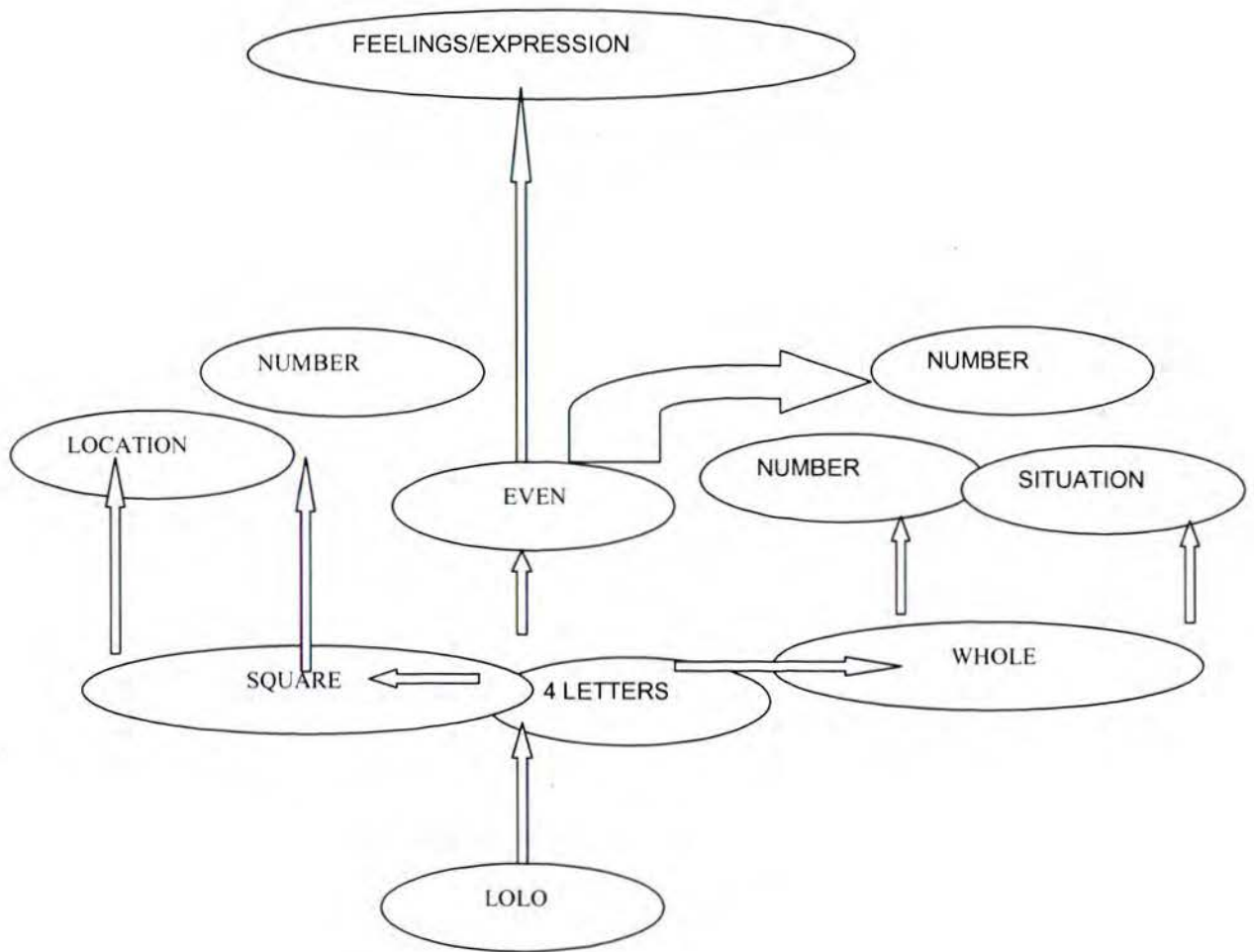


Figure 1 Represents the mind map. The researcher adapted it using names and it identified many activities performed with the learners. The original mind map was regarded as associative network which claims that knowledge is not stored as a separate unit. Rather, what is stored is connection strength between different ideas in the network hence mind map (Jordan, Carlile & Stack, 2008:48).

Table 1': Names Written Forward Backwards- Backward Forwards

word	word formed on reversing letters	What is preserved?	What is not preserved
Lolo	oloL	The name has capital letter L, two O's , one small letter l and can be pronounced backwards as oloL(why not back words), 4 is an even number.	Lolo is not the same word as oloL if we pronounce it forwards. If we pronounce it backwards it gives a different meaning
Evah	havE	Both words have meaning although meanings are not the same. In the case of Evah the meaning is : name of a female person. "Have" is a verb.	Is it exciting to walk backwards? When do we normally walk backwards? We normally walk backwards if the enemy is coming so that one can maintain seeing the enemy while walking backwards.
Eve	evE	The word spells the same	evE pronounced the same whether you start forwards or backwards

Explanation of Table 1: Shows how other names written from backward to forward becomes distorted even when you pronounce them, while other names written from backward to forward still spell the same and others when written from backward to forward cannot be distorted but can give different meaning as appears in the example above.

Another example of our experiment is when we start converting words to numbers when the names and numbers cannot change. For example:

a=1; b=2; c=3; d=4; e=5; v=22, etc. so Eve = 5225 this is the name palindromic given to numbers which remain the same when their digits are reversed. The Cambridge International Dictionary of English (2002:1020) defined 'Palindrome' as a word or group of words that is the same whether you read it from the beginning or backwards.

How the study relates to the Mathematics Curriculum in NCS

This study is an integration of Natural Science and Economics and Management Science.

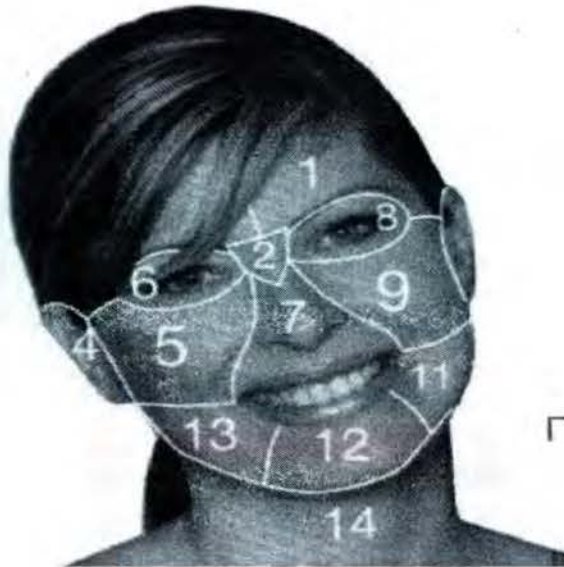
Learning Outcome	1	: Numbers Operations and Relationships
Assessment Standards	1	: Learners can be able to count objects i.e. they can be able to count the number of eyes, legs and fingers, etc.
	2	: Pronounce number names such as 1; 2; 3; 4; etc. and Know the letters a- z.
	4	: Learners can be able to differentiate kinds of animals or different nations in South Africa.
	7	: Different technique will be applied. For example How many legs does a Cow have? If I have 6 Cows How many legs will there be? If I decided to sell 2 Cows, how many legs will I be left with?

From this lesson the researcher was trying to highlight that 6 is a whole number and to sell 2 Cows then we will be left with 16 legs and 4 is also a whole number, even number, and square number. The researcher was objectifying things to be visible to learners.

The face scenario was from Botes (2008:7), the items were developed by the researcher based on the face mapping with the background from skin care industry (see example// worldwide shopping mall.co.uk/body beauty).

It has been seen from the face picture that there were demarcations with white lines as one can notice the numbers 1, 2, 3, 4 up to 14 with 3 and 10 attached to demarcated areas. The idea behind face mapping involves putting one's face on a map based on the belief that the skin provides an outside view into the body's internal health. In this way the skin provides the therapists with a deeper view of why the skin looks the way it looks (see figure below). This was followed by the lesson plan drawn for this activity which specified the learning outcomes and their assessment standards (Botes, 2008:7).

Figure 2: FACE MAPPING



The researcher used logic as a visual representation to illustrate the relationship behind the objectives. The lines used were significant to illustrate the relationship of the name of the shapes in fig 2.

Data was collected from the worksheet provided as an activity and was analyzed qualitatively. However, the researcher's concern was not about spelling mistakes or grammatical errors since English was not the learners' mother tongue. The main point of the task given was about the meaning of what the learners wrote down in which the researcher used literature review to support the study when collecting the data.

3.5.1. What Mathematics do Grade 7 Learners Know in Relation to Concepts of Number?

The researcher had written down names from backwards to forwards and learners were asked to read. She asked learners whether the names are distorted. Learners discovered that some names were distorted while other names were not affected. Same as using numbers when other numbers changed them fro backwards to forwards.

3.5.2. To what extent are Learners able to communicate what they know about number?

Learners were asked to write down other names of their choice, write it from backwards to forwards, then used numbers and wrote them from forward to backward and from backward to forward.

3.5.3 What can we learn about teaching from what learners demonstrate about what they know and are able to communicate about the Mathematics involved with number?

From the activity those learners had performed using a different approach of teaching will enable learners interest to be developed positively particularly when the researcher encouraged cooperative learning when learners were able to share information with others.

Table 2: The learners' Task

Task Imagine that you have a friend who lives far away from you. Your friend wants you to send him/her a picture of you. After checking all your photos at home, you find that you do not want to send any of them because you are afraid that they will get lost in the post. You decide to draw a good picture of yourself and send it to your friend. Draw a picture of your face. Put some numbers on the picture of your face. Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

As noted earlier, this task directly addresses learners' knowledge of numbers. In addition, it attempted to gain insight into learners' abilities to communicate what they knew about number, and also to probe into other dimensions of learning especially the social and linguistic competences that might be linked to learners' learning and understanding in school. This is in addition to the requirements from the education policy document which anticipates that learners need to acquire "a critical awareness on how Mathematical relationships can be responsibly used in different situations" (DoE, 2000a:1).

A task like this one is of a nature that may not be familiar to learners in its formulation. It is different from the tasks that learners were usually presented with in their classroom assessments and traditional assessments. A question can then be posed about whether the researcher anticipated learners facing difficulties completing this task. That is why it was important to carry out a piloting of the instrument in order to see how learners at a lower level (senior phase) would respond to it. An analysis of the responses from the group of selected grade seven learners showed that learners had no difficulty in drawing a picture of their face. They were also able to put some numbers on their face picture to identify their favourite

numbers. This result made the researcher confident that the grade seven learners would not find it difficult to do the task. In addition, the learners had the freedom to express themselves in their own language if they so wished. This was indicated to them before they commenced writing the task. The task was in English and did not restrict learners in using the language that they understood.

3.6. LESSON PLAN FOR THE TASK

Learning area	Grade 7
Duration	3 days
Theme	Words and Numbers.
Learning Outcomes 1	The learner will be able to recognize, describe and represent numbers and their relationships and to count, estimate, calculate and check with competence and confidence in solving problems.
Learning Assessment	Counts forwards and backwards in whole numbers.
Learning Outcomes 3	The learner will be able to describe and represent characteristics and relationships between two- dimensional shapes and three-dimensional objects in a variety of orientations and positions.
Learning Assessment	In contexts that include those that may be used to build awareness of social, cultural and environmental issues, describes and classifies geometric figures and solids in terms of properties, including faces, vertices and edges.
Integration	Second Additional Language
Learning Outcomes 4	Learner will be able to write different kinds of factual and imaginative text for the wide range of purposes.
Learning Assessment	Write a Message.
	Distinguish between words which sound the same but spelled differently.

Table 3: Lesson Plan

Mathematics Benchmark Mathematical ways of knowing words.	- Learners will draw face picture. - Learners will demonstrate the ability to make a connection between numbers and words. - Learners will explain why they have chosen the number as their favourite. - Learners will show their art skills.
Context	- Concept of skills measurement techniques. - Communication skills
Resources	- pencil - pens - papers - rubber
How will I engage learners in using the techniques of connecting the concept of numbers and language in their prior knowledge?	- Day 1: show learners face picture. : learners will tell the teacher why they have chosen the number as their favourite.
What learners will do to explore the concept and to begin to develop vocabulary at the same time..	- Day 2 : learners will draw the face picture and write a letter to communicate to their friend about the face picture. : Learners will do the task.
What I will do to give learners opportunities to construct their own explanation of the concepts.	- Learners show their understanding of the concepts
How will I evaluate learners' task?	- Collect written work as evidence. - Analyze and give feedback.
Researcher	- looking at what has been done in the task.

3.7. QUALITATIVE RESEARCH APPROACH

Qualitative research approach was informed by an interpretive framework which focused on exploring learners' knowledge and thinking in relation to Mathematical concepts associated with number. As such, this study was of a qualitative nature in the sense that it was concerned with obtaining insights into the nature of the knowledge that learners were able to demonstrate in a written exploratory task. These insights from the data collected emanated from an examination of learners' written work and with the interpretive meanings based on responses from these learners (Creswell, 2003:131).

Qualitative research is a means for exploring and understanding the meaning individuals or groups ascribe to social or human problems and were largely an investigative process in which the researcher gradually makes sense of a social phenomenon by comparing, replicating, cataloguing and classifying the object of the study (Creswell, 2003:131).

3.7.1 Characteristics of Qualitative Research

Qualitative approach expresses the characteristics on how the researcher perceived the learners responses to make them meaningful to his /her study.

- It was based on assumptions that *were* very different from quantitative design.
- Data that emerge from qualitative study *were* descriptive in nature. Thus data *were* reported in words or pictures rather than in numbers;
- The focus of qualitative research *was* on participants' perceptions and experiences, and the way they made sense of their lives;
- Qualitative research focuses on the process that *was* occurring as well as the product or outcomes. The researcher *was* particularly interested in understanding how things occurred;
- Ideographic interpretations *were* utilized. In other words, attention *was* paid to particulars, and data *was* interpreted with regard to particulars of a case rather than generalizations (Creswell, 2007:194).

3.8. POPULATION AND SAMPLING

Sampling in this study refers to the selection of learners to perform the task.

3.8.1 Population Site

Bless, Higson-Smith & Kagee (2006:97) defined population as the entire set of objects or people which was the focus of the research and about which the researcher wanted to determine some characteristics. For example, the context of this study was Ramadiane, a primary school which has 661 learners and 21 educators. The focus of my study was on grade 7 learners. The school is in a rural place in Dr Ruth Mompati District (District is a demarcation of municipal structure) of the North West Province (South Africa). Geographically it was an area where the community depended on subsistence farming i.e. no income was generated from sales of their produce. There was a lack of service delivery in terms of transport networks, etc, and the school lacked necessary resources such as a library, computers and laboratory. The majority of people were previously disadvantaged in terms of the level of education, and because of the apartheid regime they left school at an early age and worked on farms where the owner spoke only Afrikaans to communicate to them. Parents were unable to help their children with homework because they did not understand English and the curriculum. Parents and their

children use Setswana at home more than any other language but they understood spoken Afrikaans language better. The total population targeted was thirty six learners in grade seven.

3.8.2. Sample

According to Trevor (2007:213) a sample is a subset of all members of a target population to produce valid and reliable evidence.

Thirty six grade 7 learners were chosen because they had at least three years of explicit instruction on number concepts and relationships (Learning Outcome 1) and so it would be enlightening to see what kinds of knowledge about number they were able to demonstrate and communicate the researcher ensured that the task did not interfere with the normal activities of the school.

The research was conducted at a local Primary School where the researcher taught since it was easily accessible to do such a study. The principal and the Mathematics teaching staff were receptive to the request to conduct the study at the school. Also, the learners that formed the sample were generally known to the researcher from day to day school interaction. The researcher's familiarity with the sample served as a basis for the establishment of a "relationship" to facilitate an effective implementation of the study.

3.8.3. Sampling Theory

Sampling Theory is the study of the relationship between population and samples drawn from it (Bless, Higson- Smith, & Kagee, 2006:98). The main advantages of sampling are:

- Gathering data on a sample is less time consuming
- It is less costly since the costs of research are proportional to the number of hours spent on data collection.
- Sampling may be the only practical method of data collection when the population is infinite or extremely large, thus making a study of all its elements impossible.

3.8.4. Method of sampling

In this study the researcher used purposive/ judgmental sampling. The primary consideration in purposive sampling is the judgment of the researcher as to who can provide the best information to achieve the objectives of the study. The researcher only goes to people who in his or her opinion are likely to have the required information and be willing to share it, which may be useful to construct a historical reality, describe a phenomenon or develop something about which only a little was known (Ranjit, 2005:179). In total, 36 learners did the task.

3.9. DATA ANALYSIS AND INTERPRETATION

Creswell (2003:190) describes data analysis and interpretation as an ongoing process that involves continual reflection about the data asking questions and writing memos which involves using open ended questions and developing an analysis from information supplied by participants.

The second part of the research data collection process involved an administration of the research instrument with grade 7 learners. A detailed analysis of learners' responses to the task was subsequently undertaken. The researcher had initially intended to interview selected learners based on a preliminary analysis of the responses. However, because the task had allowed space for learners to write in detail what they thought, it was decided that data collected from the written responses would be sufficient for the exploratory nature of the study. Conducting interviews with learners, while useful, was considered time consuming and rather threatening for the level of learners involved.

Tables were drawn and the information from these tables was grouped in accordance with the meanings they preserved. At the interpretation stages the researcher relied much on what learners had done in the task.

3.9.1. Ethnomethodological analysis

Ethnomethodology refers to the methods by which people make sense of the situations in which they find themselves and how they manage to sustain orderliness in their interactions with other people (Henning, Van Rensburg, & Smith, 2005:42).

Henning et al.(2005:42) state that for ethnomethodologists, culture consists not of a stable set of things that members were supposed to know, but of the process for figuring out or giving meaning to the actions of members for instance learners errors had been considered as important because the researcher was able to build new words.

3.9.2. Ethnography

Ethnography means, literally, a picture of the way of life of the identifiable group of people. It is also an excellent way of gaining insight into the culture or social process, particularly those in complex behavioral settings and those involving other cultures (Henning et al., 2005:42). This linked to the study because the task given was more on communication which required learners' social skills during Mathematics lesson.

3.10. MEASURES TO ESTABLISH TRUSTWORTHINESS OF THE STUDY

According to Angot & Milano (2001:140) measurement is the process by which we translate from the theoretical realm to the empirical. Studying works by other writers can reveal existing translations that may be directly usable or could be a basis for certain adjustments that need to be made. If these translations appear unsatisfactory or unsuited to the current study, then the researcher moves to the second stage of measurement process, of developing translations either by improving existing ones or through innovation (Angot & Milano, 2001:140).

The researcher was integrating different learning areas in the task given to develop learners' interest on what they know. For example asked learners' to draw the face and put numbers on different parts of the face then asked learners to write a letter to the friend to tell why chosen the number. Actually the researcher was trying to promote mutual understanding amongst learners by developing their interest of communication using language and numbers as curriculum envisage cooperative learning and active participation, where we would be able to see that in the classroom when learners interact with each other about their findings in Mathematics where language and were involved for communication.

3.10.1 Validity

"Validity refers to the degree to which a method, test or research tool actually measures what it is supposed to measure" (Opie, 2004:68). Cohen, Manion & Morrison (2000:102) suggest that validity in qualitative research indicates confidence in the results, and that reality was independent of the claims made by researchers. In this study the researcher needed to ensure how she saw the written task as a tool for exploring learners' knowledge and communication of that knowledge in relation to the Mathematics of number. To do this the researcher explored the issue of content validity. To have content validity learners' responses to the task needed to be connected to the level of exposure they had to the Mathematics of number, and also to the natural ways of writing and communicating at the senior phase (grade 7) level.

As could be seen in the task presented, the nature of the task itself appealed to the learners themselves, particularly when numbers and language were used as a way of communication in their everyday life when they ought to apply their thought and participate effectively in learning. There were obviously language difficulties that might have limited the learners' abilities to communicate what they knew. The main aim of the study was not to "measure" the accuracy of the language that learners used in communicating their knowledge but to get insights on how learners attempted to communicate. Any constraints in their language would however be noted and raised for further reflection as implications for teaching Mathematics as well as other learning areas.

"External validity refers to the degree to which the results can be generalized to the wider population, cases or situations" (Cohen et al., 2000:109). Since the study was conducted at one rural school, using one class of Grade 7 learners, the external validity of the findings was limited. A pre -test was conducted by the researcher in a dialogue form with the learners and since learners were participating well, this gave confidence to the researcher that the grade 7 learners would be able to perform the task as well. According to de Vos (2005:206) pretesting is a measuring instrument being tried out on a small number of people having similar characteristics to the sample group. Although the researcher may plan her investigation very carefully and logically, the practical situation will remain an unknown factor.

3.10.2 Reliability

Opie (2004:66) defines reliability as "the extent to which a test or procedure produces similar results under constant conditions." According to Cohen et al. (2000:119), a typical definition for reliability such as the one above may not be workable for qualitative research. This is because, one of the premises of qualitative studies is the "uniqueness of situations such that the study could not be replicated – that was their strength rather than their weakness".

The reliability and validity in this study were considered in terms of the rigour with which the study would be conducted and also in terms of the extent to which the results of the study would be related to the experiences and conditions of learning in schools with a similar environment.

3.11. ETHICAL CONSIDERATIONS

Ethics are a set of moral behaviours that are intended to guide a person's behaviour in a society (Thomas, 2004:90). It was very important to gain permission to enter the field that had been decided on. It was also important that while pursuing permission from relevant authorities, people on the ground should be informed of what the project sought to accomplish.

Ethics is concerned with the "application of moral principles to prevent harming or wrong doing to others, to promote the good, to be respectful and to be fair" (Opie 2004:25). All learners who took part in this study were treated fairly and respectfully for the effort they made towards the success of this study. The above definition points out clearly that the researcher must accord the participants in the study the utmost respect and value their dignity and privacy. The researcher must also realize that educational institutions are hierarchical and when access is required to conduct research in them, protocols must be adhered to.

Setati (2000:353) extends this by pointing out that since schools are hierarchical there is "a Power structure that controls them". Setati uses Power with a capital 'P' to indicate hierarchical power. In schools the Power relations are at many levels: Education Department, the School

Governing Body (SGB), the principal, the teachers and the learners. This differentiated level of Power gave direction to the researcher when negotiating access.

As a way of adhering to ethical considerations, the researcher firstly approached the North West Department of Education to request permission to conduct research at one of its schools (see Appendix A). A proposal of the research and the intended documentation was submitted to its offices. The researcher also approached her principal for permission to conduct the research, and explained to her the purpose of the study. The study was conducted at the primary school where I taught since I had access to Grade 6 & 7 learners and it would be convenient to do the data collection during my non-teaching time. The principal and the other participants were informed that the research was in partial fulfillment of the requirements for a master's degree. A commitment was made that in my report no reference would be made to the school or the Grade 7 class that I used. However the school would be referred to by a pseudonym (nickname).

The study involved one class of Grade 7 learners. This meant that I needed to negotiate access with the principal as the head of the institution by showing her a letter of approval to conduct the study since she had advised me to write a letter to the Department of Education to ask for permission to have access to learners. I also asked learners to fully support me by their participation in my study. At my school the Grade 7 Mathematics learners were taught by myself and one other teacher. I explained the purpose of the study to the other teacher and requested her cooperation.

Learners were briefed on the purpose of the study and were invited to be part of the research project. Taylor (2002:123), states that "school children do not always understand the distinction between data which are being gathered anonymously for research purposes and assessments which are being made of them personally." In the light of Taylor's statement I emphasized to learners that the information collected from the written task was for research purposes only, and did not have anything to do with their reports or the marks that they received for Mathematics.

Grunewald (2003:5) states that the obligation to protect the anonymity of research participants and to keep research data confidential was all – inclusive and that should be fulfilled at all costs unless arrangements to the contrary were made with the participants in advance. The researcher assured learners that their responses would be treated as confidential. In my report they would be referred to by codes unless they requested that their real names be used.

3.12. SUMMARY

The study took place in one of the rural Primary school in Mafikeng (North West Province). The sample was drawn from 36 grade 7 learners and was purposive in nature.

The chapter elaborated on aspects related to the design relates collection strategies as well as on analysis.

Measures of trustworthiness as well as ethical conduct were considered in order to give an assurance that this report was a true reflection of what the researcher had done and the documentation would be seen to be at the back in the Appendices, and Learners' work including a certified copy of the letter written by the researcher to the Department of Education.

Data was collected. Learners' responses to the face mapping are elaborated further in the following chapter.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1. INTRODUCTION

It is always important to know exactly what data should be collected and how it will eventually be analyzed and interpreted. This process should primarily be guided by the learners' task so that the researcher will finally have data that is manageable in a sense that it can be accounted for, it can be accurately analyzed and appropriately interpreted. Data was collected from the learners' task then assessed and interpreted using descriptive data analysis. However in this study the researcher was not concerned with learners' spelling errors since English was not the learners' mother tongue. The main point of my concern about the activity given to learners is about the meaning of what learners wrote down. Tables were drawn to analyze the results and learners 'mystery' names were considered to carry some meaning.

4.2. TABLES AND SUMMARY

Table 4: Number Attached

Parts of the face	Number Attached						
	1	2	3	4	5	6	7
Mouth							
Learner no.	L18	L35	L2 L5 L11 L29 L36	L13	L31	L19 L34	
Nose							
Learner no.			L1 L22	L3			
Eyes							
Learner no.	L27	L15 L21		L16 L17 L33	L12	L9	L14
Ears				L20			
Learner no.							

13 learners seemed not to understand what the task required them to do, because they selected more than two parts, while others selected more than two numbers. 23 did exactly what the task required them to do. This showed that more learners had understood the task. Learner 18 and 27 were attached to '1' as a favourite number though the parts selected were not the same. Learner 35, 15 & 21, chose '2' as a favourite. Learner 2, 5, 11, 29, 36, 1 & 22, chose '3' as a favourite number. Learner 3, 16, 17, 33, 20 chose '4' as a favourite numbers. Learner 31 & 12 chose '5' as a favourite number. Learner 19, 34 & 9 chose '6' and Learner 14 chose '7' as a favourite number.

Table 5: Reasons for Choosing the Number

Favourite Number	Why favourite
1	• L18 like no 1 which is mouth because people talk about it. • L27 like the number which is an eye because it enables the respondent to see light and position.
2	• L15 because people spoke about the eyes. • L35 chose this number (mouth) because it is important. • L21 said people say the learner's eyes are bigger.
3	• L1 said nose is meant for breathing. • L22. like nose because without it you cannot breath. • L5 like because she / he can be able to speak and eat. • L11 mouth is not boring. • L2 like his/ her mouth. • L29 chose this number which is mouth because people like it and that could make him / her proud. • L36 enabled to eat with the mouth.
4	• L3 proud of his or her nose because it is beautiful. • L13 like mouth because it is nice. • L16 like the number because she / he can round it off to the nearest zero. • L17 like eyes because she/he can see. • L20 like ears for listening. • L33 like eyes because it can able him or her to see everything.
5	• L 12 do not like eyes because it is very big. • L31 speak with the mouth.
6	• L19 attached to this number because it is nearest to ten. • L34 chose it because he/ she can speak and taste with the mouth. • L9 chose the number because of the big eyes.
7	• L14 eyes being big like a frog.

Table 5 indicates that, for every learner that chose the number, there was a reason behind the choice. Most learners chose those numbers because they knew about the importance of the parts they chose. 7 learners had chosen number 3. 6 learners' had chosen number 4. 2 learners preferred number 1. Another 3 learners' had chosen number 2. 2 learners favoured number 5. 3 other learners had chosen number 6. 1 learner liked number 7.

Table 6: Number of Learners with Selected Parts of the Face

Parts of the face	No of learners with selected parts of the face
	X
Mouth	11
Eyes	9
Ears	1
Nose	3
Not selecting any number	12
Total	N = 36

The information in table 6 showed that thirty six (36) learners took part in the study. Twenty four (24) of the learners had showed the parts that they liked and twelve (12) learners did not select any of the parts.

Table 7: Typical Key Phrases to Illustrate the Category

Category	Typical key phrases to illustrate this category
Number	• L10 could not show which number was close to zero. • L12 like d no5 because it was nearest to ten. • L16 liked no4 because it was close to zero. • L19 liked no 6 because it was nearest to ten.
Language	• L1,L2,L3,L5,L6,L7,L8,L9,L10,L11,L12, L13,L14,L15,L16, L17,L18,L19,L20,L21, L22, L23, L24,L25, L26,L27,L29,L30, L31, L32, L33, L34, L35, L36 be able to use language for expression. • L4 & L28 no expression of language.
Function	• L1,L2,L3,L5, L17,L20,L22,L26,L27,L31, L33,L34, L36 mention the function of their favourite number.
Beauty	• L3, L14, L16, L23 liked all that part because it was beautiful.
Prior Learning	• L27 prior to what I have learnt, this picture looked like that of a judge president. But the message contained was about the eyes which guided him or her everywhere.

These learners illustrated their interest and those interests were categorized in table above. For example learner 3 had drawn someone wearing earrings, this meant that the picture had to do with beauty.

Table 8: Face Drawing of the Learners

Learner number	Use numbers only to label the face	Use numbers and names to label the face	Not using any number to label the face	Chosen Favourite Number from the face	Chosen the favourite part only from the face	Not chosen any number from the face as a favourite	Able to tell Why favourite	Unable to tell why favourite
1	√	×	×	√	√	×	√	×
2	×	√	×	×	√	√	√	×
3	√	×	×	×	√	×	√	×
4	√	×	×			×	×	√
5	√	×	×	√	×	×	√	×
6	√	×	×			×	×	√
7	√	√	×	√	×	√	×	√
8	√	×	√			√	×	√
9	√	×	×	√	×	×	√	×
10	×	×	×			×	×	√
11	√	×	×	×	√	√	×	√
12	√	×	×			×	√	×
13	√	×	×	√	√	×	√	×
14	√	×	×			×	√	×
15	√	×	×	√	√	×	×	√
16	√	×	×			×	√	×
17	√	×	×	√	×	×	√	×
18	√	×	×	√	×	×	√	×
19	√	×	×	√	×	×	√	×
20	×	√	×	√	×	×	√	×

21	√	×	×	√	×	×	√	×
22	√	×	×			×	√	×
23	√	×	×	×	√	√	√	×
24	√	×	×			√	×	√
25	√	×	×	√	×	√	×	√
26	√	×	×			√	√	×
27	√	×	×	√	×	×	√	×
28	×	×	√			√	×	√
29	×	×	×			×	×	√
30	√	×	×	√	×	×	√	×
31	√	×	×			×	√	×
32	√	×	×	√	×	×	√	×
33	√	×	×			√	√	×
34	√	×	×	√	×	×	√	×
35	√	×	×		×	×	×	√
36	×	×	×			×	√	×

30 learners were able to use numbers only to label the face, while 6 learners could not. 33 learners could not use numbers and names to label the shapes, 3 learners were using numbers and names to label the face. 2 learners did not use any number to label the face, 34 learners used numbers to label the face. 10 learners were not chosen any number from the face as favourite, 26 learners were able to choose any number from the face as favourite. 24 learners were able to tell why favourite, 12 learners were not able to tell why favourite.

4.3. RESPONSES ACCORDING TO NUMBER CHOSEN

Figure 3: Different Faces

Learner 18

Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. box 570

Sommeville

2760

14 September 2003

Dear my friend

Hello, and I like to say hello

I want to tell you the number of my face I like number 1 because people talk about my mouth. She and he say my mouth is very small. My friends I want to tell you something like my mouth people talk about my mouth he says my mouth people talk about my mouth.

Some people talk about my mouth and I like number 1 because it is beautiful.

I like my mouth my mouth in the picture ^{is so beautiful} about and I like it ~~is~~

ANALYSIS

Contents on the letter

'I write to tell you the number of my face. I like number 1 because people talk about my mouth is very small. I want to tell you something like my mouth people talk about my mouth he says my mouth people talk about my mouth'.

Numbers on the Picture

1(mouth), 2(right - eye), 3(right - ear), 4(nose), 5(hair).

Chosen Number

Number 1 (mouth) was chosen.

Address

Address was written.

Greetings

Greeting was written.

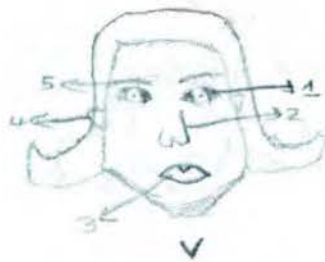
Reason for choosing the number as favourite

The learner said she/ he liked mouth because it was beautiful.

Comments on what learner 18 tried to say

People talk about my 'mouth' word such as 'out' could be discovered which covered Research question 2 & 3, the learner knew that his mouth was beautiful. Research question 1, learner was able to number different parts of the face.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 57
Sanni'shof
2700
09-September-2008

Dear: Tabele

Am so happy to write this letter to you. am so proud to finally to have a chance to speak to you. I just wanted to tell you about my favorite number. my Number is number 1. This number is the most important number in the whole world. I really need to see, because i can't go anyway without my eyes. i would have ~~change~~ things around ~~everyway~~ i go. my eye is everything that i need. My eyes guide me everyway i go. my eyes show me the light way i should go and were should not go.

Am so glad to write ~~to~~ to you.
from your friend: Reckan
to you my friend: Tabele

ANALYSIS

Contents on the letter

'Am so happy to write this letter to you .am proud to finally to have a chance to speak to you'.

Numbers on the Picture

1(right eye), 2(nose), 3(mouth), 4(left - ear), 5(hair).

Chosen Number

Number 1 (eyes) was chosen.

Address

Address was written.

Greetings

Greeting was written.

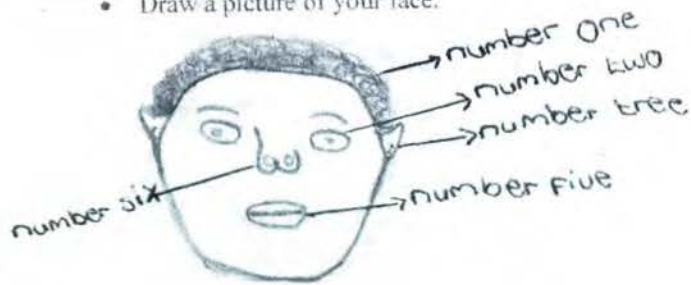
Reason for choosing the number as favourite

It was really important to the learner because she/ he would want to see.

Comments on what learner 27 tried to say

Looking into what the learner had drawn his/her drawing looked like the one of a judge president. Research question 3. Research question 1, the learner was able to use numbers to label parts of the face. Research question 2, this learner knew that with his/her eyes he/she would be able to see.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
Sannieston 2760
4 September 2008

Dear Gloria

I Choose number two because people are spicking in my eyes
my friend I want to tell you about my number two
I like number two remember this number two friend
Love Good bye.

your Gaboosa
my Friends Gloria

ANALYSIS

Contents of the letter

'I choose number two because people are spicking in my eyes'

Numbers on the Picture

Number was written in words.

Chosen Number

Number two (2) was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

Liked number two because people were speaking about his/her eyes.

Comments on what learner 15 tried to say

'Spicking' through this word the researcher could build a word such as 'pick' that is to choose someone or something, 'sick', 'spin', 'sing', 'sign', etc., the problem that had been discovered was that, this learner wrote the word speaking the way it had been pronounced, though such a learner could not be penalized because English was not his/her mother tongue. The researcher was able to increase his or her vocabulary from what the learner had written. Research question 3, the learner was able to label each part using words this simply showed that the learner could write well though somewhere he/she could do some errors. Research question 2, able to communicate what she/he understood about numbers.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 570
Sunnyside
2760
4 September

Dear my friend

I like draw this face because people they say My eyes is bigger. And by the way I like to say have pasted this face for you. I want to tell you about people they say. I have choose that number of my face. I like to you see the L.O. = 1 & 11 & 11

ANALYSIS

Contents on the letter

'I like draw this face because people they number'.

Numbers on the Picture

1(nose), 2(left eye), 3(left ear), 4(chin), 5(mouth).

Chosen Number

Number 2 (eye) was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

Number 2 was chosen as favourite.

Comments on what learner 21 tried to say

The learner showed good communication skills of numbers. 'Thise' the learner wrote it as it was pronounced 'I' changed to 'e' it is therefore written as 'these' thus this addressed research question 4. Research question 2, the learner was able to communicate by using numbers. The implication that was discovered was that the learner was able to communicate using numbers.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear Mongolone

P.O. Box 570

Sannicshof 2760

9 September-2008

Hello my friend I am fine and how are you
I have draw my face and chose the part in my body that make me more proud
and expiece my self
My Friend these part expiece my body and I feel so confident
I talk about number 2 because number 2 is sep special to me
Im impotant to me my friend
Im so happy to write this letter
I choose number 2 because number 2 is special to me

ANALYSIS

Contents on the letter

'Hello my friend I am fine and how are you'.

Numbers on the Picture

1(nose), 2(mouth), 3(hair), 4(left - eye), 5(left - ear), 6(right - eyebrow).

Chosen Number

Number 2 (mouth) was chosen.

Address

Address was written.

Greetings

Greeting was written.

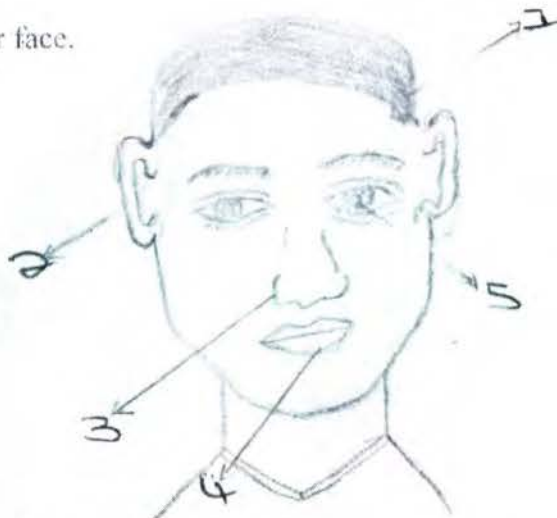
Reason for choosing the number as favourite

She /he chose number 2 because it is special to him /her.

Comments on what learner 35 tried to say

Greeting was written on top of the address. Research question 2, the learner knew how to greet well. Research 3, this learner knew the contents on the letter as well as knowledge of numbers though he/she needed to be taught where to write the greeting. Research question 1, the learner had that concept of numbers.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 5
Sannies
09 Septe

Dear: Gopolang
 first all I want to say hello and how are you?
 I talk about number 3 because number 3
 is special to me important to me my friend
 I have draw my face and choose the part
 of my body that is a special part and I
 am proud of that part The nose is because if I
 have no nose I am going to breath

Analysis

Contents on the letter

'I have draw my face and choose the part in my body that is a special part and I am proud of that part nose is because if I have no nose I am not going to breath'.

Number on the picture

1(hair), 2(ear), 3(nose), 4(mouth), 5(right - eye).

Number chosen

3(nose)

Address

Address written.

Greetings

Greetings were written

Reasons for choosing the number as favourite

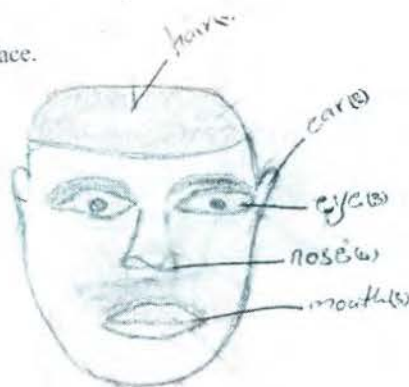
Liked the nose because he/ she is going to breath.

Comments on what the learner 1 tried to say

Nouse was written the way it is pronounced instead of the way it should be written in which the researcher could change nouse to be house or mouse to make it meaningful. Out of the comments the study to cover research question no 1, this learner was able to use the number for communication. It also covered research no2; the learner was able to give the functions of his/her favourite number. On addressing research question no3, the learner was able to communicate their knowledge that he/she used nose for breathing and the error that had been identified was that of 'nouse' that the problem arising from what the learner had written, he/she wrote nouse as it had been pronounced.

Learner 2

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.C. Box 108

Lichtenburg 2700

9 September 2008

Dear friends

~~My friend I like my mouth because I~~
~~My friend I love my number 5 and I~~

My friends I like my mouth because I spoken and I eat at my mouth so I like my mouth because mouth is very very important wen people lie at me X together I running to people I talk after I talk I eating everyone is talking at me.

Analysis

Contents on the letter

'my "friads" I like my mouth because I spoken and eat at my mouth'.

Numbers on the picture

1(hair), 2(right- ear), 3(right - eye), 4(nose), 5(mouth).

Chosen number

5(mouth).

Address

Address was written in the correct position

Greetings

Greeting was written.

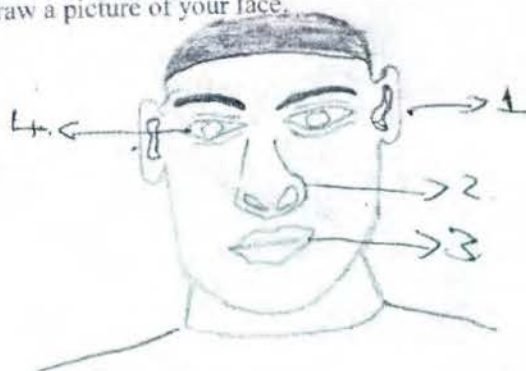
Reason for choosing the number as favourite

The learner said he/ she could be able to eat with the mouth.

Comments on what the learner 2 tried to say

The word "friads" written by the learner able the researcher to build words such as "said", "sad", "raid", to make it meaningful. The research question 4 addressed the problem of spelling erros, nevertheless because English is not the learners' mother tongue learners would always pronounce some words the way they felt comfortable to say not being aware that that was not how they had been expected to do. Research question 2 the learner was able to communicate what they knew about the number they chose because he/she said with the mouth they were able to eat. Research question number 1. the learner was able to use the number to communicate. Research question 1 this learner had been using the number on the face to communicate to his/ her friend. Research question 3 the learner was able to use the number to number different parts of the face drawing.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear my friend

Hello my friend I want to tell you with my mouth everything that I do with my mouth every day.

3. I talk with my mouth

3. I eat everything with my mouth.

3. I Chew everything with my mouth.

3. I talk with my friend and everybody with my mouth.

3. I eat the food and others goes down with my saliva to go in to Stomach.

3. I talk with him or her and others with my beautiful mouth.

ANALYSIS

Contents on the letter

Hello my friend, I want to tell you "with" my mouth everyday. I talk, eat and chew with my mouth".

Numbers on the picture

1(right-ear), 2 (Nose), 3 (Mouth), 4 (Left-eye)

Number chosen

3

Address

No address

Greetings

Greetings were written

Reason for choosing the number as favourite

Reason for choosing a favourite number was written

Comments on what learner 5 tried to say

Greetings were written correctly and in an appropriate place. Showed a reason on choosing his/her mouth. The message was clear. The preposition "I want to tell you with my mouth" that seemed as if the learner was talking face to face with his/her friend, but remembered she/he had been asked to write a letter to his/her friend so he/she was supposed to write, "I want to tell you "about" not "with" my mouth. Research question no1: learner was able to use the concept of numbers. Question no2: the learner was able to communicate well in using numbers. In question no3: the learner understood what the activity was all about.

Learner 11

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
Sammirshof
2760
4 September 2008

Daer friend

Hell my friend. I like to say hello

I love you but your theef

My friend I am very happe for you

From Kattergo I like say I Luv you because your mouth
it is boring
from kattergo

ANALYSIS

Contents on the letter

'Hell' my friend I like to say hello. I love you but 'theef'. My friend I am very 'happe' for you.

'Daer' friend.

Numbers on the Picture

1(left - eye), 2(nose), 3(mouth), 4(left- ear), 5(fore- head), 6(hair).

Chosen Number

No number chosen.

Address

Address was written.

Greetings

Greeting was written.

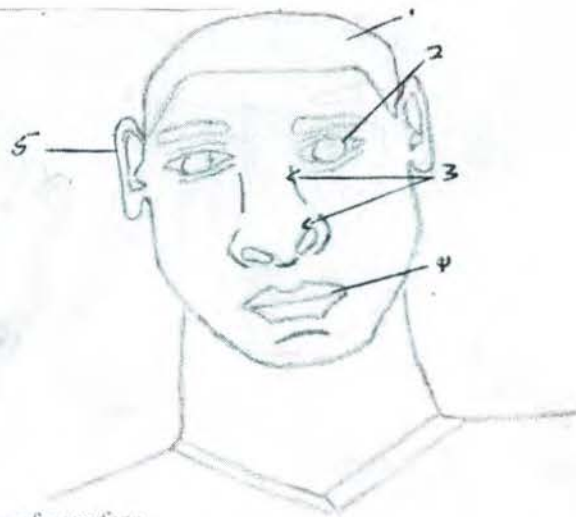
Reason for choosing the number as favourite

Love the friend because the mouth is boring.

Comments on what learner 11 tried to say

'Hell' is a mysterious language, 'theef' the researcher was hoping the learner wanted to write 'teeth'a word such as 'happe' had been identified and was changed to 'happy'.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 570
Gannieshof 2760
09 September 2008

Dear friend

I write this letter because I want to tell you my special part of my face. I select this number (3) three. Because number three without nose you can't breathe friend. If you not breathe you die.

Other parts of my face are not special to me. Because - friend you can live without teeth, and that is why I tell you other are not special.

ANALYSIS

Contents of the letter

'I write this letter 'because' I want to tell you my special part of my face'.

Numbers on the Picture

1(hair), 2(right - eye), 3(nose), 4(mouth), 5(left - ear).

Chosen Number

Number 3 (nose) was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

The learner said he/she could live without teeth but could not live without nose.

Comments on what learner 22 tried to say

'nouse' could be changed to 'nose' not written the way it had been pronounced. It could also be changed to 'house' 'mouse'. For research question 2 learner had showed the reason that one would not be able to live without nose which was the nose. Research question 3, the implication that the researcher got was that one would be able to live without teeth, but without nose no one would be able to live. Research question 1, the learner was able to number different parts of his/her face.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 510
Janneshof
2760
6 September 2008

Dear Jennie

I have say hello first. I like to have photo of mine. I wright this letter to tell you my feveret number. I now you want my photo.

I like my mouth number 3 and people like it and I'm proud of my face. People can say everything of my face this is my face not people face. Jennie you are a good friend

I now you like my face because you are my friend and you will be my friend always

Your friend
R. Jones

ANALYSIS

Contents on the letter

'I have say hello first I like to have photo of mine. I wright him letter to tell you my feveret number. I now you want my photo'.

Numbers on the Picture

1(right ear), 2(nose), 3(mouth), 4(left eye), 5(hair), 6(left - eyebrow), 7(cheek).

Chosen Number

Like number 3(mouth).

Address

Address was written.

Greetings

Greeting was written.

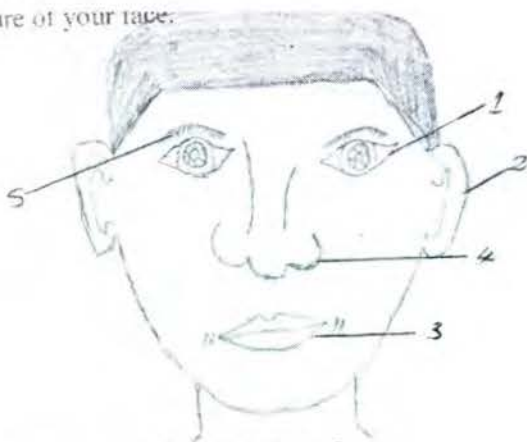
Reason for choosing the number as favourite

The learner was proud of his/ her mouth.

Comments on what learner 29 tried to say

My 'feveret' number could be changed to 'favourite' research question 3 addressed issues of spelling errors which were likely to be done by learners who used English as a second language. Research question 1, this learner was able to use numbers for different parts of the face. Research question 2, showed that the learner was able to communicate to the friend on how proud he/she was about number 3

- Draw a picture of your face:



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O BOX 570
Sannieshof 2760
09 September 2009

Dear Kcaleboga
First all I want to say hello and how are you
I am happy to write this letter to you
I have drawn my face and the part in my body that make
me more proud and express my self
My friend those parts express my body and I feel so confident
My number is 3 because my number 3 is so very spec.
and it is important to me and I eat with my mouth

ANALYSIS

Contents on the letter

'First all I want to say hello and how are you. I am happy to write this letter to you. I have drawn my face and the part in my body that makes me more proud and express myself.'

Numbers on the Picture

1(right eye), 2(right ear), 3(mouth), 4(nose), 5(left -eyebrow).

Chosen Number

Number 3 (mouth) was chosen.

Address

Address was written.

Greetings

Greeting was written.

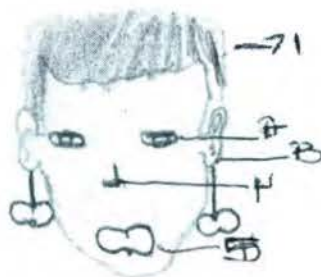
Reason for choosing the number as favourite

He/ she would be able to eat with his or her mouth.

Comments on what learner 36 tried to say

The learner feels that his/her mouth part was special, this showed to be addressing research question 3. Research question 2, the learner was able to communicate what they knew about the mouth part. Research question 1, able to number different parts of the face.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear Mamibi

Robert S.
Sanniesho
2670

I write this letter to you my friend

Mamibi write because I want to have
me in spill. I has look in my eyes. I listen
with my ears. I smell with my nose. I eat with
mouth. I nose is so beautiful. my nose is b
I am proud about my nose. my nose is b
Princess small like it

From: Sarah Kwasi

Analysis

Contents on the letter

'I write this letter to you my friend Mamiki write because I want to have seen me in spill'. 'I nose is so beautiful'.

Numbers on the picture

1(hair), 2(right - eye), 3(right - ear), 4(nose), 5(mouth).

Chosen number

No number chosen.

Address

Address written.

Greetings

Greeting was written.

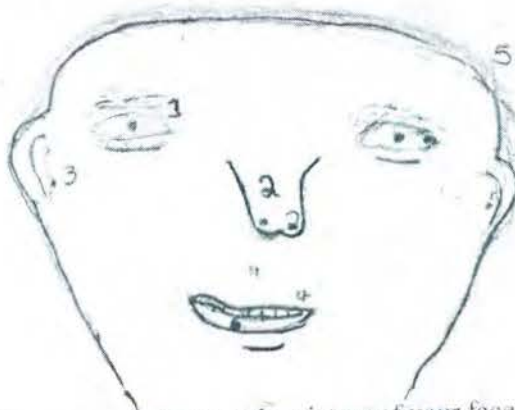
Reason for choosing the number as favourite

Said his or her nose was beautiful and proud of it because it is small and is like a princess.

Comments on what the learner 3 tried to say

From the picture that the learner was drawing one can detect that it was more about the beauty because the learner had drawn a face of a person wearing earrings. Though everything that the letter contained was there but was not orderly written as address without skipping the line. Research question 1 the learner was able to number different parts of the face. The only mistake that this learner has done was that he/she never chose a number as his/her favourite. Again the word spill was wrongly used because it totally gave different meaning of what the learner was not talking about, the word spill defined liquid which fell. The researcher had suggested that the learner could be using face to face or eye to eye. Research question 3 the implication that I got as a researcher was that this learner did not understand the task well which demanded the learner to choose the number as favourite to communicate to the friend though this learner was labeling the face.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear mpho

P.O. Box 2760

Sonnenhof 2760

06 September 2008

The first thing I want to tell is Hello my friend, I miss you so much, I want to tell you about my face, I am pleased to write you a letter, I like number 4, because its nice to me, people hate number 3, because my ears is so long, But I don't know why because its mine, and I like number 5 too, I like short hair, Because when I have short hair I feel happy to my self, I will need you my friend. Good bye.

Your friend

Libane

ANALYSIS

Contents on the letter

The first thing I want to tell is hello my friend I miss you so much, I want to tell you about my face, I am pleased to write you a letter, I like number 4 because is nice to me. People hate number 3 because my ear is so long.

Numbers on the Picture

1(left - eye), 2(nose), 3(left - ear), 4(mouth), 5(hair), 6(teeth).

Chosen Number

Number 4 was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

Like number 4 because it is nice to him/ her and people hate number 3 because his/ her ears were too big.

Comments on what learner 13 tried to say

The second last line I 'fill' seems as if the learner wanted to place something that was vacant to 'fill' the space of, nevertheless perhaps the learner wanted to express his/ her feelings to the friend instead of writing 'feel' she or he wrote 'fill', out of this a word such as 'ill' could be found. Research question 1, learner was able to use numbers to label different parts of the face. Research question 2 and 3, the learner understood why he/she chose the number as favourite.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O box 2760
Stamfords
570
04 SEPTEMBER 2008

Dear Oletilwe
I Pleased to write this letter to you
because I want to tell you that I like number 4
because I can round it off to zero
most of the people like my eyes
they say that my eyes are beautiful
because I like number 4 I can buy anything with that
number. that is all I have to say
Your Friend
Tshego Fatso

ANALYSIS

Contents on the letter

'I pleased to write this letter to you because I want to tell you that I like number 4 I can round it off to zero'.

Numbers on the Picture

1(mouth), 2(right - ear), 3(right - eyebrow), 4(left - eye), 5(hair), 6(nose).

Chosen Number

Number 4 was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

Most people like his/her eye which was number 4 and she/he can round it to zero.

Comments on what learner 16 tried to say

The learner was attached to numbers. Research question 1, learner was able to number different parts of his/her face. Research question 2, the learner had a pre- knowledge that 4 was near zero when rounded off. Research question 3, the implication that the researcher got was that the learner enjoyed working with numbers. The learner had no problem in communicating with numbers.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 570
Sannieshof 26
2670
14 September 2002

Dear Lorna

I write this letter for you. In this picture I choose the number 4 because I like all parts number 4. I like it because I see with my eyes. The name of this parts number is eyes. And I have two eyes.

Your friend
Gloria

ANALYSIS

Contents on the letter

'I write this letter for you. In this picture I choose the number 4 because I like parts number 4. I like it because I see with my eyes.'

Numbers on the Picture

1(hair), 2(fore-head), 3(left - ear), 4(left - eye), 5(nose), 6(mouth).

Chosen Number

Number 4 (eyes) was chosen.

Address

Address was written.

Greetings

Greeting was written.

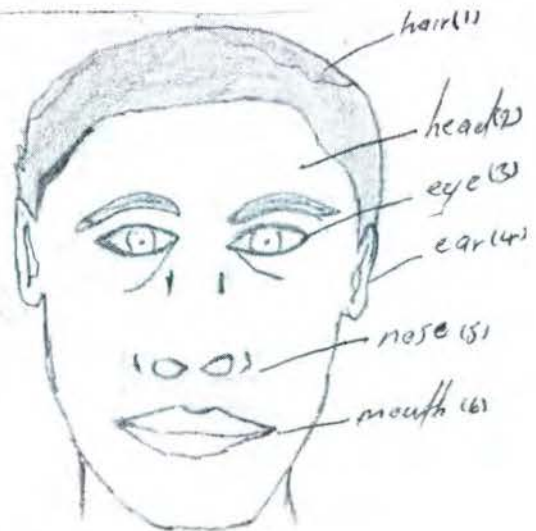
Reason for choosing the number as favourite

Chose eyes because he/she could see with the eyes.

Comments on what learner 17 tried to say

The learner was attached to the eyes. Research question 1, the learner had the concept of using numbers to number different parts of the face. Research question 2, the learner was able to communicate what she/he knew about the number by mentioning that with the eye he/she could be able to see. Research question 3, the implication that the researcher got concerning this learner was that the learner understood what he/she had been doing in the task. Research question 4, no problem had been identified.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
2760
Sannieshof
09 September 2008

Dear friends

My friends I choose number ⁴ ~~4~~. Number ⁴ is my ^{ear} and I like my ear.
With my ears I listen to everyone who talks everything about everything.
and also at school I ^{to} ~~to~~ my teachers I listen to my teachers
when they teach me. and when they tell us something I give them
attention with my ears.

ANALYSIS

Contents on the letter

'My friend I choose number 4. Number 4 is my ear and I like my ear'.

Numbers on the Picture

1(hair), 2(head), 3(right- eye), 4(right - ear), 5(nose), 6(mouth).

Chosen Number

Number 4(ears) was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

Chose number 4 because she/he could listen to his/ her teachers.

Comments on what learner 20 tried to say

The learner had shown good skills of communication though the date was not written straight to the address. Research question1, learner could number face parts. Research question 2, learner knew that he/she could use ears for listening. Research question 3, the learner was able to communicate using numbers. No problem had been identified with the learner concerning the task.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear nasego

I am very happy to write this ~~to~~ letter
I like my eyes because I see every
thing with my eyes and I see 10h with
my eyes and I like numbers

ANALYSIS

Contents on the letter

'I am very happy to write this letter I like my eyes I can see every thing'.

Numbers on the Picture

1(hair), 2(left - eyebrow), 3(left- ear), 4(right - eye), 5(nose), 6(mouth).

Chosen Number

No number chosen but the face part which was an eye was chosen.

Address

No address written.

Greetings

Greeting was written.

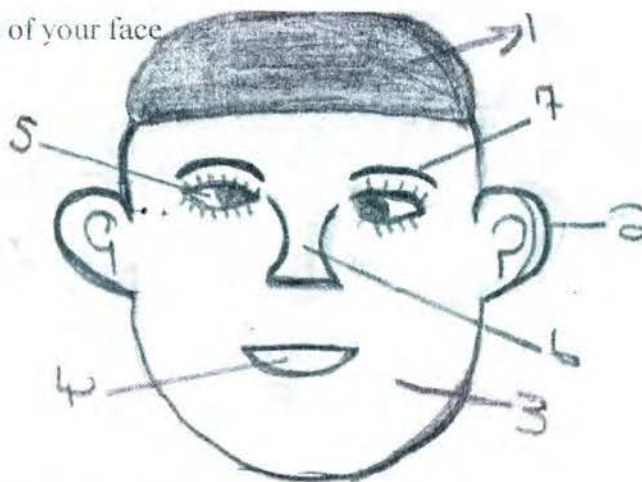
Reason for choosing the number as favourite

The reason was that he/she could see with his/her eyes.

Comments on what learner 33 tried to say

The learner was attached to the part of his/her face not the number that was the impression that the researcher got concerning this learner which addressed research question 3, research question 1, the learner was able to communicate using numbers. Research question 2, this learner communicated what she/he knew with what she/he had chosen.

- Draw a picture of your face



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O.Box 570

Sannichhof
2760

Date: 4 September 2008

Dear: Borrolo

I write this letter because I want to tell
number five because is nearest to ~~ten~~ ten an
buy anything about it because it is not the
~~ten~~ that's why I write this letter to you
forgets ~~for~~ something people also talking abo
eyes they ~~say~~ says my eyes are very big they d
~~like~~ like my eyes because its very nice
Why then

ANALYSIS

Contents on the letter

'I write this letter because I want to tell you about number five because is nearest to ten'.

Numbers on the Picture

1(hair), 2(right - ear), 3(cheeck), 4(mouth), 5(left - eye), 6(nose), 7(right - eye brow).

Chosen Number

Number 5 was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

The learner wanted to tell about number 5 because is nearest ten.

Comments on what learner 12 tried to say

The learner had good communication skills of using numbers to his/her friend. Research question 2, the learner was able to use numbers for communication. Research question1, learner was attached to numbers. Research question 3, the implication that the researcher had was that this learner had a knowledge background of numbers. No problem had been identified.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
Sannieshof
2760
9 September 2008

Dear Tshage

Hello my friend I am fine and how are you boy
I have drawn my face and chose the part in my body that makes me more proud and express my self
My friend those parts express my body and I feel so confident
And you are the real friend of my heart and I don't want to miss you boy
You are the big boy for life
You play Football and watching TV. I chose number 5 my mouth. I speak with my mouth
I chose the five part in my body that makes me beauty or feel good about myself
And I feel good for you and you feel good about me because we are to be the friend forever and ever and so

ANALYSIS

Contents on the letter

'I have drawn my face and chose the part of my body that makes me more proud and express myself'.

Numbers on the Picture

1(hair), 2(right - ear), 3(left - eye), 4(nose), 5(mouth).

Chosen Number

Number 5(mouth) was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

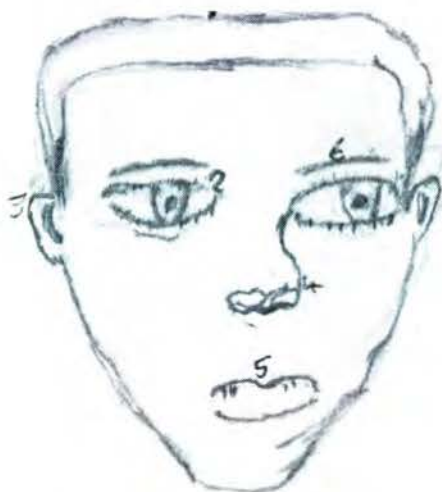
The learner chose his her mouth because he/she was able to speak with his/her mouth.

Comments on what learner 31 tried to say

Address was not written on a straight line. Research question 1, this learner was able to number different parts of the face. Research question 2, learner was able to use the number for communication, research question 3, the implication that the researcher got was that this learner knew that with his/her mouth he/she was able to speak.

Learner 9

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

1

P.O.Box: 570

Sunnyside B7.
4 September

1 Dear Siphos

My friend am very happy for the number six
because the number (6) big eyes
My friend is not happy for you eyes
Bey my friend am happy for your face.

My friend
THABO

ANALYSIS

Contents on the letter

'Bey my friend am happy to you.

Numbers on the Picture

1(hair), 2(left - eye), 3(left - ear), 4(nose), 5(mouth), 6(right - eyebrows).

Chosen Number

Number 6 (right eyebrows).

Address

Address correctly written.

Greetings

Greeting written.

Reason for choosing the number as favourite

Chose it because number 6 is big eyes.

Comments on what learner 9 tried to say

'Bey' from what the learner had could be discovered. Sometimes because of lack of concentration the learner ended up making written mistakes. Research question 2, the learner chose number 6 because she/he knew that he/she got big eyes. Research question 1 the learner was able to use numbers to show different parts of the face. Research question3 the implication that the researcher got concerning the task was that the learner needed to practice reading though he/she was able to tell why she/he chose the number as favourite.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear Friend

PO Box 2760

Sannigor

4 September 2008

I decide to draw a picture of myself and send to you

I like to tell you something about the picture of me

I decide no 6 I like it because it nearest to hand

ANALYSIS

Contents on the letter

'I decide to draw a picture of myself and send to you. I like to tell you something the picture of me.

Numbers on the Picture

1(left ear), 2(right ear), 3(left eye), 4(right eye), 5(nose), 6(mouth).

Chosen Number

Chose number 6 (mouth).

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

Liked number 6 because it is nearest to ten.

Comments on what learner 19 tried to say

The learner was attached to numbers thus research question 1. Research question 2 & 3 learner was able to communicate well using numbers.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. box 670 Sarniesha
2760
10 September 2003

Dear: Esteban David

I chose number 6 because I eat with my mouth and I speak with my mouth and I taste with my mouth

When you speak to me I speak with mouth. When you say Hi come here

You speak with your mouth it when I choose the mouth when the mouth is very important when you speak you

cannot speak without mouth when you

cannot mouth some time you are a patient or he/she

Your friend: Arianne

"Stamp"

ANALYSIS

Contents on the letter

'I chose number 6 because I eat with my mouth.'

Numbers on the Picture

1(head), 2(hair), 3(right eyebrow), 4(left eye), 5(right ear), 6(lower- lip), 7(nose), 8(upper- lip).

Chosen Number

Number 6 (mouth) was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

With hi/ her mouth the learner could be able to eat and speak.

Comments on what learner 34 tried to say

The learner was attached to the mouth part which the researcher had an impression that address research question 3. Research question 2, this learner knew that a mouth has lower and upper lips. Research question 1, this learner showed that he/she had a good concept of numbers. No problem was identified.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 570

Sonniestop

2760

Date: 4 September 2008

Dear: Rikhabising

I write this letter because I want to tell you about number 7 seven because people are talking about my eyes. People are saying my eyes are big like a frog. And people they ^{love} my eyes because they are beautiful eyes. And I love my eyes too. People tell me about my eyes every day.

Your friend

Bonito

ANALYSIS

Contents on the letter

'I write this letter because I want to tell you about number seven because people are talking about my eyes'.

Numbers on the Picture

1(mouth), 2(nose), 3(cheek), 4(hair), 5(eyebrow), 6(right - ear), 7(left - eye).

Chosen Number

Number seven was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

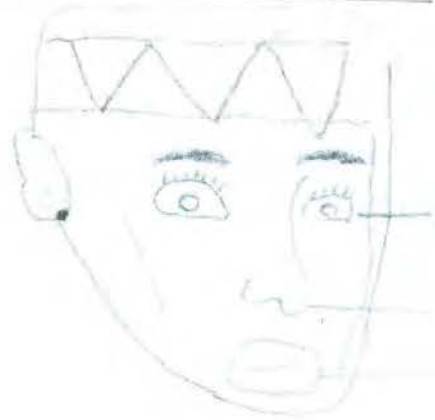
People were saying his/her eyes were big like frog and love it because they are beautiful.

Comments on what learner 14 tried to say

The learner was attached to the beauty of his/her eyes. Research question 1, the learner was able to communicate with numbers. Research question 2, the researcher was telling his her friend that he or she liked his/ her eyes because they were big and further personified the frog that his eyes were big as a frog. Research question number 3, the implication that I got was that this learner was ready for the grade 7 and had good foundation background of language and numbers.

Learner 4

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling you why you would love to have your face pasted with that number.

Bene, 570 P.O. B.

Cambridge

1 September 2008

Analysis

Contents on the letter

None.

Chosen number

No number chosen.

Address

Address was written.

Greetings

No greetings

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

01 September 2008

Dear Maggie

P.O. Box 2760
Sunnieshof

I right my friend has has
to send draw a good picture
With happing a good of
yourself and and send it lives at
home you want to send anythings
Sometime love to. Would the
from picture my friend but

ANALYSIS

Contents on the letter

"I" "right" my friend has to send draw a good picture with "happing" a good of yourself and send it lives at home you want to send anythings sometime love to. Would the from picture my friend but"

Numbers on the picture

1 (head), 2 (right eye), 3 (left ear).

Chosen number

No number chosen.

Address

Address was written in the correct position but date was written on the far right.

Greetings

Greeting was written parallel to the address

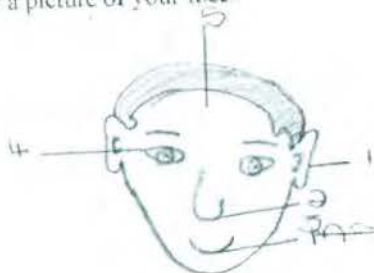
Reason for choosing the number as favourite

No reason for choosing the number.

Comments on what learner 6 tried to say

I "right" write it as if he/she was talking about the sides or directions or to the right meaning to make it correct. The learner lacked expression with what he/she wanted to say with but had shown "has shown clear writing and good drawing skills. From what I noticed looking back into research question no 1, learner knew the concept of numbers. For research question no 2, the learner could communicate but was unable to use a number as a way of communication. When looking at research question no 3, the implication that I got was that the learner did not understand what was expected of him/her to do.

- Draw a picture of your face



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
Gannifo
Gannifo
52760
11 September 2008

Dear Naledi

Hello Naledi My friend are number 3 to mound the number 2 to reamd auld the stretch are aydone to mound the nose and two thend My friend to school the tree thams they fasaa are mandar to riech ouldthem so much the soccer and remember the siraes to push.

ANALYSIS

Contents on the letter

"Hello" "Naledi" my friend are number 3 to the "mound" the number 2 to "reamd auld" the "stretch ar aydone to mound" the nose and two "thend" my friend to school the tree "thams" they "fasaa" are "mandar ouldthem" so much the soccer and "neckbool" the "siraes" to push not "broplem" the "seras" the "mesta windi".

Numbers on the Picture

1 (right-ear), 2 (Nose), 3 (Mouth), 4 (Left-eye), 5 (forehead)

Chosen Number

Number chosen (2 nose).

Address

Address written correctly.

Greetings

Greetings written parallel to the address.

Reason for choosing the number as favourite

Reason was not clear.

Comments on what learner 7 tried to say

This learner had creative skills of writing and drawing. The word " Naled" can produce many words such as 'nale', 'lead', 'deal', 'dean', the word " reamed" can be 'dream', 'read' , and ould can be 'loud' , "mound" can be 'sound', 'mud', 'mourn', "broplem," can be " problem," "seras" 'seas' 'erase', "windi" , wind', 'win'. In chapter one the researcher talked about that one aim of the study was about spelling words or numbers from forward backwards or changing words to numbers. Here many transformations and developments of words were discovered. Research question1: learner was able to use the numbers to the parts of the face. Question no 2: what the learner wanted to say was not clear. Nevertheless, the researcher was able to pick up many words to make it meaningful. Research question no 3: the implication that I got was that this learner's speech was limited.

Learner 8

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

In September 2008

P.O. Box

Sannieski

2760

4-2-08

My friend

My friend want to tell you something about my face. people like her want
to talk they about my ears. but say my ears is so big.
'Wander for what they nose me for. but she come to me to tell
me about my nose. I don't like people who gossip me.
Don't want to anyone talk to people who always shouting
if shouting I will fighting with them. I will tell
don't one talk to me if she talk she must not
talk about my nose.

ANALYSIS

Contents on the letter

My friend want to tell you something about my face people him/ her want to talk they about my hears, but they say my hears is so big.

Numbers on the Picture

1(mouth), 2(nose), 3(right - ear), 4(right - eye), 5(hair).

Chosen Number

No number chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

Reason was not clear.

Comments on what learner 8 tried to say

Spacing of the address was not correctly placed especially the date. Word such as 'hears' is unusual though some words could be built upon it. One may assume that the learner wanted to write 'ears', words such as 'share' could be built or 'shear'. Research question 1 this learner was able to use numbers to label different parts of his/ her face drawing. The learner was unable to use the number for communication

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

My friend I want to tell you
Dear Ned I want to tell you something But to mouth to mouth
I love number because are nearest zero
because love number
People are Bob because my friend is not happy
with me

P.O. Box 570
Sonoma 94960
September

ANALYSIS

Contents on the letter

My friend I want to tell you something but 'to mouth to mouth'.

Numbers on the Picture

No number was written on the picture.

Chosen Number

No number chosen.

Address

Address written.

Greetings

Greeting was written.

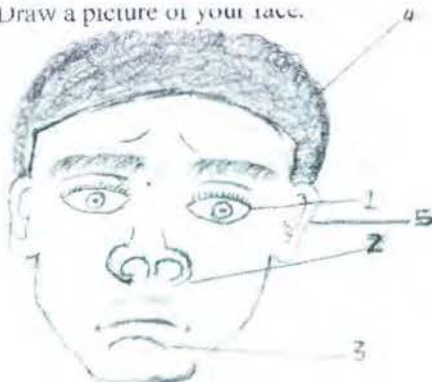
Reason for choosing the number as favourite

The number that was not chosen which the learner loved was nearest zero.

Comments on what learner 10 tried to say

The address was parallel to the greeting. The face was not numbered. This showed that this learner did not understand the task.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

4 September 2008

P.O. Box

Sonnieshof

2760

4 September 2008

My Friend you like My Mouth. I am ~~Stay~~ ^{Staying} Deelpan
 My NAME is ~~Hani~~ ^{Hani} ~~and your eye~~ My eye is
 beat Full and My Nose.
 My ~~pic~~ Face is beat Full.
 Friend My Friend War ave beat Full.

ANALYSIS

Contents on the letter

'My friend you like my mouth I am stay Deelpan'.

Numbers on the Picture

1(right eye), 2(nose), 3(mouth), 4(hair), 5(right ear).

Chosen Number

An eye was chosen which was written number 1.

Address

Address was written.

Greetings

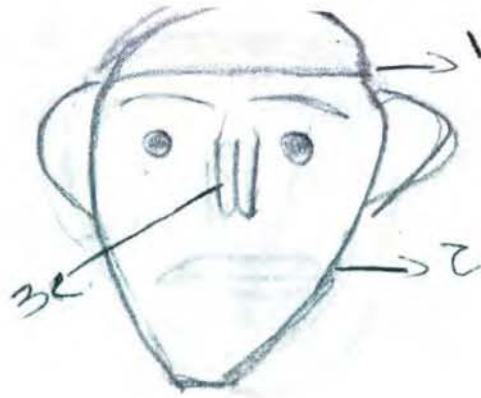
No greeting was written.

Reason for choosing the number as favourite

Chose eyes because it was beautiful.

Comments on what learner 23 tried to say

No greeting. No clear favourite number was written. Research question 1 the learner was able to use numbers to different parts of the face. Research question 2 addressed issues of beauty which the learner displayed to his/her friend. Research question 3, the learner had a knowledge of beauty.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear Makwane

P.O. box 2
Gannies

I right a letter with happiness my friend.
and I want to tell you some about me. most people
they are talking with my hate but I don't
know why they are talking with my hate.
and I love my hate ~~is~~ much. and most people
they are saying your nose is not right
but me I said why you saying that
with my nose. but me I say my nose is right. and I
and they say sorry your mouth is right. and is
what are you talking. I know you talk with my mouth
why say you say my mouth is right. Thank you
my nose mouth is very very be sharp

ANALYSIS

Contents on the letter

'I right a letter with happienes my friend and I want to tell you some about me'.

Numbers on the Picture

1(hair), 2(cheek), 3(nose).

Chosen Number

No number chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

No reason for choosing the number.

Comments on what learner 24 tried to say

Address was not properly written and laid on the same par with greeting. Research question 1, the learner was unable to use the concept of numbers. Research question 2, there was nothing that the researcher could talk about the learner. Research question 3, the implication that the researcher got was that there was no good foundation laid to this learner with respect to numbers and language.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O B0570
Sanni
Sapto
3/9/2008

P De va Tshwari

The paeple seple in males

Ma friend a like to say for my friend

and I choose num ber (6)

becowse it is important to to

me my friend. My friend I love this

Write le tter to go

ANALYSIS

Contents on the letter

'The paeple seple in males mafriend a like to say for my friend and I choose number 6.'

Numbers on the Picture

1(right- ear), 2(right - eye), 3(mouth), 4(hair).

Chosen Number

Number 6 was chosen.

Address

Address was written.

Greetings

Greeting was written.

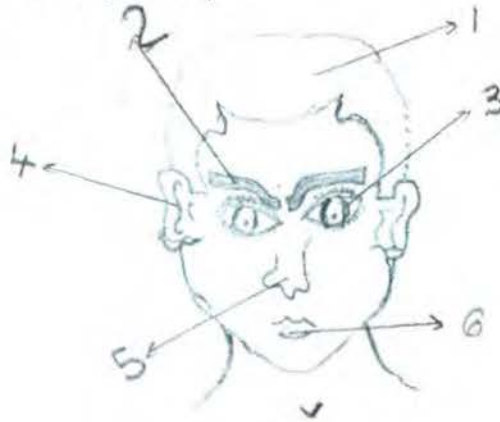
Reason for choosing the number as favourite

He/ she chose number 6 because it was important to him/her.

Comments on what learner 25 tried to say

Looking into the word 'paepel' the researcher could find a word like 'people'. The number 6 was not written therefore it was the unknown number.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

① ~~Put~~ Dear my friend

② My ears I can hear you talk. I can see far away
I can see you talk with my mouth. I can breathe with my mouth.

ANALYSIS

Contents on the letter

'my ears I can hear you talk. I can see faraway'.

Numbers on the Picture

1(hair), 2(left eyebrow), 3(right eye), 4(left ear), 5(nose), 6(mouth).

Chosen Number

No number chosen

Address

No address

Greetings

No greeting.

Reason for choosing the number as favourite

Seemingly the learner was attached to his/her mouth though he/she never showed which number she/he favoured but his/her point had been stressed upon the mouth to use it for talking and breathing.

Comments on what learner 26 tried to say

The functions of the face parts *were* known by this learner and showed a detachment from numbers. The learner showed personal detachment to body parts "objectification or partification". My ears I can "liesine" compartmentalize "lie" "sine" normally sine was used in trigonometry the learner wanted to write listen but wrote 'liesine'. That made sense when separated, not when connected to increase communication skills in order to boost this learner's esteem. Research question 1: the learner was able to use a number in pointing out parts of the face. On research question 2: that showed that this learner knew the function of each part. Question no 3: the learner was trying to write the way she/he heard how words were being pronounced.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dava Tshipo
my friends
First Ie to say fi my
Choose

Box 570

Sanni & Shof

September

ANALYSIS

Contents on the letter

'first Ie to sey fi my choose'.

Numbers on the Picture

No number written.

Chosen Number

No number chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

No reason was given.

Comments on what learner 28 tried to say

'Dera' Tshepo could be changed to 'Dear' Tshepo. Address was not written at the correct place. Research question 1, this learner had no background on the concept of numbers. Research question 2, the learner was unable to show how to communicate their prior knowledge. Research question 3, the implication that the researcher got was this learner had no proper foundations to enable him/her to communicate about the knowledge of numbers.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
Sanniestown
2760
4 September 20

Dear Friend

I like to choose number 5 because people like to talk about my head and I like my head because I can concentrate some thing. My friend I write this letter to you to tell you about the number that I choose into my face. My friend you are so special to me. I think you will enjoy the number that I have tell you about that because I think you we will enjoy it. I like to say friend I need you so come with to tell you about the Raining of I
Your Friend
Thabele

ANALYSIS

Contents on the letter

'I like to choose number 5 because people like to talk about my head'.

Chosen Number

1(left eye), 2(right ear), 3(nose), 4(mouth), 5(fore- head), 6(right-eyebrow).

Address

Address was written.

Greetings

Greeting was written.

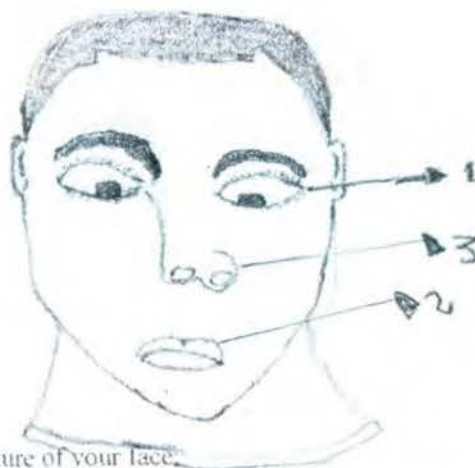
Reason for choosing the number as favourite

Liked number 5 (fore head) because he/ she could use it for concentration.

Comments on what learner 30 tried to say

The face drawing looked like the one of the matured African person. The learner could also show an attachment of numbers supported by pre- knowledge which addressed research questions 1, 2 & 3.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 570
Sunnyside
2760
9 September 2008

Dear neatebaga

my friend my eyes is nice, my mouth is nice,
~~and~~ my nose is nice and my nek is nice
my drawing a picture in my face is nice
~~some~~ my drawing is clean and my face is nice
I chose number 2 because is clean and is nice
~~I eat my mouth~~ I eat with my mouth

your friend
Tebano

ANALYSIS

Contents on the letter

'My friend my eyes is nice, my mouth is nice, my nose is nice, my nek is nice, my drawing in my picture is nice'.

Numbers on the Picture

1(right - eye), 2(mouth), 3(nose).

Number 2 (mouth) was chosen.

Address

Address was written.

Greetings

Greeting was written.

Reason for choosing the number as favourite

The reason that the learner chose number 2 was that his/ her mouth was clean and fresh.

Comments on what learner 32 tried to say

The learner is attached to every part of his/her face thus research question number 3. Research question 1, the learner was able to label different parts of the face. Research question 2, the learner had reasons why he/she chose to communicate with his/her friend about the number. Grammar is a problem.

4.4. ANALYSIS DONE UNDER THE WRITING OF LEARNERS WORK

Learners were given opportunities to make their own choice by selecting their favourite number and to share their choice of number with friends through a letter.

Language is invisible, but can be made visible by using illustrative structures, models, etc. For instance the word "face" is invisible, but when learners draw the "face", that is when things become visible, such visual structure is the activity given to learners to use numbers instead of words in which some learners become interested. The use of words- to- numbers or numbers - to -words becomes easier. For example the word "ears", e=5, a=1, r=18, s=19 so the number will be written as the first phase of the study and the learners responses were outlined in chapter 3. Numbers were generated based on the position of letters in the alphabetic list.

In the second encounter, when learners saw numbers, they worked more quickly as they associated them with the subject (Mathematics) as long as they understood what is expected of them. When using words to numbers such as phrases to numbers, they first think and construct their knowledge to make sense of the problem because they could not think in the language of learning and teaching (LOLT).

Lastly, when learners realized that Mathematics and Language were inseparable, they strived to learn both Mathematics and the Language to solve Mathematics problems.

4.5. SUMMARY

The focus of the chapter is on the presentation and analyses of learners responses. The following chapter discusses on the findings, discussions as well as recommendation.

CHAPTER 5

FINDINGS, DISCUSSIONS, RECOMMENDATIONS

5.1 INTRODUCTION

This chapter focused on the research findings, discussions and recommendations drawn in this study towards the improvement of language usage during Mathematics teaching and learning.

The curriculum emphasized that teachers were expected to be innovative and encouraged cooperative teaching and learning as well as learners' active participation so that learners should not think that Mathematics is a difficult subject, the researcher used different strategies of teaching and learning to show that there was nothing impossible to be achieved. The researcher therefore developed learners' enthusiasm and interest in learning Mathematics. Therefore, learners were encouraged to interact with each other using language and numbers as a way of communication where they were able to express themselves and share the information that they had with each other.

5.2. FINDINGS OF THE STUDY

The findings in this study showed that learners were able to express themselves using artistic ways as well as language for communication; it also revealed that learners were attached to numbers as well. Learners were able to point out from the face one part to indicate their favourite number and also explained why they had chosen that number as their favourite, while some were unable to express themselves.

Research Question 1: What Mathematics do grade 7 learners know in relation to concepts of number?

Personal attachments to what was introduced in the task required learners to draw a face, and number parts of the face, then chose a favourite number and tell a friend why they had chosen that number. Findings of the research question1 were connected to Van Hiele's level one (Feza & Webb, 2005:37).

Visualization

Learners were able to use visual art of their faces as an expression for communication in which language was also used.

Finding no 1: Numbers are visual language represented by symbols. Learning Mathematics through Language involves training the mind where learners will think about words used which were composite sounds. However Language uses alphabets to represent a collections of elements of sound and these alphabets form a connection with numbers. For example: $a = 1$,

b= 2, c= 3 etc. (see example on palindromic page 24 paragraph 2) following the objective use of this study learners were made aware that each letter in the alphabet has got its own position when converted to numbers. This showed that there was a connection between language and numbers which were used as a means of communication.

Finding no 2: When new words were introduced, a new concept would be learned such as objectification, partification, visible, etc. Some names were devoid of any relationship to their meaning like “error”, “eras”: this could be seen when learners were unable to write the correct spelling. In this study, the researcher found that some of the learners were unable to express themselves whereas others could. Though learners were not restricted to use English they were also allowed to use the language that would make them comfortable to communicate with numbers.

Finding no 3: When doing Mathematics, we need to pay close attention to how terms and concepts of words and numbers are used and in what situations. For instance “opposite, volume, even” means different things depending on the situation, whether in Mathematics or Language. This whole idea is about contextualization or recontextualizations which can be elaborated Mathematically; ‘even’ as numbers, ‘volume’ as measurement,

Research Question 2: To what extent are these learners able to communicate what they know about number?

Looking back to the activity, learners were given an opportunity to communicate using language and numbers. Some of the learners were able to use numbers to express their feelings and tell why they had chosen the number i.e. function of that part chosen was clarified while others could not. For instance learner 34 was able to use numbers to different parts of the face as the task required them to do, chosen his/her favourite number, name the part and gave its function. While on the other hand learner 28 was unable to express him/herself using numbers to communicate.

Knowledge seemed to be the power in Mathematics which involves “reasoning, solving problems, and connecting Mathematical ideas”. Writing a letter was an indication that learners knew why they chose numbers as favourites. Reasoning refers to the capacity to think logically about the relationships between concepts and situations to develop adaptive reasoning where learners need to be given opportunities to practice how to communicate during Mathematics (National Research Council (NRC), 2001:129)). With the skills they had, they showed their creativity in their drawings. Connection between how they saw and how they learnt might

prompt them to examine and test what they perceived in the world around them when they were communicating with the other friends using numbers.

Informal Deduction

The researcher had made learners aware that language and numbers cannot be separated and every daily activity required language as well as numbers for communication. For example buying and selling of goods where learners were sellers and other learners' buyers which include counting.

Formal Deduction

The improvement of learners learning of Mathematics depends on skillful teaching and also on the capability of teachers which requires justification and definition. Knowing Mathematics for teaching entails more than knowing for oneself how to unpack ideas (Ball, 2003:1).

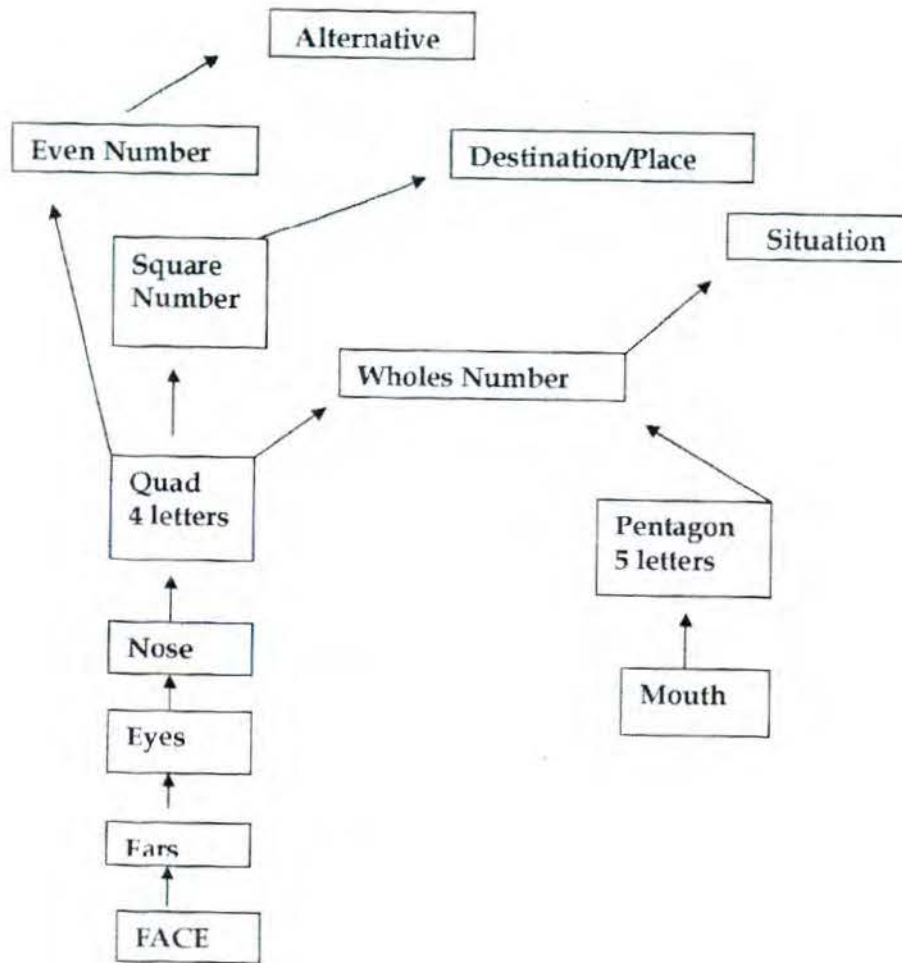
From the fact that learners were able to recognize the function of each part of the face, the researcher realized that learners were once taught about the functions of different parts of the face that was why they were able to share that information with others.

Finding no 1: Language is invisible, but can be made visible by illustrative structures, models etc. For instance the word "face" is invisible, but when learners draw it, it becomes visible through visual structure.

Finding no 2: The curriculum encouraged innovative thinking. From this study the use of words and numbers were the main interest as the researcher wanted to make learners aware that they could be used for communication in order to make Mathematics interesting. The word "face" from their activity has four letters and four is a perfect square, whole number, even number and is also called a "quad" (see figure 3).

Finding no 3: The figure 1 below showed how the researcher had objectified the word "FACE" with its parts to make a connection between things, so that other people who read this document would be able to understand this adoption of Face Map Work. When learners counted the letters from the word 'FACE' they realized that the word was composed of four letters (see fig 3).

Figure 4: Different of the Face Map Work



Finding no 4: since OBE and NCS encourage a teacher to be innovative, and learners to take full participation in the learning environment, whatever I am doing in class should be visible to learners when words and numbers are used. For example: "FACE" contains four letters, a polygon with four sides is called a quad, this quad can be a whole number, even number, square number, which can also represent a situation, destination and also alternative, same as "NOSE" with four letters.

Research Question no 3: What can we learn about teaching from what learners demonstrate about what they know and are able to communicate about the Mathematics involved with number?

The task given to the learners matched their level of thinking as they seemed to participate fully though some of the learners had a problem but showed their capability of drawing and in using numbers. Learner 16 participated fully and had showed his/her attachment in numbers that the number she/he chose when rounded off to the nearest ten is equal to zero whereas learner 25 actually what she/he wanted to say was not clear though one could noticed the capability of using numbers in pointing different parts of the face.

Rigour

The study showed that the researcher used different strategies to develop learners' skills and interest to communicate with numbers. That is why the researcher had to encourage learners to interact with each other. By so doing, learners were able to learn from each other.

Finding no 1: The findings of the study revealed that language and numbers play a significant role in our lives and that learners' enthusiasm in using numbers seemed to arouse their interest to do more Mathematics tasks.

Finding no 2: The task given seemed to cover seven learning areas. These were Economics and Management Science; Language; Numeracy; Natural Science; Art and Culture; Social Science and Technology.

Finding no 3: In supporting finding no 2, numbers are used in the daily life of the learners which involves counting and requires language and art as an expression of feelings for communication. This could also be used in Economics and Management Science "money and language either spoken or sign language" to communicate the price of the object. Science is also included to measure the dosage of medicine using a number. Technology is included by making use of pen and paper to write. One subject shows one's level of creativity i.e. face drawing, and Social Sciences communicate ideas and promote a sense of sharing and responsibility.

Finding no 4: Creative individuals are described as having a greater degree of personal openness for self-evaluation. Therefore, learners should be given enough time and opportunity to learn, think, and discover by practicing and teachers must accept learners' errors as part of a creative and learning process.

5.3 SUMMARY

As highlighted in the previous Chapters and under goals and objectives of this study formed part of the discussion with the supporting literature review. The study was exploratory in nature and learners were encouraged to communicate what they know during Mathematics lessons. the topic brought a concern from the researcher to conduct such a study and to also try to explore ways on how to develop other fascinating strategies that made learners to and in communicate with numbers.

The lesson plan drawn was also the plan of action to make the researcher aware of what should be done concerning the lessons.

The main aim of the task which was used for data collection was not about checking for learners' mistakes but to improve communication skills and develop positive attitudes in learners to enjoy working with numbers. Nevertheless though learners made errors, the researcher was able to build words from the errors that learners had made to make it meaningful as English is not their mother tongue. Writing in Mathematics can also help learners to consolidate their thoughts because it requires them to reflect on their work and to clarify their thoughts about the ideas developed in the lesson (NCTM, 2000:60).

5.4 DISCUSSION

In the past the system of Education used to be based on the teacher centred approach where the teacher becomes the source of information. South Africa obtained a democratic government in 1994, the system changed to be based on Outcomes Based Education dealing with critical outcomes and performance indicators which also encouraged full learner participation and supported that a learner must search for information by him or herself. This was a problem to teachers especially those that were teaching in the rural schools where facilities of obtaining information, such as computers and libraries were neither at schools nor in the village Deelpan. The curriculum was revised later due to the fact that teachers were complaining that they had never been trained in the way the Department of Education expected teachers ought to implement the curriculum on research.

The constant changes in the curriculum have given problems to teachers. The Department of Education has become involved with a programme called Foundations for Learning launched by Campaign called Quality, Improvement, Development, Support, & Upliftment, Programme (QIDS – UP),(DoE, 2009).

This programme aims to give support to schools, teachers and learners to improve skills and knowledge in literacy and numeracy. The programme tries to address the concerns of teachers

in the senior phase, who found that many learners were unable to read, write and count, even after six years of schooling.

The foundation and intermediate phases are to be strengthened by including a daily reading period for the last 10 minutes of the school day and by doubling the number of mathematics periods.

5.5 RECOMMENDATIONS

Language and numbers play a significant role in daily life of learners' activity; therefore learners need to be taught literacy and numeracy at the foundation phase. Recommendations have been incorporated with respect to the research questions in this study in the following manner:

Research Question no 1: What Mathematics do grade 7 learners know in relation to concepts of number?

- If teachers could emphasize more on language in their teaching of Mathematics by guiding and encouraging learners to work with numbers, then learners would be able to communicate freely with others using numbers.

Research Question no 2: To what extent were these learners able to communicate what they know about numbers?

- Looking into the task given to learners, they actually showed interest in using numbers to communicate, while the researcher tried to promote cooperative learning in order to instill learners' interest of sharing and communication thereby using numbers to express themselves.

Research Question no 3: What could we learn about teaching from what learners' demonstrated about what they know and were able to communicate about the Mathematics involved with numbers?

- Using different strategies in the teaching and learning of Mathematics required communication which entails language either spoken or sign language thereby numbers written showed signs and that learners and that learners were able to use numbers to communicate what they know when they made a choice about numbers .

5. 6 SUGGESTIONS FOR FURTHER RESEARCH

Brand, (2009) in the analysis of grade 12 learners' results showed how schools had been targeted as trapped schools. It was not that schools were poorly performed in all the subjects but were trapped due to poor performance of Science and Mathematics.

The analysis of grade 12 learners results collected for 2009 by the researcher showed the performance of learners. For an example of one of the trapped schools (Badibana Secondary School) from a village Deelpan in the Dr. Ruth Segomotsi Mompati District was sampled by the researcher as her interest on investigating the causes that made learners results of Mathematics to drop (*see APPENDIX 8*). The relevance being what should be done to arouse learners' enthusiasm to work with numbers and with a great understanding of Mathematical language usage.

5.7 CONCLUSION

From the data analysis, the study revealed that most learners could communicate well using numbers and were able to give different reasons for choosing the number although a few were unable to use numbers nor reasons, but did show skills of drawing. This study was so important in the sense that it encouraged learners to read, speak and write so as to improve their communication skills in Mathematics.

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APPENDIX 1

PRIVATE BAG 670

MMABATHO

2735

18 AUGUST 2008

DEPARTMENT OF EDUCATION

NORTH WEST PROVINCE

Dear Sir / Madam

Re: Request to conduct a pilot study at one of the School in your Area Project Office for my Masters Degree in Education.

Topic: An exploratory study on applying OBE and NCS to teach and learn mathematics through language in Grade 7 in a rural primary school (Deelpa).

I the undersigned, hereby request your permission to pilot my study with Grade Seven learners. The lesson will cover ninety minutes. I am intending to perform it on 29 August 2008.

Your consideration in this matter will be highly appreciated.

Yours faithfully

LOLO FLORENCE MOKGOMO

SIGNATURE:

APPENDIX 2
LETTER OF APPROVAL

PRIVATE BAG 670

MMABATHO

2735

18 AUGUST 2008

DEPARTMENT OF EDUCATION
NORTH WEST PROVINCE

Dear Sir / Madam

Re: Request to conduct a pilot study at one of the school in your area project office for Masters Degree in Mathematics Education.

Topic: An exploratory study on applying OBE and NCS to teach and learn mathematics through language in grade 7 rural primary school (Deelpan).

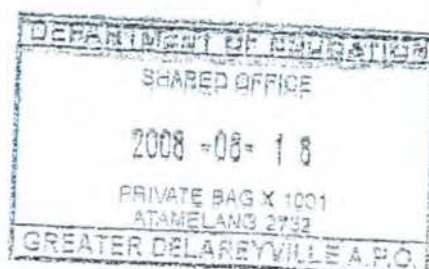
I the undersigned hereby request your permission to pilot my study to grade seven learners as the lesson will cover ninety minutes of which I am intending to perform it on 29 August 2008.

Your consideration in this matter will be highly appreciated.

Yours faithfully

LOLO FLORENCE MOKGOMO

SIGNATURE: 



AREA
M.S. MANAGER.
NGIPHA
APPROVED

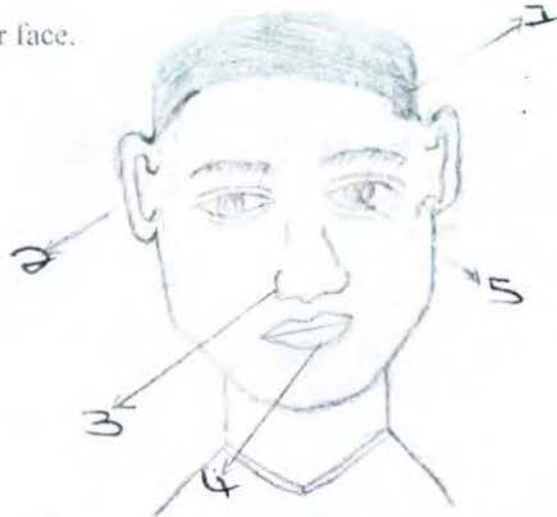
APPENDIX 3

RESPONSES ACCORDING TO THE NUMBER CHOSEN

Figure 3: Different Faces

Learner 1

- Draw a picture of your face.

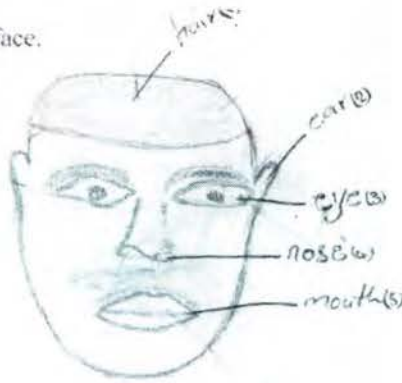


- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 5
Sannies
09 Septe

Dear? Ciopolang
first all I want^{to} say hello and how are you?
I talk about number 3 because number 3
Special to me important to me my fr
I have draw my face and choose the part
my body that is a special part and I
of that part The nose^{is} because I
nose I am going to breath

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 108

Lichtenburg 2760

4 September 2008

Dear: friends

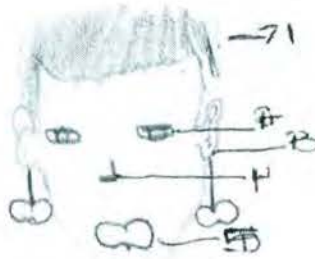
~~My friend I like my mouth because I~~

~~My friend I love my number 1 and I~~

my friends I like my mouth because I spoken and I eat at my mo
mouth so I like my mouth because mouth is very very important
wen people lie at me & together I running to people I take after I
talk & eating everyone is totalking at me.

Learner 3

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear Mamibi

Robert 57
Stannieshof
2670

I write this letter to you my friend

Mamibi write because I want to have a
me in spili. I has look in my eyes. I listen ra
with my ears. I smell with my nose. I eat with
mouth. I nose is so beautiful. my nose is be
I am proud about my nose. my nose is li
Princess small like it

From: Sarah D. Hosi

Learner 4

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling you why you would love to have your face pasted with that number.

Base Skin Paper

Base Skin Paper

Base Skin Paper

Learner 5

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear my friend

Hello my friend I want to tell you with my mouth everything that I do with my mouth every day.

3. I talk with my mouth.
3. I eat everything with my mouth.
3. I chew everything with my mouth.
3. I talk with my friend and everybody with my mouth.
3. I eat the food and others goes down with my saliva to go in to stomach.
3. I talk with him or her and others with my beautiful mouth.

Learner 6

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

01 September 2008

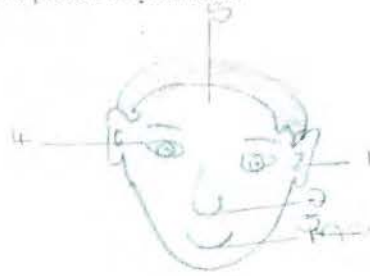
Dear Magoje

P.O. Box 2760
Sonniestraf

I right my friend has
to send draw a good picture
With happing a good of
yourself and and send it lives at
home you want to send anythings
Sometime love to. Would the
from picture my friend but

Learner 7

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570

Gerrits
Gerrits

5760

11 September 2008

Dear Naledi,

Hi Naledi my friend are number 5 to
around the number 2 is around and the
three are my friends to around the
nose and two around my friend to school
the are there they are are around
to reach out them so much the soccer
and remember the girls to push.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

1st September 2008

p.c. Be

Sanniemi

2nd

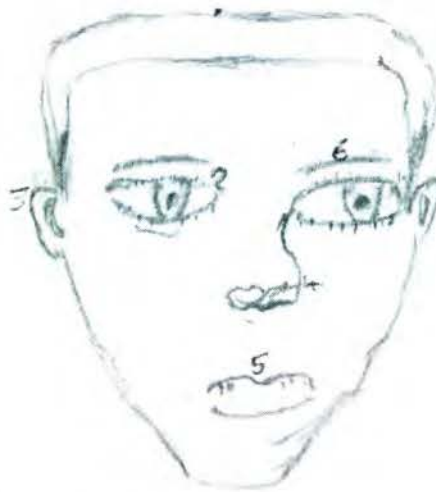
1st - 0.5

1st - 0.5

I would want to tell you something about my face people know/see want
to talk they about my ears. but say my ears are so big.
'Warden' so what they can see me but she come to me to tell
me about my nose. I don't like people who gossip me.
I don't want for anyone can see people who always shouting
if shouting will fight me with them. I will tell
don't one talk talk to me if she talk she must not
talk about my nose.

Learner 9

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box: 570
Sarnesburg B7
4 September

Dear Siphos

My friend am very happy for the number six
because the number (6) big eyes
My friend is not happy for you eyes
Bey, My friend am happy for you face

My friend
THABO

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

My friend I want to tell you

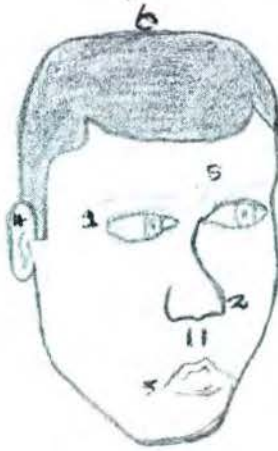
My friend I want to tell you something But to make it more
 I want number because the number is 2760
 because, 1000, number
 People are 2000 because my friend is not happy
 with me.

P.O Box 270

Sonnenhof 2760

September

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
Sannivāher
2760
4 September 2008

Dear friend

Hello my friend. I like to say hello

I love you but you're there

My friend I am very happy for you

From Katterjo I like say I Love you because your mouth
is it is boring
from Katterjo

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570

Sanniesthof

2760

Date: 4 September 2009

Dear Borrolo

I write this letter because I want to tell
 number five because is nearest to ~~ten~~ ten and
 buy anything about it because it is not two
~~ten~~ that's why I write this letter to you
 forgets ~~for~~ something people also talking about
 eyes they says my eyes are very big they do
~~like~~ like my eyes because its very nice
 With love

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear mpho

PO BOX 2760

Springer 2760

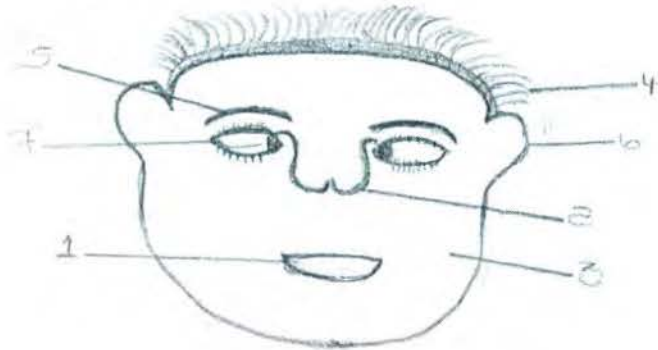
06 September 2008

The first thing I want to tell is how my friend miss you so much, I want to tell you about my face. I am going to write you a letter, I like number 4, because it's nice to me, people hate number 3, because my ears is so long, but I don't know why. Because it's mine, and I like number 5 too, I like short hair, because when I have short hair I am happy to my self, I will need you my friend. Good bye.

Your friend

LiBama

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 570

Sannieshof

2760

Date: 4 September 2008

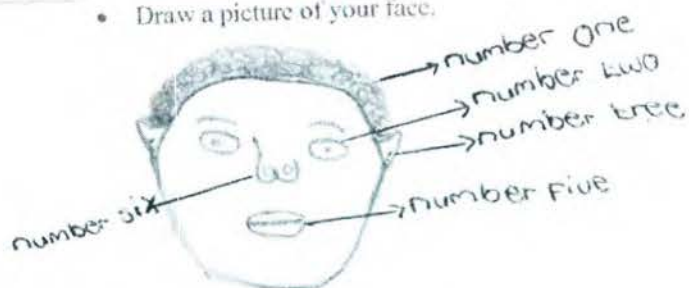
Dear Nthabiseng

I write this letter because I want to tell you about number 7-seven. because people are talking about my eyes. People are saying my eyes are big like a frog. And people they ~~love~~ ^{I love} my eyes, because they are beautiful eyes. And I love my eyes too. People tell me about my eyes every day.

Your friend

Bonolo

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
Sarnieshof 2760
4 September 2008

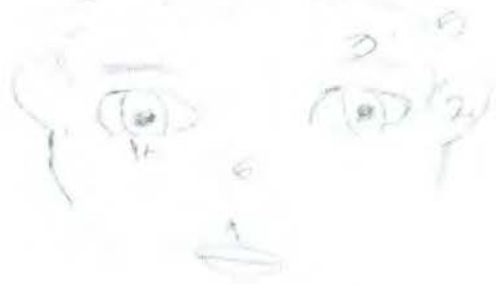
Dear Gloria

I Choose number two because people are spicking in my eyes
my friend I want to tell you about my number two
I like number two remember this number two friend

Love Good bye.

your Gaboese
my Friends Gloria

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O BOX 2.760

STANNISHOE

570

04 SEPTEMBER 2008

Dear Olatunwa

I Pleased to write this letter to you
because I want to tell you that I like number 12
because I can sound it off to zero
most of the people like my eyes
they say that my eyes are beautiful
because I like number 12 I can buy anything with that
number, that is all I have to say

Your Friend
Tsthegofalso

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
 Sannieshof 26
 3670
 14 September 2007

Dear Lorna

I write this letter for you. In this picture I change the number 4 because I like my parts number 4. I like it because I see with my eyes. The name of this parts number is eyes. And I have two eyes.

Your friend
 Chloë

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. box 570

Formosa

2760

16 September 2000

Dear my friend

Hi! I am 12 years old.

I want to tell you the number of my face. The number 1 because people always say "My mouth is not like yours" or "My mouth is very beautiful". My friends always say "My mouth is very beautiful". I like my mouth because people always say "My mouth is very beautiful".

Some people say "My mouth is not like yours" and I like number 1 because it is beautiful. I like my mouth very much. I like my mouth because it is beautiful. I like my mouth because it is beautiful. I like my mouth because it is beautiful.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear Friend

PO Box 2760

Sannisor

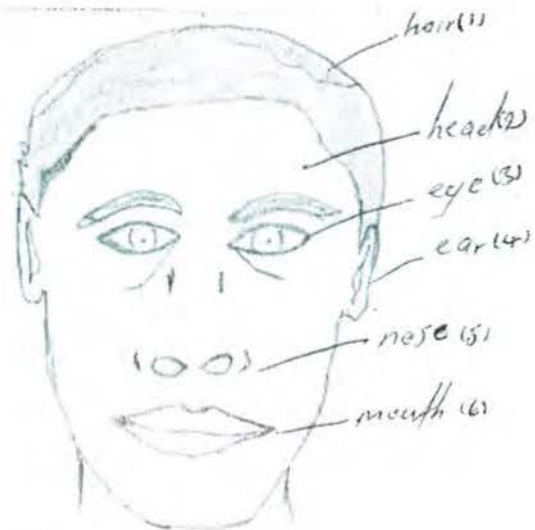
4 September 2003

I decide to draw a picture of myself and send to you

I like to tell you something about the picture ^{name} ^{Len}

I decide no ⁶ I like it because it nearest to ^{hand}

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
2760
Sagres
09 September 2008

Dear friends
My friends I choose number ⁴ ~~1~~. Number ⁴ is my ^{ear} and I like my ear.
with my ears I listen to everyone who talks everything about everything.
and also at ~~the~~ school I ~~to~~ ^{to} my ~~to~~ teachers I listen to my teachers
when they teach me. and when they tell us something I give them
attention with my ears.

- Draw a picture of your face.



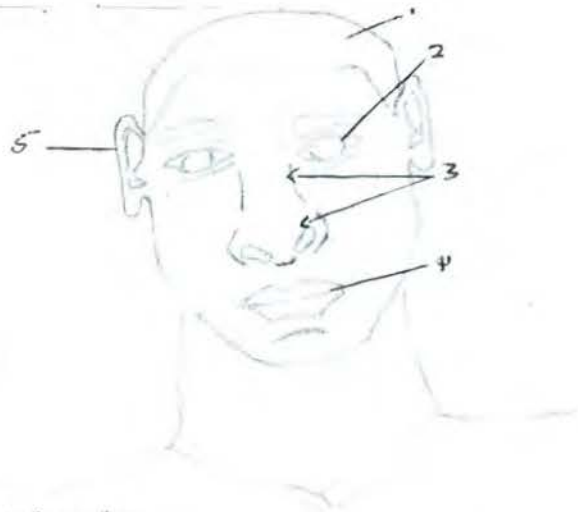
- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
 Samarkand
 2760
 2 September

Dear my friend

I like show this face ^{because} people they ^{number} say the eyes is bigger. And by the
 My I like to say have pasted this face for you I want to tell you
 about people they say. I have choose that number of my face. I like to
 you see the 1, 2, 3, 4, 5, 6

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

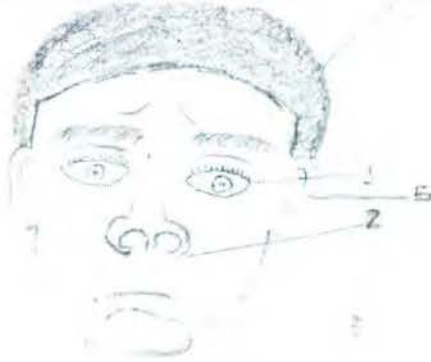
P.O. Box 570
 Samia of 2760
 09 September 2008

Dear friend

I write this letter because I want to tell you my special part of my face. I select this number (3) three. Because number three without nose you can't breathe, friend. If you not breathe you die.

Other parts of my face are not special to me. Because - friend you can live without teeth, and that is why I tell you other are not special.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

4 September 2008

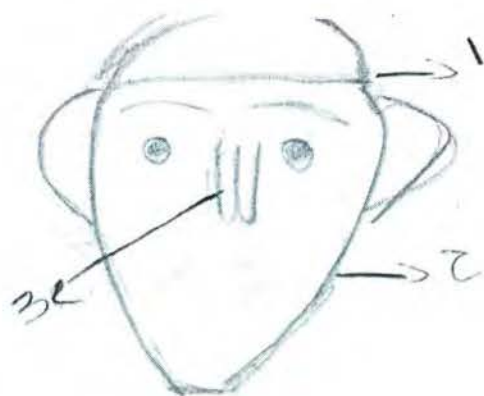
P.O. Box

Sannieshof

2760

4 September 2008

My Friend you like My Mouth. I am ~~stay~~ ^{stay} Deelpan
 My NAME is ^{Van} ~~Van~~ ~~and your eye~~ My eye is
 beaut Full and My Nose.
 My ~~pick~~ Face is beaut Full.
 Friend My Friend Van are beaut Full.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear Mkwane

P.O. box 2-
Gannied

I right a letter with happiness my friend.
and I want to tell you some about me. most people
they are talking with my hate but I don't
know why they are talking with my hate.
and I love my hate ~~so~~ much. and most people
they are saying your nose is not right
but me I said why you saying that
with my nose but me I say my nose is right. and I
and they say sorry your mouth is right. and I
what are you talking. I know you talk with my mouth
why say you say my mouth is right. Thank you
my nose mouth is very very be sharp

- Draw a picture of your face.



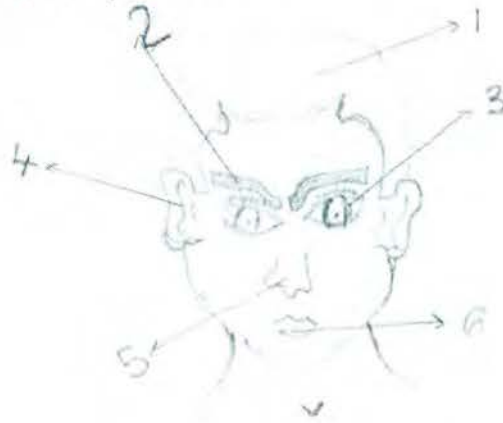
- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O Box 570
Gomori
Saptomate
3/9/2008

P. Deval Tshuwal

The people people in males
my friend a like to say to my friend
and I choose number (6)
because it is important to be
me my friend my friend more this
write letter to go

- Draw a picture of your face.

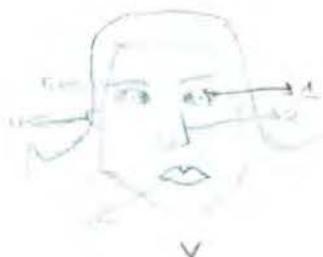


- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

① ~~My~~ Dear my friend

② Years I can hear you talk. I can see you far away
I can see you talk with my mouth. I can breathe
with my mouth

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 57
Sannishof
2767
09-September-2008

Dear Robert

I'm so happy to write this letter to you. I'm so proud to finally
to have a chance to speak to you. I just wanted to tell
you about my favorite number. My number is number 1. This
number is the most important number in the whole world.
I really need to ~~see~~ because I can't go anywhere without my
eyes. I would have ~~change~~ things around ~~everywhere~~ I go. My eye
is everything that I need. My eyes guide me everywhere I go.
My eyes show me the light way I should go and I should
not go.

I'm so glad to write ~~to~~ to you.
I'm your friend: Robert
To you my friend: Robert

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Deva Tshipo
 my friends
 First let to say to my
 Choose

Box 570

Sanni of Shof

September

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 570
Jennieshof
2760
6 September 2018

Dear Jennie

I have say hello first I like to have a photo of mine I might like letter to tell you my secret number I now you want my photo.

I like my mouth number 3 and people like it and I'm proud of my face. People can say everything of my face this is my face not people face Jennie you are a good friend I now you like my face because you are my friend and you will be my friend always

Your friend
P. L. L.

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear friend

P.O. Box 570
Sammestof
2760
4 September 20

I like to choose number 5 because people like to talk about my head and I like my head because I can control some things. My friend I wrote this letter to you to tell you about the number that I chose for my face. My friend you do special for your friend.

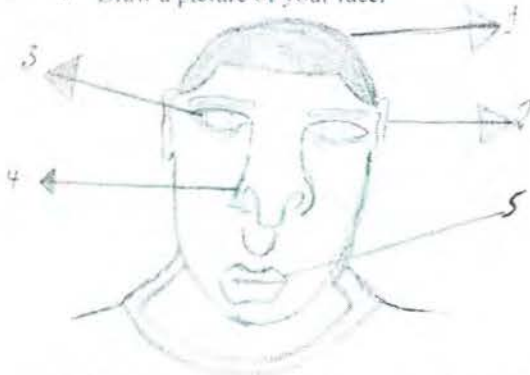
I think you will enjoy the number that are here to tell you about that because I think you we will enjoy it. I like to say friend I need you to come with to tell you about the

Ranching of I

Your friend

Thadeo

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number

J.D. Bex 5/10
Sannieshof
2760
9 September 2008

Dear Tshogo

Hello my friend I am fine and how are you boy
I have drawn my face and chose the part in my body that makes me more proud and express myself
My friend these parts express my body and I feel so confident
And you are the real friend of my heart and I don't want to miss you boy
You are the big boy for sure
You play Football and watching TV. I chose number 5 my mouth. I speak in my mouth
I chose the five part in my body that makes me beauty or feel good about myself
And I feel good for you and you feel good about me because we have to be the friend forever and ever and ever

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. Box 1570
Sunnyside
2026
9 September 2018

Dear Neatkyu

my friend my eyes is nice, my mouth is nice,
~~and~~ my nose is nice, and my skin is nice
my drawing a picture of my face is nice
~~and~~ my drawing is clean and my face is nice
I chose number 2 because it is clean and is nice
~~I eat my mouth~~ I eat with my mouth

your friend
Tiberio

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear nasego

I am very happy to write this letter
I like my eyes because I see every
thing with my eyes and I see lot with
my eyes and I like numbers

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O. box 570 Sannicciola
2160
10 September 2008

Dear: Terebe David

I chose number 6 because I eat with my mouth and I speak with my mouth and I taste with my mouth

When you speak to me I speak with mouth when you say Hi come here

You speak with your mouth it when I choose the mouth when the mouth is very important when you speak you

cannot speak without mouth when you

cannot mouth come when you are a patient or he/she

Your friend: Ariu Tamele

"Stamp"

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

Dear friend

P.O. Box 570

Sanmichele 2760

9 September 2008

Hello my friend I am fine and how are you

I have draw my face and chose the part in my body that make me more proud and expree my self

my friend those part expree my body and I feel so confident

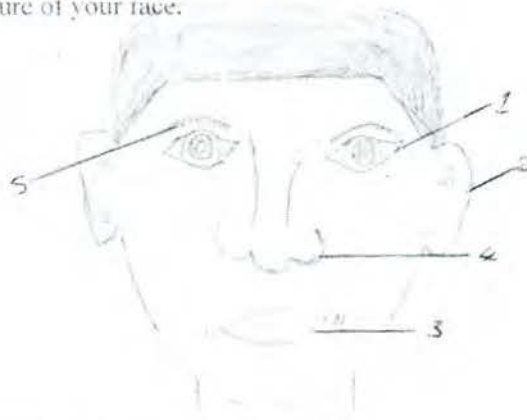
I talk about number 2 because number 2 is sep special to me

In impolunt to me my friend

In so happy to write this letter

I choose number 2 because number 2 is special to me

- Draw a picture of your face.



- Put some numbers on the picture of your face.
- Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.

P.O BOX 570
Sunnieshop 2760
09 September 2009

Dear Keakboga
First all I want to say hello and how are you
I am happy to write this letter to you
I have drawn my face and the part in my body that make
me more proud and express my self
My friend those parts express my body and I feel so confident
My number is 3 because my number 3 is so very special
and it is important to me and I eat with my mouth

APPENDIX 4

LIST OF FIGURES

Figure 1: Mind Map

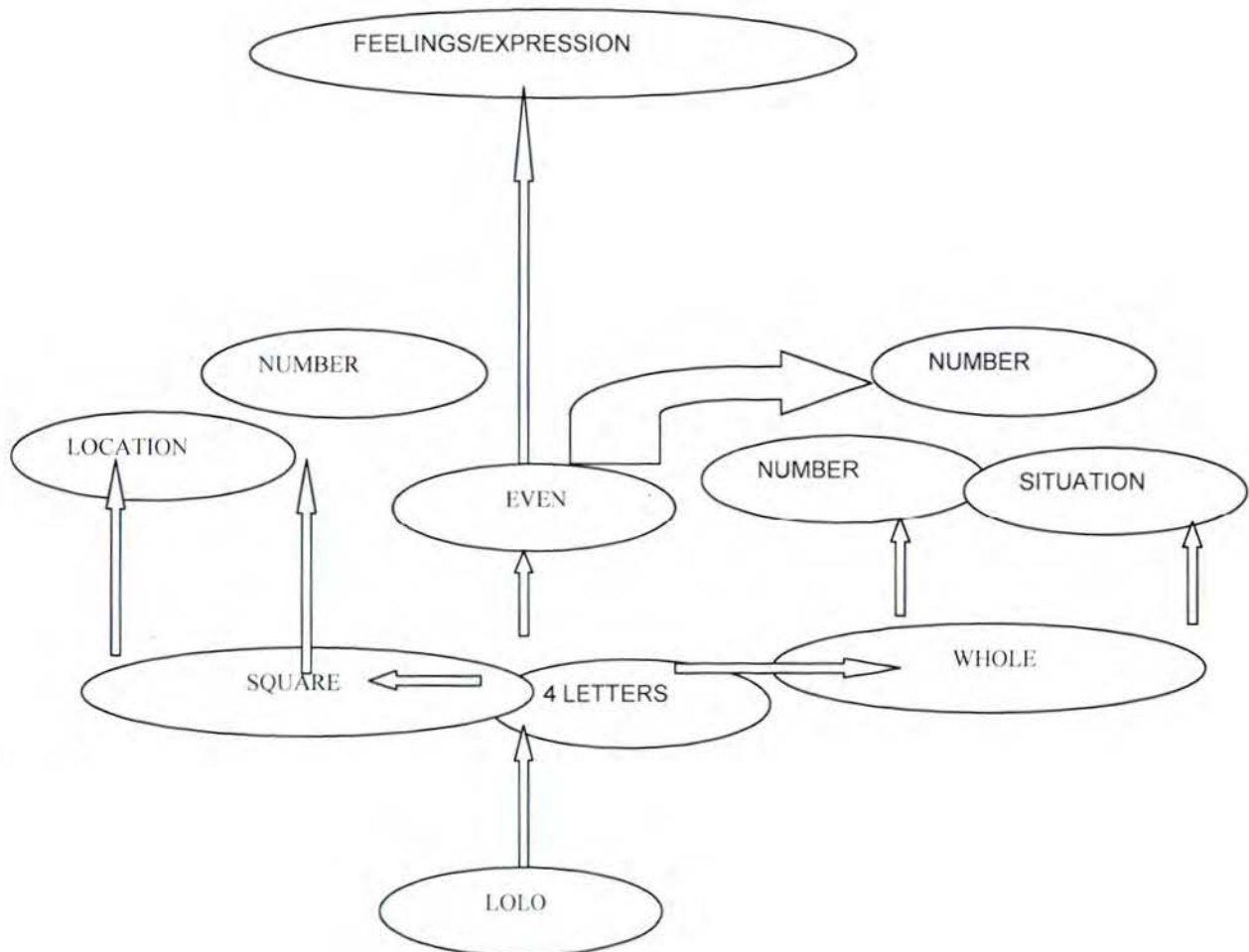
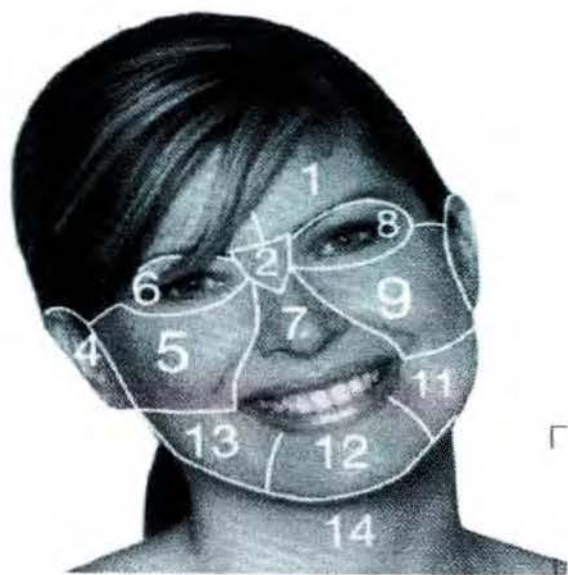
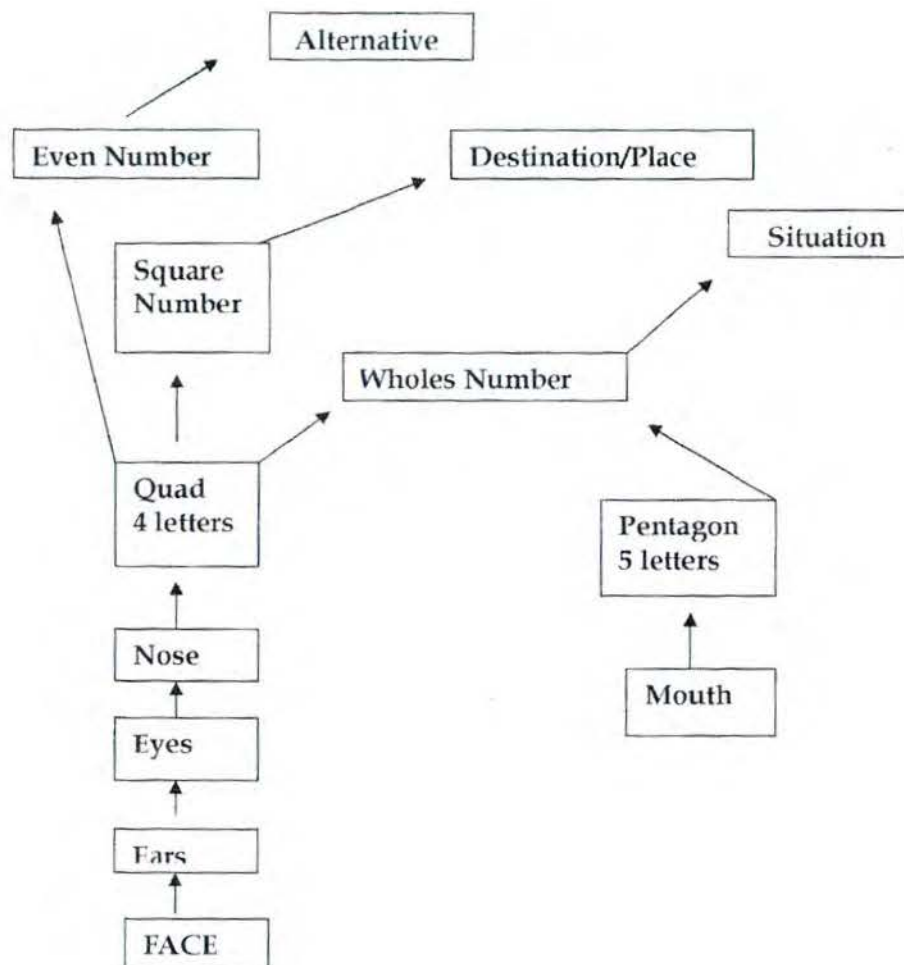


Figure 2: FACE MAPPING



New Vision Magazine, 2008: Vol 22 (Botes, 2008:7).

Figure 3: Face Map Work



APPENDIX 5

LIST OF TABLES

Table 1` : Names written forward backwards- backward forwards

word	word formed on reversing letters	What is preserved?	What is not preserved
Lolo	oloL	The name has capital letter L, two O's , one small letter l and can be pronounced backwards as oloL(why not back words), 4 is an even number.	Lolo is not the same words as oloL if we pronounce it forwards "forwards".If we pronounce it backwards it gives different meaning
Evah	havE	Both words have meaning although meanings are not the same. In the case of Evah the meaning is : name of a female person. "Have" is a verb.	Is it exciting to walk backwards? When do we normally walk backwards? We normally walk backwards if the enemy is coming so that one can maintain seeing the enemy while walking backwards.
Eve	evE	The word spells the same	evE pronounced the whether you start forwards or backwards

Table 2: Learners Task

Task Imagine that you have a friend who lives far away from you. Your friend wants you to send him/her a picture of you. After checking all your photos at home, you find that you do not want to send any of them because you are afraid that they get lost in the post. You decide to draw a good picture of yourself and send it to your friend. Draw a picture of your face. Put some numbers on the picture of your face. Choose one number from the picture and write a short letter telling your friend why you would love to have your face pasted with that number.
--

Table 3: Lesson Plan

Mathematics Benchmark Mathematical ways of knowing words.	- Learners will draw face picture. - Learners will demonstrate the ability to make a connection between numbers and words. - Learners will explain why they have chosen the number as their favourite. - Learners will show their art skills.
Context	- Concept of skills measurement techniques. - Communication skills
Resources	- pencil - pens - papers - rubber
How will I engage learners in using the techniques of connecting the concept of numbers and language in their prior knowledge?	- Day 1: show learners face picture. : learners will tell the teacher why they have chosen the number as their favourite.
What learners will do to explore the concept and to begin to develop vocabulary at the same time..	- Day 2 : learners will draw the face picture and write a letter to communicate to their friend about the face picture. : Learners will do the task.
What I will do to give learners opportunities to construct their own explanation of the concepts.	- Learners show their understanding of the concepts
How will I evaluate learners' task?	- Collect written work as evidence. - Analyse and give feedback.
Researcher	- looking at what has been done in the task.

Table 4: Number attached

Parts of the face	Number Attached						
	1	2	3	4	5	6	7
Mouth							
Learner no.							
Nose							
Learner no.							
Eyes							
Learner no.							
Ears							
Learner no.							

Table 5: Reasons for choosing the number

Favourite Number	Why favourite
1	
2	
3	
4	
5	
6	
7	

Table 6: Number of learners who took part in the study

Parts of the face	No of learners with selected parts of the face X
Mouth	
Eyes	
Ears	
Nose	
Not selecting any number	
Total	

Table 7: Typical key phrases to illustrate the category

Category	Typical key phrases to illustrate this category
Number	
Language	
Function	
Beauty	
Prior Learning	

Table 8: Face drawing of the learners

Learner number	Use numbers only to label the face	Use numbers and names to label the face	Not using any number to label the face	Chosen Favourite Number from the face	Chosen the favourite part only from the face	Not chosen any number from the face as a favourite	Able to tell Why favourite	Unable to tell why favourite
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
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34								
35								
36								

Dr. Ruth Segomotsi Mompoti District: Results - Prepared by J.S. Brand (DAM)

Schools 0 - 29% : 2009

Centre	School	APO	Pass Percentage						Gr. 12 : 2009			Trap	Trap	Trap	Trap	Trap	Trap
			2004	2005	2006	2007	2008	2009	No. Wrote	No. Pass	No. Fail	2009	2008	2007	2006	2005	2004
												< 70%	<70%	<70%	<60%	<50%	<50%
1	A 3231	MAMMUTLA SEC	Gr. T			3.9	39.8	29.63	54	16	38	Trap	Trap	Trap			
2	A 3149	PULE-LEBUW	Tal	44.93	61.03	77.8	53.3	63.8	196	57	139	Trap		Trap			Trap
3	A 3183	THABASIKWA	Gr. T	36.84	64.29	100	41.7	19.0	24	6	18	Trap	Trap	Trap			Trap
4	A 3232	TSHIPITSILE SEC	K.M.				11.4	53.8	29	7	22	Trap	Trap	Trap			
5	A5027	GAOPALELWE SEC	Gr. T				39.0	59.0	120	28	92	Trap	Trap	Trap			
6	A 3143	PICA-PAU	K.M.	26.09	24.07	51.1	41.5	25.0	39	9	30	Trap	Trap	Trap	Trap	Trap	Trap

Schools 0 - 29% : 2008

Centre	School	APO	Pass Percentage						Gr. 12 : 2009			Trap	Trap	Trap	Trap	Trap	Trap
			2004	2005	2006	2007	2008	2009	No. Wrote	No. Pass	No. Fail	2009	2008	2007	2006	2005	2004
												< 70%	<70%	<70%	<60%	<50%	<50%
1	A 3143	PICA-PAU	K.M.	26.09	24.07	51.1	41.5	25.0	39	9	30	Trap	Trap	Trap	Trap	Trap	Trap
2	A4053	GOTHATA SEC	Del	55.6	26.9	30.2	27.7	20.0	14	8	6	Trap	Trap	Trap	Trap	Trap	
3	A 3183	THABASIKWA	Gr. T	36.84	64.29	100	41.7	19.0	24	6	18	Trap	Trap	Trap			Trap

Schools 0 - 29% : 2007

Centre	School	APO	Pass Percentage						Gr. 12 : 2009			Trap	Trap	Trap	Trap	Trap	Trap
			2004	2005	2006	2007	2008	2009	No. Wrote	No. Pass	No. Fail	2009	2008	2007	2006	2005	2004
												< 70%	<70%	<70%	<60%	<50%	<50%
1	A4053	GOTHATA SEC	Del	55.6	26.9	30.2	27.7	20.0	14	8	6	Trap	Trap	Trap	Trap	Trap	
2	A4021	BOITHAPO HIGH	Del				25.7	76.3	87	63	24			Trap			
3	A5143	VAALEWE SEC	Gr. T				20.0	71.4	10	6	4	Trap		Trap			
4	A 3055	JOSEPH SAKU	Gr. T	68.75	78.26	51.1	18.3	44.8	52	33	19	Trap	Trap	Trap	Trap		
5	A4101	MADIBOGO HIGH	Del				16.2	69.0	53	51	2		Trap	Trap			
6	A 3120	MORERU	K.M.	20.83	53.13	65.1	16.2	67.5	49	25	24	Trap	Trap	Trap			Trap
7	A 3232	TSHIPITSILE SEC	K.M.				11.4	53.8	29	7	22	Trap	Trap	Trap			
8	A 3231	MAMMUTLA SEC	Gr. T				3.9	39.8	54	16	38	Trap	Trap	Trap			

Dr. Ruth Segomotsi Mompoti District: Results - Prepared by J.S. Brand (DAM)

Trapped 2005 + 2006 + 2007 + 2008 + 2009 (5 years consecutively)

	Centre	School	APO	Pass Percentage						Gr. 12 : 2009			Trap	Trap	Trap	Trap	Trap	Trap
				2004	2005	2006	2007	2008	2009	No. Wrote	No. Pass	No. Fail	2009 < 70%	2008 <70%	2007 <70%	2006 <60%	2005 <50%	2004 <50%
1	A 3171	SEBETSWANE SEC	K.M.	53.93	40.48	55.4	59.1	62.2	67.24	116	78	38	Trap	Trap	Trap	Trap	Trap	
2	A4156	NOTO HIGH SCHOOL	Del	30.0	23.9	57.9	61.9	35.5	62.07	58	36	22	Trap	Trap	Trap	Trap	Trap	Trap
3	A4053	GOTHATA SEC	Del	55.6	26.9	30.2	27.7	20.0	57.14	14	8	6	Trap	Trap	Trap	Trap	Trap	
4	A4006	BAKOLOBENG JUN SEC	Del	62.0	49.1	33.6	55.7	45.4	56.32	87	49	38	Trap	Trap	Trap	Trap	Trap	
5	A 3094	MAJENG	Gr. T	54.12	34.38	34.2	43.1	56.5	54.76	84	46	38	Trap	Trap	Trap	Trap	Trap	
6	A 3102	MARUBISING	Tal	11.63	30.56	30.0	64.7	45.5	47.83	23	11	12	Trap	Trap	Trap	Trap	Trap	Trap
7	A4004	BADIBANA HIGH	Del	69.1	44.6	34.6	45.5	34.1	33.90	59	20	39	Trap	Trap	Trap	Trap	Trap	
8	A 3143	PICA-PAU	K.M.	26.09	24.07	51.1	41.5	25.0	23.08	39	9	30	Trap	Trap	Trap	Trap	Trap	Trap

Dr. Ruth Segomotsi Mompati District: Results - Prepared by J.S. Brand (DAM)

Trapped 2008 + 2009 (2 years consecutively)

	Centre	School	APO	Pass Percentage						Gr. 12 : 2009			Trap	Trap	Trap	Trap	Trap	Trap
				2004	2005	2006	2007	2008	2009	No. Wrote	No. Pass	No. Fail	2009 < 70%	2008 < 70%	2007 < 70%	2006 < 60%	2005 < 50%	2004 < 50%
1	A4162	ONKABETSE-THUTO	Del				81.2	35.3	67.74	62	42	20	Trap	Trap				
2	A 3171	SEBETSWANE SEC	K.M.	53.93	40.48	55.4	59.1	62.2	67.24	116	78	38	Trap	Trap	Trap	Trap	Trap	
3	A 3055	JOSEPH SAKU	Gr. T	68.75	78.26	51.1	18.3	44.8	63.46	52	33	19	Trap	Trap	Trap	Trap		
4	A4156	NOTO HIGH SCHOOL	Del	30.0	23.9	57.9	61.9	35.5	62.07	58	36	22	Trap	Trap	Trap	Trap	Trap	Trap
5	A 3199	TONG COMPREHENSIVE	K.M.	49.55	53.19	63.5	77.5	45.6	60.82	97	59	38	Trap	Trap				Trap
6	A 3011	BOGOSING HIGH	Gr. T	65.28	67.07	53.2	78.8	46.8	60.53	76	46	30	Trap	Trap		Trap		
7	A4174	RAKGWEDI-BOKANG	Del	37.2	82.1	59.5	50.0	34.7	60.00	55	33	22	Trap	Trap	Trap	Trap		Trap
8	A 3148	PUDUMONG	Tal	42.86	45.52	78.7	52.3	60.0	58.95	95	56	39	Trap	Trap	Trap		Trap	Trap
9	A 3125	MOTHELESI SEC	Gr. T	70.97	72.73	69.6	60.0	53.8	57.14	28	16	12	Trap	Trap	Trap			
10	A4053	GOTHATA SEC	Del	55.6	26.9	30.2	27.7	20.0	57.14	14	8	6	Trap	Trap	Trap	Trap	Trap	
11	A4006	BAKOLOBENG JUN SEC	Del	62.0	49.1	33.6	55.7	45.4	56.32	87	49	38	Trap	Trap	Trap	Trap	Trap	
12	A 3094	MAJENG	Gr. T	54.12	34.38	34.2	43.1	56.5	54.76	84	46	38	Trap	Trap	Trap	Trap	Trap	
13	A 3115	MOKGARENG HIGH	Tal	37.39	67.31	48.0	49.1	42.0	53.33	45	24	21	Trap	Trap	Trap	Trap		Trap
14	A 3117	MONCHUSI	K.M.	94.12	77.59	43.6	47.2	67.1	52.75	91	48	43	Trap	Trap	Trap	Trap		
15	A 3176	SETSWAKGOSING	K.M.	62.83	48.42	45.3	76.1	62.2	51.13	266	136	130	Trap	Trap		Trap	Trap	
16	A 3120	MORERI	K.M.	20.83	53.13	65.1	16.2	67.5	51.02	49	25	24	Trap	Trap	Trap			Trap
17	A 3072	KGOSITHEBE	K.M.		20.00	41.1	78.0	64.0	50.00	22	11	11	Trap	Trap		Trap	Trap	
18	A 3102	MARUBISING	Tal	11.63	30.56	30.0	64.7	45.5	47.83	23	11	12	Trap	Trap	Trap	Trap	Trap	Trap
19	A 3085	LEPHA TSHIMILE	Gr. T	36.23	46.15	67.9	69.8	68.2	45.36	97	44	53	Trap	Trap	Trap		Trap	Trap
20	A5039	ITSHUPENG SEC	Tal				88.8	55.5	44.38	169	75	94	Trap	Trap				
21	A5128	THUTOLORE SEC	Gr. T				35.0	57.5	38.54	96	37	59	Trap	Trap	Trap			
22	A4043	G S PHOI HIGH SCHOOL	Del				79.5	57.1	37.50	72	27	45	Trap	Trap				
23	A4004	BADIBANA HIGH	Del	69.1	44.6	34.6	45.5	34.1	33.90	59	20	39	Trap	Trap	Trap	Trap	Trap	
24	A 3219	WALTER LETSIE	Gr. T	29.76	32.47	53.3	74.6	48.2	32.94	85	28	57	Trap	Trap		Trap	Trap	Trap
25	A 3201	TOTONYANE	Gr. T	75.00	82.61	79.3	61.1	60.0	32.35	34	11	23	Trap	Trap	Trap			
26	A 3231	MAMMUTLA SEC	Gr. T				3.9	39.8	29.63	54	16	38	Trap	Trap	Trap			
27	A 3183	THABASIKWA	Gr. T	36.84	64.29	100	41.7	19.0	25.00	24	6	18	Trap	Trap	Trap			Trap
28	A 3232	TSHIPIETSILE SEC	K.M.				11.4	53.8	24.14	29	7	22	Trap	Trap	Trap			
29	A5027	GAOPALELWE SEC	Gr. T				39.0	59.0	23.33	120	28	92	Trap	Trap	Trap			
30	A 3143	PICA-PAU	K.M.	26.09	24.07	51.1	41.5	25.0	23.68	39	9	30	Trap	Trap	Trap	Trap	Trap	Trap

District results 2009

(Sorted as per 2009 pass %)

No.	Centre_name	AO name	Wrote	Passed	2009 Pass %
1	VRYBURG HIGH SCHOOL	Taledi	88	88	100.00
2	TIGER KLOOF EDUCATIONAL INST	Taledi	79	79	100.00
3	P H MOEKETSI AGRIC HIGH SCHOOL	Taung	52	52	100.00
4	STELLA HIGH SCHOOL	Taledi	30	30	100.00
5	KISMET SECONDARY	Taledi	29	29	100.00
6	LODIRILE-TSWAING HIGH SCHOOL	Delareyville	7	7	100.00
7	CHRISTIANA COMBINED	Taung	45	44	97.78
8	SCHWEIZER RENEKE HIGH SCHOOL	Taledi	45	44	97.78
9	LE-RONA SCHOOL	Taung	60	58	96.67
10	MADIBOGO HIGH SCHOOL	Delareyville	53	51	96.23
11	PINAGARE HIGH SCHOOL	Taung	109	104	95.41
12	MOGAWANE HIGH SCHOOL	Delareyville	21	20	95.24
13	KROMELLENBOOG COMBINED SCHOOL	Taung	19	18	94.74
14	BLOEMHOF COMBINED	Taung	35	33	94.29
15	IKOPANYENG SECONDARY SCHOOL	Delareyville	11	10	90.91
16	PHATSIMA SEC SCHOOL	Delareyville	92	82	89.13
17	KOPANELO SECONDARY SCHOOL	Delareyville	9	8	88.89
18	SEABO HIGH SCHOOL	Taung	56	49	87.50
19	BATLHAPING HIGH SCHOOL	Taung	198	173	87.37
20	GEYSDORP SECONDARY SCHOOL	Delareyville	46	40	86.96
21	HUHUDI HIGH SCHOOL	Kag. Molopo	91	77	84.62
22	UTLWANANG-BAROLONG SEC SCHOOL	Delareyville	51	43	84.31
23	REABETSWI SECONDARY SCHOOL	Taledi	97	77	79.38
24	JERRY MAHURA SECONDARY SCHOOL	Taledi	33	26	78.79
25	GABOBIDIWE HIGH SCHOOL	Taung	70	54	77.14
26	REIVILO HIGH SCHOOL	Taung	42	32	76.19
27	THUSO THEBE HIGH SCHOOL	Kag. Molopo	96	72	75.00
28	GA-KHUNWANA HIGH SCHOOL	Delareyville	90	66	73.33
29	COLINDA SECONDARY	Taledi	45	33	73.33
30	ST PAUL'S HIGH SCHOOL	Taung	97	71	73.20
31	BOITHAPOO HIGH SCHOOL	Delareyville	87	53	72.41
32	MAATLA HIGH SCHOOL	Taledi	68	49	72.06
33	REIVILO COMBINED PUBLIC SCHOOL	Taung	25	18	72.00
34	BOPAGANANG PUBLIC SCHOOL	Taledi	83	59	71.08
35	IPELEGENG HIGH SCHOOL	Taledi	107	76	71.03
36	KGONONYANE HIGH SCHOOL	Kag. Molopo	81	56	69.14
37	KGOSIETSILE-LETHOLA MIDDLE SCHOOL	Taung	83	57	68.67
38	ONKABETSE-THUTO TECH and COMM	Delareyville	62	42	67.74
39	SEBETWANE SECONDARY SCHOOL	Kag. Molopo	116	78	67.24
40	JOSEPH SAKU MIDDLE SCHOOL	Taung	52	33	63.46
41	BOIJANE HIGH SCHOOL	Taledi	24	15	62.50
42	NOTO HIGH SCHOOL	Delareyville	58	36	62.07

3	THAPAMA HIGH SCHOOL	Taledi	69	42	60.87
4	TONG COMPREHENSIVE SEC SCHOOL	Kag. Molopo	97	59	60.82
15	BOGOSING HIGH SCHOOL	Taung	76	46	60.53
16	RAKGWEDI-BOKANG HIGH SCHOOL	Delareyville	55	33	60.00
17	VAALOEWER SECONDARY SCHOOL	Taung	10	6	60.00
18	OBANG SECONDARY SCHOOL	Taledi	72	43	59.72
19	PUDUMONG SEC SCHOOL	Taledi	95	56	58.95
50	MOTHELESI SECONDARY SCHOOL	Taung	28	16	57.14
51	GOTHATA SECONDARY SCHOOL	Delareyville	14	8	57.14
52	BAKOLOBENG JUNIOR SEC SCHOOL	Delareyville	87	49	56.32
53	LERUNTSE-LESEDI HIGH SCHOOL	Delareyville	49	27	55.10
54	MAJENG SEC SCHOOL	Taung	64	46	54.76
55	MOKGARENG HIGH SCHOOL	Taledi	45	24	53.33
56	MONCHUSI SECONDARY SCHOOL	Kag. Molopo	91	48	52.75
57	MAMPHO SECONDARY SCHOOL	Taledi	62	32	51.61
58	SETSWAKGOSING HIGH SCHOOL	Kag. Molopo	266	136	51.13
59	MORERI SECONDARY SCHOOL	Kag. Molopo	49	25	51.02
60	KGOSITHEBE COMBINED SCHOOL	Kag. Molopo	22	11	50.00
61	MARUBISING SECONDARY SCHOOL	Taledi	23	11	47.83
62	LEPHA TSHIMILE HIGH SCHOOL	Taung	97	44	45.36
63	ITSHUPENG SECONDARY SCHOOL	Taledi	169	75	44.38
64	MANKUROANE TECH AND COMM H/S	Taung	86	34	39.53
65	THUTO-LORE PUBLIC SEC. SCHOOL	Taung	96	37	38.54
66	G S PHOI HIGH SCHOOL	Delareyville	72	27	37.50
67	BADIBANA HIGH SCHOOL	Delareyville	59	20	35.90
68	WALTER LETSIE SECONDARY SCHOOL	Taung	85	28	32.94
69	TOTONYANE SECONDARY SCHOOL	Taung	34	11	32.35
70	REITSHOKILE INTERMEDIATE SCHOOL	Kag. Molopo	10	3	30.00
71	MAMMUTLA SECONDARY SCHOOL	Taung	54	16	29.53
72	PULE LEEUW COMPRE SEC. SCHOOL	Taledi	196	57	29.08
73	THABASIKWA SECONDARY SCHOOL	Taung	24	6	25.00
74	TSHIPIETSILE SECONDARY SCHOOL	Kag. Molopo	29	7	24.14
75	GAOPALELWE SECONDARY SCHOOL	Taung	120	28	23.33
76	PICA PAU HIGH SCHOOL	Kag. Molopo	39	9	23.08
			5106	3272	64.08

Delareyville

					2009
No.	Centre_name	AO name	Wrote	Passed	Pass %
1	LODIRILE-TSWAING HIGH SCHOOL	Delareyville	7	7	100.00
2	MADIBOGO HIGH SCHOOL	Delareyville	53	51	96.23
3	MOGAWANE HIGH SCHOOL	Delareyville	21	20	95.24
4	IKOPANYENG SECONDARY SCHOOL	Delareyville	11	10	90.91
5	PHATSIMA SEC SCHOOL	Delareyville	92	82	89.13
6	KOPANELO SECONDARY SCHOOL	Delareyville	9	8	88.89
7	GEYSDORP SECONDARY SCHOOL	Delareyville	46	40	86.96
8	UTLWANANG-BAROLONG SEC SCHOOL	Delareyville	51	43	84.31
9	GA-KHUNWANA HIGH SCHOOL	Delareyville	90	66	73.33
10	BOITHAPO HIGH SCHOOL	Delareyville	87	63	72.41
11	ONKABETSE-THUTO TECH and COMM	Delareyville	62	42	67.74
12	NOTO HIGH SCHOOL	Delareyville	58	36	62.07
13	RAKGWEDI-BOKANG HIGH SCHOOL	Delareyville	55	33	60.00
14	GCTHATA SECONDARY SCHOOL	Delareyville	14	8	57.14
15	BAKOLOBENG JUNIOR SEC SCHOOL	Delareyville	87	49	56.32
16	LERUNTSE-LESEDI HIGH SCHOOL	Delareyville	49	27	55.10
17	G S PHOI HIGH SCHOOL	Delareyville	72	27	37.50
18	BADIBANA HIGH SCHOOL	Delareyville	59	20	33.90
			923	632	68.47

BADIBANA SECONDARY SCHOOL

ANALYSIS OF RESULTS GRADE 12

NOV. 2009

SUBJECT	No. WROTE	No. PASSED	% PASS	No. FAIL	% FAIL
SETSWANA	59	59	100	-	-
ENGLISH	60	56	93.3	4	6.7
AFRIKAANS	10	10	100	-	-
LO	62	62	100	-	-
MATHS	35	7	20	-	-
MATHS LIT	25	19	76	6	24
GEOGRAPHY	33	13	39.4	22	60.6
HISTORY	15	14	93	1	7
AGRIC SC.	30	13	43.3	17	56.7
LIFE SCIENCE	35	14	40	21	60
P. SCIENCES	35	3	8.6	32	91.4
ACCOUNTING	10	4	40	6	60
B. STUDIES	10	5	50	5	50

No. WROTE = 60

No. PASSED = 20

No. FAIL = 40

% PASS = 33.3 %

% FAIL = 66.7 %

2. ANALYSIS – LEVELS

SUBJECT	LEVELS							TOTAL
	1 (0-29)	2 (30-39)	3 (40-49)	4 (50-59)	5 (60-69)	6 (70-79)	7 (80-89)	
SETSWANA	-	-	1	26	30	2		59
ENGLISH	4	13	25	13	5			60
AFRIKAANS	-	-	8	1		1		10
LO			2	11	37	12		62
MATHS	28	3	2	2				35
MATHS LIT	6	7	8	2	1			25
GEOGRAPHY	22	8	13					33
HISTORY	1	2	4	4	4			15
AGRIC SC.	17	11	2	1				30
L.SCIENCES	21	7	6		1			35
P.SCIENCES	32	2	1					35
ACCOUNTING	6	3	1					10
B. STUDIES	5	2	3					10

Sign : 

Mr R.G. Themba

Principal
BADIBANA SECONDARY SCHOOL
PO BOX 2760

Mr KISILESOBA

Date : 11/01/2010

