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FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF MUSIC AND MUSICOLOGY

ENHANCING THE LEARNING OF SUBTRACTION CONCEPTS THROUGH SONGS TO GRADE TWO PUPILS AT GWENZIMUKULU PRIMARY SCHOOL

BY

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APPROVAL FORM

This is to certify that I have supervised the dissertation entitled ‘Enhancing learning of subtraction concepts to the grade two pupils at Gwenzimukulu Primary School in Zhombe:’ Dissertation submitted by R15082Cin partial fulfillment of the requirements of Bachelor of Science Honors Degree in Music and Musicology.

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DECLARATION

I, Ratidzo Shanangurai do hereby declare that this dissertation is my own original work that has not been submitted to any other university. I declare that proper citations and acknowledgements in accordance with copyright law and ethical requirements have been strictly adhered to in writing this dissertation.

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DEDICATION

To my beloved daughter, Kudzwaiishe.

ABSTRACT

The research's main focus was to enhance the learning of mathematical subtraction concepts through the aid of songs. Attempts were made to help pupils learn mathematical subtraction concepts through the aid of songs. The study was carried out in a second grade class in a rural school called Gwenzimukulu Primary. It is qualitative in nature. An action research was employed in collecting data. Grade Two Red class participated in the study. Convenience sampling technique was used to select the participants as well as the research site. To gather data, the researcher used interviews and observations. Tests and exercises on subtraction were also administered. The findings indicate that songs can be used in varied ways to help pupils learn mathematical subtraction concepts. Teachers in Zimbabwean primary schools are called upon to help all the pupils learn mathematics subtraction concepts through engaging them actively in the learning process.

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CHAPTER ONE: THE PROBLEM

1.0 INTRODUCTION TO THE STUDY

The study looked at promoting the learning of mathematical subtraction concepts through the aid of songs to Grade Two pupils at Gwenzimukulu Primary School in Zhombe. This chapter provided the background of the study, statement of the problem, research questions, significance of the study, limitations of the study and delimitations of the study. These sub-topics have been used to introduce the topic on the use of songs in teaching mathematical subtraction concepts to grade two pupils at Gwenzimukulu Primary School.

1.1 BACKGROUND OF THE STUDY

Singing has an impact on the mind. It has the power to alter one's mental state. It is one way many people use to win others' attention (Jourdain 1975). The researcher realized that pride can be instilled in a person through singing. Religious connections are also strengthened by singing great hymns of faith. Saul got refreshed when David sung a psalm (1 Samuel 16 v 23). Because of their influential nature, songs might play a vital role in teaching and learning in general.

The researcher joined the education sector in 2009 and she immediately noticed that the majority of pupils at Gwenzimukulu Primary School performed poorly in mathematics with subtraction being one of the areas in which the pupils face the most problems. It is important to effectively eradicate all challenges at elementary level before pupils proceed to junior level. There is need to develop more effective mathematics instructional procedures and methods at that stage to avoid confusion at junior school. Although operations are taught at every level every term, the internalization of the material is questionable hence the need to find ways to improve mathematical retention.

Caine & Caine (2001) say that meaningful learning requires relaxed alertness, immersion and active participation. In this light, the researcher feels that songs can be used as powerful to promote lasting learning of mathematical subtraction concepts since they create an atmosphere of fun, relaxation and readiness. Songs can thus be used as alternative instructional method and learning strategies that can promote the teaching and learning of mathematical subtraction concepts. Music and play can be used to conceptualize mathematical concepts. Chrysostomou (2004) points out that neglecting conceptual mathematical understanding is one cause of low achievement in mathematics. It seems wise to incorporate this teaching and learning strategy in the pool of many other approaches like demonstrations, talk and chalk methods and discussions.

The researcher realized that in most cases, teachers at Gwenzimukulu Primary have a tendency to rely on a single method which could be monotonous to some learners. Teachers stick to methods like demonstrations, field trips and discussions. However, pupils are at a loss for what to do when faced with subtraction problems independently. These methods have proven to be insufficient for many pupils to learn and retain information as portrayed by the low pass rate every year.

Advertisers understand this phenomenon very well for they extensively make use of jingles which are known for being repetitive in nature such that the audience end up off-consciously singing along, much to the benefit of the advertisers and their brands, products and services (Wallace 1994).This, among many other things, motivated the researcher to consider songs as potentially powerful pedagogical tools that could be very effective especially in the challenging area of subtraction concepts at junior primary school level. Barker (1985) points

out that songs are powerful pedagogical tools that enliven a classroom and enhance student learning in an enjoyable manner. Having said this, it would be unwise to ignore songs given that they are a unique resource which can help create a relaxed learning atmosphere. From the study of literature and from some personal experiences, the researcher noticed that Gwenzimukulu Primary School mathematics teachers could be missing a great deal by not exploiting songs as classroom teaching aids. This research adds knowledge to what is known about the functionality of the human brain by shedding light on the positive role played by songs on learning. The study examines the significance of songs in the pedagogy of mathematical subtraction concepts for grade two pupils at Gwenzimukulu Primary School in Zhombe.

1.2 STATEMENT OF THE PROBLEM

The problem addressed in this study is that despite many methods available for teaching mathematical subtraction concepts, pupils continue to perform badly in this area. The aim of the current research was to give teachers ideas on how to use songs in meaningful and appropriate ways in order to help students learn subtraction effectively. The study determined how songs can be implemented in enhancing learning of subtraction concepts. In broad terms, this study examined whether songs enhanced the teaching and learning of mathematical subtraction concepts. It is my wish that educators become empowered so that they become aware of the role played by songs in mathematics teaching and learning.

1.3 RESEARCH QUESTIONS

1.3.1 How can songs be used in the classroom environment to help pupils learn subtraction concepts?

1.3.2 To what extent do songs enhance the learning of subtraction concepts if teachers make use of them during lessons?

1.4 SIGNIFICANCE OF THE STUDY

This action research study is an attempt to highlight the effectiveness of songs in alleviating the mathematical challenges of pupils at Gwenzimukulu Primary School.

Recommendations from this research will benefit policy makers in the education to appreciate the importance of songs in the learning process. At a time when curricula are being reviewed with new approaches to education being explored, the research will become handy for those who make decisions on behalf of everybody else.

The research presents a new opportunity for mathematics teachers at junior level primary school with an opportunity to focus on songs as a problem-solving mechanism at work. Since conventional methods of teaching mathematical subtraction concepts have been found not to be effective for children of different intellectual aptitudes, this research will offer an efficient alternative. The classroom practitioners will thus develop new knowledge directly related to their work and will be empowered for they will be allowed to take roles and make changes related to teaching and learning of mathematics subtraction concepts.

The research seeks to come up with new approaches that can aid school children to better learn mathematical subtraction concepts therefore grade two pupils as well as other children still at lower level primary school will be the biggest beneficiaries. The researcher is convinced that the study will result in excellent recommendations that, if executed, would help improve the pupil's basic mathematical skills.

The research might be a valuable resource for students pursuing similar studies in education and other related disciplines. It will contribute to the existing body of knowledge which acts as an information resource pool from which vital knowledge on pedagogy can be retrieved and utilized.

The researcher works in the education sector where she deals with children and is in a position to witness the challenges faced by pupils in comprehending mathematical subtraction concepts. The research will therefore provide data that will be of critical importance in her quest to increase her knowledge and to effectively take charge of her professional development.

1.5 LIMITATIONS

Lack of adequate time was an enormous constraint as the researcher had to attend to both the study and other demands of the degree programme like assignments and in-class tests while, at the same time, preparing for her final examinations. The researcher had to work long exhaustive working hours to make up for the squeeze to make sure the findings of the study were not compromised by that challenge.

The research included teachers as respondents but it was a hard time to get them talking since they were under pressure of their own owing to the demands of the new curriculum that they are busy implementing. Full cooperation was difficult to get and this may have affected the reliability of the answers from that group of participants.

The researcher interviewed her own workmates, and there is a possibility that some or all of them answered questions not honestly but just in a way which pleased the researcher. They

may have responded to the research questions simply as a duty to a colleague rather than as a sincere contribution to an important research whose credibility partly depends on their honest participation.

1.6 DELIMITATIONS

Delimitations of the study are geographical. The focal study area is Gwenzimukulu Primary School in Zhombe. This study is carried at Gwenzimukulu Primary School for the following reasons: the researcher is stationed at the same school hence carrying out the study in Zhombe area cuts transport costs. The site was selected because it provides a population frame which is appropriate for the researcher to recruit by capitalizing on her familiarity to the neighborhood. Since the researcher enjoys strong networks and relationships with participants who were selected for the study, she will take advantage of the rapport which she established with some of the pupils and teachers at the school. The research is also confined to one class; the grade two red class. Generally, this is a manageable sample which allows the researcher to observe and re-observe without any considerable limitation. The researcher, however, acknowledges that a wider sample would increase the veracity of the findings and reduce the margin of error.

The sample was conveniently selected so it may not be possible to generalize the findings of the study as compatible with all circumstances. The findings may best provide an interpretative solution for only the selected class and those who could be elsewhere but in similar situations. A considerable change in variables may render the findings of the study inadequate to fully explain a phenomenon.

1.7 CONCLUSION

Enhancing learning of mathematical subtraction concepts through the aid of songs to Grade Two pupils at Gwenzimukulu Primary School is an area that needs attention. The formulation of solutions to the problems faced by learners in learning subtraction mathematical concepts is a task which this research can help accomplish. This chapter has put the topic under review into perspective by laying out the background of the study, statement of the problem, research questions, significance of the study, delimitations of the study and limitations of the study. The following chapter focuses on the sources of literature reviewed revealing other researchers' contributions.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides an overview of related literature on the use of songs in the teaching and learning of mathematical concepts in general. The research only reviewed literature related to the problem as a way of familiarizing the researcher with similar research materials done by other in the past. In anything, this is an acknowledgement that this research does not exist in a vacuum and that although it may have areas where it has broken new ground, it remains part of wider efforts to improve learning among young children.

The related literature was employed by the researcher to guide and inform the study on the use of songs in enhancing learning of mathematical subtraction concepts.The chapter is divided into sections. The first section furnishes some general information about the importance of play in the development of young learners. The second review is on music and the brain. Included under this section are the radical ideas from Paulo Freire. The themes music as a memory aid and the role of songs in children's cognitive abilities follow. The last section elaborates on fun and enjoyment through songs when learning.

2.2 THE IMPORTANCE OF PLAY TO LEARNERS

According to Kenney (1997), there is a growing awareness that play is underused in teaching young children. Young pupils like to sing, move and play with sound. Learning through play is vital for the learner's development. Mornighan-Nourot Scales and Van Hoorn (1987) say play is central to human wellbeing during infancy. Young children get involved in music as play. Vygotsky (1978) defines play as a zone in which children's mental capabilities are extended. When children are engaged in what interests them much, they are likely to be confident and competent. Brierly (1994) goes on to warn that if children are introduced

inappropriately to the formal practice of skills to the detriment of time to explore and play, their curiosity, motivation and creativity could be impaired. Teachers are therefore called upon to provide an environment that provokes the interest children.

If teachers fail to consider the importance of play to young pupils, that would be tantamount to a deprivation of a chance to learn. Piaget (1971) says that children's play reflects their developing understanding of the world. Through play, children explore and experiment and it can be seen as the main opportunity for children to learn without fear because a relaxed learning atmosphere is created. Vygotsky (1978) suggests that play contains all developmental tendencies in a condensed form and is in itself, a major source of development.

Children of all ages enjoy playing. Developmentally appropriate practices suggest that play is that most vital component of the infant curriculum. This is true since play encourages aspects of social, emotional, cognitive and physical development that cannot be achieved in any other way (Bredekamp and Copple 1995). Dodge and Coker (1992) concur; saying children's exposure to play focuses on all three aspects of development cognitive, physical, social and emotional. In light of these views, it can be seen that children will miss a lot if teachers leave out play. Through play, children build up important vital knowledge which triggers a host of developmental capabilities.

Teachers can capitalize on play to teach content; they can sing a song to help learnt concepts stick in learners' minds. Pera & Van Tonder (1996) believe that learners go to school not just to learn content but to learn how to do it too. Pupils must be given opportunities to do more than learn content. They must be taught the skills of learning and given occasions to apply

what they would have learnt. There is need to intelligently interpret experiences. The teacher thus has a responsibility to help the children learn and has a role to play in ensuring that all the pupils learn. Forgarty (2004) says that for children to be successful learners, they need a supportive environment which allows them freedom to play. Jensen (1998) posits that children must enjoy their learning if it is to be successful. In this light, utilization of play can assist in the acquisition of new learning.

2.3 MUSIC AND THE BRAIN

Songs can be used as a tool for learning. Gardner (1985) points out that all normal people possess some musical intelligence. In this light, mathematics teachers could use pupils' musical intelligence to help them master mathematical concepts. In this way, music becomes a teaching aid.

Caine & Caine (1994) points out that the brain is structured in such a way that it has the left hemisphere which expresses thoughts in words and the right hemisphere which controls actions, memory and emotions. They go on to say in processing music, most learners use the right hemisphere of the brain and because most interactions rely heavily on left brain approaches, music opens an opportunity for learners who have a strong right brain orientation.

When a learning activity combines both the left and right hemispheres simultaneously, more productive learning occurs (ibid). It is crucial to capitalize on this ideal learning situation for it can help to make learning worthwhile. It is very important for teachers to take into cognizance the fact that learning always involve conscious and unconscious processes. Jourdain (1975) concurs, suggesting that music taps both hemispheres and is therefore

capable of arousing learners' emotions. Music therefore incorporates the whole brain in the learning process. Through music, information can be stored and can be retrieved when needed. By including music, learners can link what was learnt a few days back to what is being learnt. Using abilities of the whole brain helps learners to grasp what is being learnt with comparative ease.

Teachers should take into consideration learners' emotions for they enhance mathematics learning. Evoking the emotions through the use of songs could stimulate and activate the brain which could help facilitate and promote mathematics learning (Caine & Caine 1994). Armstrong (2000) agrees, pointing out that music strengthens connections among neurons because it is processed in both hemispheres of the brain and stimulates cognitive functioning. Children tend to learn faster when the approach is perceived easy and requiring them to use less effort. Teachers should try to create the best classroom learning experiences they can in order to provide the best type of education. Jensen (2000) argues that any instruction situated in emotion binds and improves learning. The most important implication therefore is that teachers should involve the activation of emotions in the teaching learning process.

2.3.1 Paul Freire's radical ideas

Brazilian educator and philosopher Paulo Freire's non-conformist view of education has helped shape the non-conventional approach to pedagogy. He wrote extensively against what he classified as the 'banking concept' of education. The 'banking concept' is an environment where teachers are the narrators and students are the recorders (Freire 1993). Freire asserts that it is true that thought has meaning only when generated by action upon the world. He reiterates that passive learning thwarts true consciousness which mean no active imagination ca n be produced (ibid). The students in this case are regarded as not conscious whose minds

are passively open to the reception of deposits of reality from the world outside. This model reinforces lack of critical thinking and knowledge ownership in students which in turn reinforces passivity in contrast to understanding of knowledge as a result of human creative process (Freire 1993). It hinders intellectual growth of students for it turns pupils into passive receptors of information that have no connection to their lives. This limits pupils' creative power.

He proposes a new solution called problem-posing education. Students will be having an active participation in education. The teacher and the student become one each teaches the other and both have a chance to think critically. Songs are one way of problem-posing technique as many of them include questions that the pupil is expected to ponder upon and find the appropriate answers. The teacher informs and the student listens in return.
Students are encouraged to think and solve problems presented to them by the teacher. Students are increasingly engaged in the learning process.

Education should refrain from an act of depositing information in which the students are the depositories and the teacher is the depositor. According to Freire (1993), the banking concept of education maintains and mirror the oppressive society. This is so as the teacher teaches and the children are taught, the teacher knows everything and children know nothing, the teacher thinks and students are thought about, the teacher talks and children listen and the teacher is the subject in the learning process and students are mere objects(ibid). This shuns the development of critical consciousness in students.

2.4 MUSIC AS A MEMORY AID

People do well in mathematics if they learn the mathematical facts and commit them to memory. Thus they can benefit from the strategies used in memory aids to commit the math facts to memory. Students are expected to learn the facts in order to be successful with operations. Caine & Caine (1994) reflect that learning through songs develops non-threatening classroom atmosphere in which the skills can be enhanced. This research is therefore a suggestion that teachers and pupils at Gwenzimukulu Primary School could make the learning of mathematical subtraction more enjoyable by using songs in the learning process.

Songs can help pupils to recall what they would have learnt. Anderson (2000) posits that the absence of retrieval cues is one of the main causes of forgetting. Teachers should thus make sure that in their lessons, there are activities that are done to help learners recall what they would have learnt. Wallace (1994) looks at recall ability and finds out that spoken text is the least frequently recalled while melodic text is the easiest to remember. If music is simple and familiar to the pupils, it can make the material put across more easily learned and better recalled than when the same material is learnt without a melody. It seems true that pupils retain knowledge when reinforced through songs and the integration of lyrics.

Teachers should see to it the material they want the pupils to learn is not easily forgettable. Isolated pieces of information are easy to forget but by blending education and entertainment approaches, learning evolves and is reinforced. Simple well known songs alter seemingly difficult material into information that can be recalled when needed. Storing the tune and the material learnt in form of aids memory. Songs often act like mnemonic devices in that they seem to increase memory. Evidence is clear that there are many benefits of using songs as a means of instruction. Hendrick (1988) says music helps memory. According to Jensen(2000)

song lyrics can be used to carry information, music can elicit memories and melodies can activate the recall of thoughts. It is thus beneficial to sing a song with lyrics rich with information to help pupils remember learnt material. Barker (1985) buttresses the that idea by pointing out that the melody of a song can indeed make a text more memorable as compared to hearing the text out of the melody context. Younger pupils have a short concentration span and it is beneficial to present lessons crafted in an interesting way.

From this observation, it does not work to dwell on the methods that are unable to reach all learners. There is need to meet all the needs of each and every pupil in the classroom yet many traditional instructional methods have prevented pupils from making the most of their skills and abilities. It is therefore important to try and think of ways that stimulate pupils' intellectual capacities.

Schoenfeld (1988) adds that the interdisciplinary connections provide students with an opportunity to make sense of mathematics and apply their mathematical knowledge in meaningful ways by connecting new knowledge with existing knowledge. Singing a song that helps pupils learn a mathematical concept helps in improving learners' attitude towards learning mathematics. This is one way of increasing a learner's mathematical achievement. Following this, music can be used to engage learners in comprehending maths in an enjoyable but relevant way.

2.5 SONGS IN MATHEMATICS LEARNING COGNITIVE CONSIDERATIONS

Songs enhance the learning of mathematical concepts. Hendrick (1988) point out that songs seem to have a particularly deep trace in our memories. Since music would appear to have such a significant influence on pupils learning, the researcher seeks to find out if the use of

songs could have the same influence on the development of pupils' mathematical subtraction skills.

Songs can be used to expose pupils to new concepts. Since repetition is one of the major characteristics of songs, they can help pupils recall material after a long period of time. Griffee (1992) asserts that the repetitive nature of songs provides wonderful opportunities to gain familiarity with mathematical concepts. In light of this, there is need for careful preparation before introducing the songs to the class. The teacher is responsible for organizing the songs according to the needs of the learner and it is important that pupils develop cognitively after a rich, stimulating environment has been created.

Interesting melodies that are easy to remember can be used to encourage pupils to learn. Such an atmosphere makes the children relax and display genuine interest and concentration. Campbell (1992) suggests that sound and music can enhance the work place as well as the classroom. Songs therefore function as a vehicle to help children learn mathematics in an effortless and enjoyable way through easy assimilations and memorization of formulas. It is reasonable to suggest that if songs are selected in accordance with the objectives of the lesson, they can prove to be a valuable supplement to teaching materials. At the same time, the teacher should address the diversity of learners' needs and tailor songs according to the learning requirements of each pupil in the class.

Jourdain(1975) argues that memory plays a key role in mathematics concepts and there is no better way for storing information in the long term memory than through music. It would seem obvious that songs should have a central place in the school curriculum. Chanting the multiplication tables as a class has proved to be the best and fastest way of learning them when the researcher was herself still in primary school.

2.6 FUN AND ENJOYMENT THROUGH SONGS

Songs bring enjoyment and are a form of entertainment. Caine & Caine (1994) highlight that the relaxed atmosphere created by implementing songs into the teaching process can make the classroom a non-threatening environment. It is a well-known fact that if one makes learning fun and enjoyable, pupils not only remember but become eager to learn. Optimum learning occurs in an environment of high motivation, self-confidence and low anxiety (Miller 1997). Jones (2000) points out the need to go beyond the verbal modality when teaching subtraction for pupils tend to easily get lost in words hence the importance of visual cues. Pupils can forget they are practicing subtraction skills and learn unaware. Millington (2011) concurs with the above idea, highlighting that songs are easy and pleasant to learn and as a result, pupils often think of songs as entertainment rather than study. This therefore helps children to find learning through songs fun, enjoyable, amusing and stimulating.

Many pupils get lost trying to learn subtraction. Pupils need to understand that subtraction is the opposite of addition. It means counting back or counting down. Children enjoy counting down and some songs can help too. Use of visual aids can be used to mimic the ducks and the paw paws. This keeps children engaged and they have fun. It inspires imagination as pupils picture the wind blowing against a tree. Sometimes pupils will need to place objects in a tin and taking them away to understand take away. It was through subtraction songs that many people learnt subtraction as children. Giving pupils the five oranges they sing about on the sing and playing out each lyric teaches valuable lessons. Counting down songs teach subtraction and pupils love to sing songs they know well.

Primary scholars learn subtraction better if they are engaged in interesting activities. Teachers therefore should make it a point that the pupils learn in an enjoyable environment. They should get rid of the pressure of learning in pupils. Hendrick (1988) reiterates that it is the

teacher's duty to tailor the activities of the learners to the effective needs of the learner using classroom procedures and strategies which pay off in terms of low anxiety, high motivation and ultimately in the ability to convey information and communicate ideas and feelings.

The researcher wonders if anything as enjoyable as songs can really be important in a subtraction lesson. Jourdain (1975) says songs can offer creative opportunities that can be good for the brain and can enhance learning and intellectual development. Teachers should thus strive to incorporate songs in a subtraction lesson so as to make learning more exciting. The fact that Zhombe is one of the hottest places in Zimbabwe makes the learning of mathematics even more difficult. Bearing in mind the playful nature of young children, a teacher should take advantage of the natural enthusiasm created by the use of songs and convert it into a meaningful learning experience.

2.7 CONCLUSION

The chapter discussed the literature which was employed by the researcher to inform and guide the study on the use of songs in teaching and learning of mathematical concepts in general. The chapter reviewed literature related to the topic and argued that songs are a valuable teaching and learning resource. The first section pointed to the importance of play on the young learner. It has been revealed that play is an important medium for all aspects of children's growth. The chapter presented ideas on how songs connect with the sensitive areas of the brain and music has been called a memory aid with the capability to help learners to retrieve learnt concepts. It has been revealed that songs can create a conducive, relaxed atmosphere which helps learners to learn off-consciously and teachers have been called upon to exploit songs as much as possible so as to help pupils learn effectively.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The execution of a scientific enquiry is possible only if there is a clear, distinct and relevant methodology crafted for the study. The purpose of this chapter is to give details on how the research was carried out. To begin with, the researcher indicates the research paradigm as well as the research design. She also goes on to spell out the population and the sample chosen for the study while data collection instruments are indicated afterwards. Under data collection instruments, the researcher indicates how data were collected during the study. The researcher mentioned the interviews and the observation guide as the data collection tools used. The researcher also deliberated on the ethical issues that were considered to enable the smooth flow of the research. Through all this work, attempts were made to find out if songs do enhance the learning of subtraction concepts.

3.2 RESEARCH PARADIGM

Brundett and Rhodes (2014) define a paradigm as a model that places a strong emphasis on interpreting the meaning of phenomena with a focus on human action. This research is qualitative in nature. Punch (2014) defines qualitative research as a research study which is not in the form of numbers. Chisaka (2013) points out that qualitative research is a multi-perspective to social interaction aimed at describing, interpreting and reconstructing this interaction in terms of the meanings that the research participants attach to it. The researcher chose the qualitative research paradigm since the goal involved the capture of a complete holistic picture of people under investigation. The study involved observing and interacting with participants under study and later representing information from the perspective of the participants.

3.3 RESEARCH DESIGN

According to Rukweru (2015), a research design is an overall strategy that is used in collecting data presentation and analysis. He says a research design is a systematic plan to study a scientific problem. MacMillan and Schumacher (2010) concur and say that a research design refers to the plan and structure of the investigation used to obtain evidence to answer research questions. An action research design was chosen for this study. Cohen&Manion (1994) consider an action research as an informal, qualitative, formative, subjective, interpretive, reflective and experiential model enquiry in which all individuals involved in the study are new and contributing participants. It provides a framework for qualitative investigations by teachers and researchers in complex working classroom situations. This research design was chosen because it is very popular in the field of education. I observed effects in real context and made changes appropriately.

3.4 TARGET POPULATION

Burns & Grove (1997) describe a population as the entire aggregation of respondents that meet the designated set criteria. It refers to the totality of all subjects that conform to a set of specifications comprising the entire group of persons that is of interest to the researcher and to whom research results will be generalized. This study was designed in a second grade class in a rural set up at Gwenzimukulu Primary School in Zhombe area, Midlands Province of Zimbabwe. There were sixty students: forty girls and twenty boys in the second grade. There were two grade two classes. Results obtained were generalized to this grade. The researcher had a chance to see how my ideas function when applied to children who know me. This saved time which otherwise could have been spent acclimatizing and getting acquainted with new pupils if they were chosen for the study.

3.5 SAMPLE

Polit & Hungler (1995) explain sampling as a process of selecting a sub-section of a population that represents the entire population in order to obtain information regarding the phenomenon of interest. It is a subset of the population which is selected to participate in a study.

The study utilized the convenience sampling to select the study site and to select the respondents. Rosen and Rosnow (1975) postulates that convenience sampling is a type of non-probability sampling where members of the target population are chosen on the basis that they meet certain practical criteria such as easy accessibility, geographical proximity, availability at a given time or the willingness to participate. Walliman (2011) clarifies that students in the researcher's own institution are main examples of convenience sampling. Participants of this study were the grade two red class pupils, the class that the researcher teaches at Gwenzimukulu Primary School. Typical use of the researcher's class was a matter of convenience. The pupils in the class are doing second grade for the second time. The class has twenty six pupils, twelve boys and fourteen girls. The whole class participated in the study.

3.6 DATA COLLECTION INSTRUMENTS

Burns & Grove (1997) regard data collection as a systematic way of gathering information which is relevant to the research purpose. Given the qualitative nature of action research, the researcher considered the view that the isolated use of a single research instrument can produce misleading results. Two instruments in parallel helped in investigating the problem. This allowed results to be compared with greater confidence in their joint implications. This also made it possible for me to get rich descriptions of participants' stand points. Thus,

interview guides and observation guides were used as instruments for data collection. Tests and exercises were also administered.

3.6.1 Interviews

According to Kothari (2009), an interview is a verbal conversation between two people with the objective of collecting relevant information for the purpose of the research. The researcher chose this instrument so that she could pursue in-depth information around the topic. Chisaka (2013) points out that interviews assist the researcher to get as much information as possible. Burns and Grove (1997) also remark that the advantage of an interview is that it enables the interviewee as well as the interviewee's perspectives to inform the research agenda and therefore give rise to a more equal balance in its relationship.

The researcher obtained the teacher's perceptions and views towards using songs to promote the teaching of subtraction as a mathematical concept. She operated on a one on one basis with the participants. Three teachers experienced in teaching the grade twos participated in the study. The interviews inquired about the background, past experience and expectations of each teacher participant and they focused on participants' perceptions and impressions and conclusions about using songs in teaching subtraction concepts.

The researcher made use of the open-ended interviews. Gubrium& Holstein (2002) define an open-ended interview as an open situation through which a greater flexibility and freedom is offered to both side; the interviewer and the interviewee in terms of planning, implementing and organizing the interview content and questions. The researcher made use of this type of interviews so as to get a chance to probe and get information from the interviewees. Here the

interviewer was keener to follow up interesting developments and to let the interviewees elaborate on various issues (Dornyein: 2007).

The use of an interview guide allowed the data the researcher was collecting to flow in a coherent manner. Guideline questions were prepared well in advance but this did not close any chance for unpredictable questions which occurred in the process of digging out valuable information from the interviewees. The questions gave the researcher guidelines regarding what to say. Probing that was done helped me discover information about how children can be helped to obtain better grades in mathematics. The researcher used an audio recording device to capture information from the interviews. The researcher used the service of an assistant to record the interview proceedings while she took notes. After the interviews, the researcher gave herself ten to fifteen minutes to evaluate the interview process. This was done to obtain new themes that could have emerged.

3.6.2 Observation

Observation is one of the methods used when collecting data especially for qualitative research purpose. The researcher made use of participant observation as an instrument for data collection. SchensulSchensul&LeCompte (1999) define participant observation as the process of learning through exposure to or involvement in the day to day or routine activities of participants in the research setting. The researcher chose this research instrument to uncover factors important for a thorough understanding of the research problem. This idea is supported by Dewalt and Dewalt (2002) who believes that the goal for design of research using participant observation as a method is to develop a holistic understanding of the phenomenon under study that is as objective and accurate as possible. Since the researcher was in direct contact with the pupils, it was easy to closely observe their response to songs

sung in class. This helped me to study their behavior at the same time helping me to see how important songs were in a mathematics lesson. Patton (2002) posits that observing participants in action and recording observations is a common way of collecting data in action research.

In order to create a sound description and true interpretation of the behavior of my pupils in the classroom, the researcher systematically and intensively observed pupils' behavior as the researcher was teaching without the involvement of songs. She also collected data that portrayed the subjective truth of using songs in the classroom and she observed their behavior during a regular mathematics lessons and looked for patterns that emerged.

3.6.3 Tests and written exercises

Tests and exercises were written by the pupils with the researcher observing how the children would have grasped the concepts. This step was meant to reflect on whether songs could have served a purpose in enhancing the learning of subtraction concepts. Tests also allowed the researcher to dig further information related to the research. Children's learning was reflected. The tests did communicate whether songs were important in helping children learn. I collected samples at different periods of time to get a feel of student's performances and changes over time. This greatly helped me to come up with conclusions on the impact of songs during the teaching and learning process. Two tests were given to the pupils. Five exercises were given. Tests were written every fortnight while exercises were given each time we had a subtraction lesson.

3.7 DATA COLLECTION PROCEDURE

No song was used as the teacher taught the concept first but the exercise was marked and results were recorded. The second lesson was taught with the aid of the song and the teacher realized she had not fully utilized the song. A test was written after two weeks and marks were recorded. The third lesson was taught with the aid of a song. A song that incorporated vocabulary like take away and count back was used. The fourth lesson was taught with the song. Media of sample paw paws were used to help children learn. Pupils sang and performed activities the song with actions in attempt to help them understand. Pupils solved the subtraction problems in groups while singing. Lastly, the teacher incorporated media for each child and gave everyone an equal chance of practicing while singing. Altogether the researcher did seven cycles.

3.8 DATA ANALYSIS

According to Polit&Hungler (1995) data analysis is the systematic organization and synthesis of the research data. Content analysis was used to analyze the data which was gathered. Burns (1994) says content analysis is whereby data gathered is categorized into themes and subthemes for it to be comparable. Content analysis helped the researcher structure the qualitative data collected in a way that satisfied the accomplishment of the research objectives. However, human error is highly involved in content analysis since there is a risk of researchers misinterpreting the data gathered thereby generating false and unreliable conclusions.

3.9 ETHICAL ISSUES

When conducting research, it is important to adhere to ethical standards. Cohen and Manion (1980) define ethics as a code of behavior considered correct. From the beginning of this

research, the researcher gave thought to all ethical aspects the study entailed. An action research is considered ethical if the research design, interpretation and practical development it produces have been negotiated with all parties directly concerned with the situation under research (ibid). All the principles that guided the work were discussed from the onset with the administration which gave approval. The researcher also got approval from parents to work with their pupils since they were under age. Issues concerning confidentiality were clarified to parents, pupils and interviewees. The researcher respected participants' right to anonymity and also allowed pupils to decline answering any questions that they deemed sensitive in nature. All the children in the study were given pseudonyms. The researcher continually gained consent at each stage of their involvement. This was done to ensure their choices were free from any kind of coercion from parents, the school or the researcher herself.

3.10 CONCLUSION

The chapter explored the investigative action research study. It provided details on the research methodology employed. Qualitative methodology was selected, targeting the Grade two red class at Gwenzimukulu Primary School. This sample was chosen basing on convenience and data was generated by conducting in depth interviews. Open-ended questions were used for the interviews. This approach was preferred since it allowed the researcher to come up with new knowledge systems. The study also used lesson observations and also administered written exercises and tests. The researcher conformed to all the necessary ethical issues and ensured children's rights were not violated. This enabled data gathering on the relevance of songs in promoting learning of subtraction concepts.

CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS

4.1 INTRODUCTION

In this chapter, the researcher presents the data collected through the use of interviews, observations and administered tests and exercises. The data collected was on the topic: 'Enhancing learning of subtraction concepts through the aid of songs to the grade two pupils at Gwenzimukulu Primary School in Zhombe.' Common themes were drawn from the information obtained from the above mentioned data collection instruments. Songs were sung during the lessons to help children learn, lessons were planned and taught and evaluations were made. Each cycle indicated a different method of utilizing songs up until a better method was obtained. The data is presented in relation to the research questions raised in chapter one.

4.2 RESEARCH QUESTION 1

- How can songs be used in the classroom environment to help pupils learn subtraction concepts?

4.2.1 Data from interviews

Two female and one male teacher experienced in teaching the grade twos participated in the study. For privacy sake, the teachers who were interviewed were named X, Y and Z. The following questions from the data collection instruments aimed to answer research question 1.

4.2.1.1 (i) At which stages of the lesson can teachers use songs to help pupils learn subtraction concepts?

Teacher X and Y

Both teachers felt that songs should be engaged at the introduction stage, giving similar reasons why they thought so. They explained that that songs serve to draw the attention of the pupils and they were both of the idea that songs at that stage prepare pupils to learn. Teacher X pointed out that a song sung at the introduction of a subtraction lesson engage pupils in the learning process unaware. Teacher Y said a good classroom tone which helps to keep pupils relaxed at the beginning of the lesson should be set. She continued to say once pupils discover how interesting the lesson is at the beginning, they will grow to like everything that follows.

Teacher Z

She said teachers should not grow tired of using songs even after the introduction stage. She indicated that since the young learners have a short concentration span, teachers should continue capitalizing on songs throughout the lesson even at the conclusion stage. The teacher also had a feeling that a song should be engaged at the introduction stage as a way of capturing pupils' interest. She said that singing a song on subtraction at the introductory stage is a way to start the lesson with all pupils. She went on to say that singing a song on subtraction at the conclusion stage is a way of ending the lesson in a more interesting way.

4.2.1.2 (ii)What activities can teachers incorporate as they sing so as to help pupils learn subtraction concepts?

Teacher X and Z

Teacher Z indicated that teachers should make their lessons live and meaningful as they incorporate the songs in a subtraction lesson. Both the teachers said emphasis should be on the movement or actions to go with the song. Teacher Z went further to say singing a song on

subtraction and marrying it with actions will help the pupils to get the meaning of the song thus get the idea. Teacher X pointed that the focus should not be on the voice quality produced by the pupils but on whether the children do understand what they are supposed to do.

Teacher Y

Teacher Z said that instead of demonstrating how to subtract through speech, the teacher can sing and make use of media to illustrate how subtraction should be carried out. The teacher cited that one can make use of leaves, counters or sticks as aids that can help the young pupils learn. She clarified that teaching and learning subtraction concept through the aid of the song and media can help in making live the classroom atmosphere.

4.2.2 Data from observations

The researcher observed the behavior of pupils each time they were learning and she observed how the pupils expressed themselves in lessons without involvement of song. She also observed their actions when a song was engaged in the learning process, how they interacted with each other and how they participated in class as well as in group work tasks that were given in each cycle to portray a different way of engaging the song. Pupils' performance in each cycle was also observed to find out if songs were having an impact in their learning.

4.2.2.1(i) Which sections of the lesson hindered children's understanding?

The introduction part did not arouse most children's interest to learn because it was teacher-centered and many pupils were passive in the learning process. They were not involved in the learning process. The teacher had difficulties in trying to capture their attention. Group work

tasks were done by the fast learners who were vociferous during the activities. Five pupils got zero out of five. Six pupils got one out of five. Four pupils got two out of five. Six pupils got three out of ten. Four pupils got four out of five. Three pupils totalized the exercise. Eleven pupils out of twenty six passed the exercise. Fifteen pupils failed the exercise. Fig 1 below shows pupils when they were in the lesson when no song was used in the learning process.

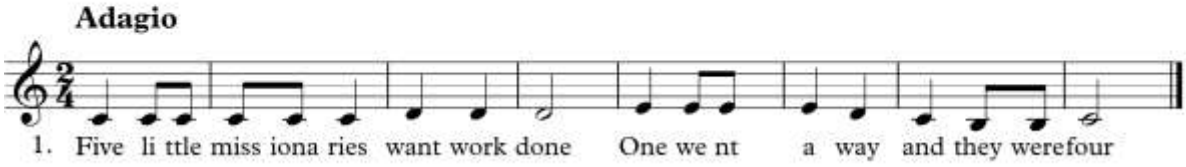
Fig 1. Pupils learning when no song was used in the learning process.

In the next lesson the teacher planned to make use of a song at the introduction stage to make the learning atmosphere live as well as to capture pupils' attention.

4.2.2.2(ii)What made pupils, if any, fail the given exercise when the song was engaged in the learning process?

The lesson was taught and the song below called "Five Little Missionaries" was incorporated to help pupils to learn.

Five little missionaries



After the engagement of the song in the lesson pupils wrote an exercise. Three pupils got a zero out of five and four pupils got a one. Six pupils got two out of five. Five pupils got three out of five and four got a four out of five. Four pupils totalized the exercise. Thirteen pupils passed and thirteen failed the exercise. The lesson activities were less engaging to help them grasp the concepts taught. Also some pupils did not get the meaning of the words take away and count back when the teacher gave explanations. Many pupils confused the words for addition. Fig 2 below shows the teacher and the pupils singing the song “Five Little Missionaries” at the introduction stage.

Fig 2: Pupils learning through song Five little missionaries

In the next lesson, the teacher planned to make use of a song that incorporated the words count back and take away; an attempt to help pupils get used to the words and understand how they should be applied. The teacher also decided to make the song a more meaningful aid when teaching and learning subtraction. In the next lesson, she thought of revisiting a song used at the introduction stage continually as the lesson progressed so as to maintain pupils' interest during the lesson.

4.2.3 Administered tests

4.2.3.1 (i) Did the majority of the pupils pass the given test?

In a test written after teaching the pupils without the extensive use of songs to help pupils learn, learners got the scores as narrated below. Four pupils got zero out of ten and two pupils got one out of ten. Three pupils got two out of ten. Four pupils got three out of ten. Two pupils got four out of ten. Three pupils got five out of ten. Two pupils got six out of ten. Two

pupils got seven out of ten. Two pupils got eight out of ten. One pupil got one out of ten and one pupil totalized the test. Ten pupils out of twenty six passed the given exercise. Sixteen pupils failed the exercise. There is need for more pupil engagement activities during lessons so as to help learnt material stick in pupil's minds.

4.2.3.2 (ii)What could have contributed to pupils failing the test?

It seems pupils were not attentive in lessons as they were being delivered. Pupils seemed to have forgotten what they had learnt. Lack of enough imitation activities left many pupils raw. Many did not grasp what they were taught in class. Pupils were passive recipients of information during lessons and failed to recall what they were taught.

Analysis of Research Question 1 (From interviews and observations)

Songs can be used at various stages of the learning process to help pupils learn. Pupils scored low marks when class activities were less pupil-engaging. Lack of pupil involvement during the lessons seem to have contributed to failure by the pupils to remember what they had learnt. Live lesson activities go with better performance.

4.3 RESEARCH QUESTION 2

To what extent do songs enhance learning of subtraction concepts?

4.3.1 Data from interviews

4.3.1.1 (i) Do you think teaching and learning subtraction concepts through songs can be a good or bad initiative?

Teacher X and Z

The teachers pointed out that teaching and learning subtraction concepts through songs can be a good initiative since children enjoy singing. Both the teachers agreed that one who capitalizes on this method can get a chance to win children's attention. They also indicated that songs stay in memory for a long time and help learners recall learnt content. Teacher Z went on to say that exploiting the songs during the lessons can be an effective way of maintaining children's interest; a way to try and cater for children's short concentration span.

Teacher Y

The teacher stressed that if songs are well managed, they can help learners grasp the learnt subtraction concepts. He pointed to the fact that since children like singing, they can concentrate if they are given a chance to learn through song. He however expressed his fear that learners can be derailed and become very happy and lose focus during the lesson if teachers fail to manage the song.

4.3.1.2 (ii)Do you think songs can help learners grasp and recall learnt subtraction concepts?

Teacher X and Z

The teachers indicated that songs can help learners recall learnt subtraction concepts since material learnt through the aid of song can stay in memory for a long time. Teacher X pointed out that this is because pupils may go home singing the song and can sing for their parents at home. It was said that the song can act as an aid to keep in memory everything the pupils did in the lesson as they can serve to refresh the minds of the learners. The teachers indicated that if the song was interesting, the learner continues singing it even after the lessons. The teachers agreed that children like singing. Teacher Z clarified that pupils always find time to repeat an activity that proved interesting to them. The teacher said that pupils who perform

learning activities in a way which interests them recall what they learnt better than those who do not.

Teacher Y

The teacher indicated that if well-managed, songs can help learners recall learnt subtraction concepts. Teacher Y stressed the need for the teacher to make pupils become engaged in activities that help them learn rather than mere singing.

4.3.1.3 (iii)What type of learning environment do you think songs create if teachers use them in the teaching and learning process of subtraction?

Teacher X, Y and Z

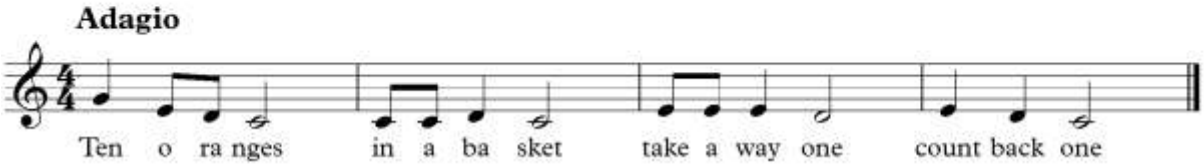
The three teachers pointed out that songs create an enjoyable playful learning atmosphere if they are used in the learning process. The all agreed that songs create an engaging learning atmosphere which helps children to learn. They all pointed out that songs create a relaxed atmosphere if they are used in a subtraction lesson. Teacher Y clarified that songs create an enabling environment for all children to get involved in the learning process. All of them indicated that songs create a friendly atmosphere where children learn without fear.

4.4DATA FROM OBSERVATIONS

4.4.1 (i)Did the children find the lesson interesting and enjoyable when songs were part of the learning process?

The song “Ten Oranges” transcribed below was sung to help pupils conceptualize the subtraction.

Ten oranges



Many pupils seemed happy during the lesson. Quite a number participated very well and they looked happy and free. The class was lively and many pupils interacted with each other. The pupils discovered what take away meant as they participated in the activity of taking away 'oranges' from the baskets in their groups. They also discovered what counting back meant. Fig 3a and 3b below are pictures showing children practically counting back and taking away sample oranges from a container as they sung.

Fig 3a Pupils practically counting back and taking away

Pupils' concentrated very well as they watched their peers taking away sample oranges from the container. They were engaged in the learning process and they liked singing as they demonstrated what they were singing using the sample oranges.

Fig 3b Pupils learning through song, Ten Oranges

After writing the exercise the teacher found out that two pupils got zero out of five. Four pupils got one out of five. Four pupils got two out of five. Five pupils got four out of five. Seven pupils got four out of five. Four pupils totalized the exercise. Ten pupils failed the exercise and sixteen pupils passed. The teacher planned a more child-centered lesson which was to be done in the next time lesson as a way to help pupils learn. She planned to encourage the pupils to sing the subtraction problems given and solve them through activity and singing.

4.4.2 (ii)Did the children find it easy to learn the subtraction concepts when songs were engaged in the teaching and learning process?

Learning how to subtract given problems through the aid of the song "Ten Green Paw Paws" seemed a light task for many pupils. The song was sung until there were no 'paw paws' left in the trees. In this way pupils understood that subtraction means less than before. They learnt

the idea of subtraction unaware. Pupils were practically engaged in the task of solving the subtraction problems. Below is the song "Ten Green Paw Paws."

Pupils enjoyed the practical exercises as they were removing 'paw paws' from trees. It was interesting to see children singing in groups as ways of solving the group work tasks given. Many pupils were happy during the lesson and quite a number of pupils interacted with the teaching media that was given to them. Pupils liked to accompany the song with the activities of removing 'paw paws' from the sample trees.

The teacher realized that not all pupils had a chance to perform the subtraction activities as they were singing. Some did not get adequate time to perform the practical activities as they sang because the media was not enough for everybody. Fig 4 below is a picture showing pupils doing group work activities making use of the song.

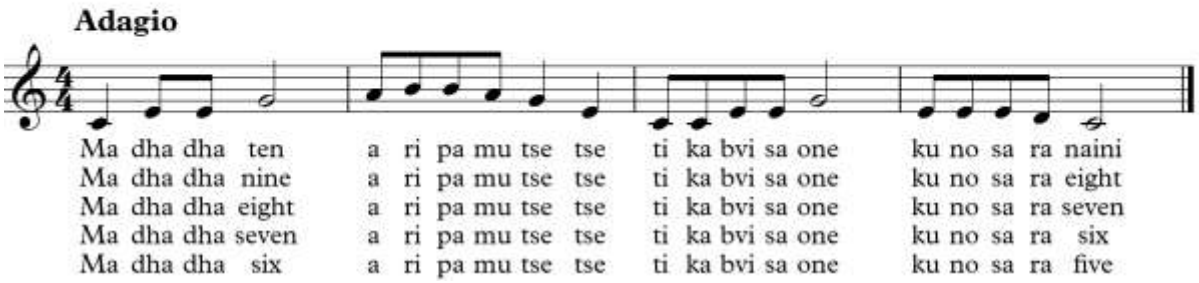
Fig 4: Pupils learning through song Ten green paw paws

The pupils wrote an exercise. The results were as follows: Two pupils got zero out of five. Two pupils got one out of five. Three pupils got two out of five. Six pupils got three out of five. Six pupils got four out of five. Seven pupils totalized the exercise. Nineteen pupils passed and seven failed the exercise. In the next cycle the teacher opted to provide media for each learner so as to give all the pupils an equal chance of practicing so as to help them learn.

4.4.3 (iii) Were the children actively involved in the learning process when songs were part of the learning process?

Almost the whole class participated very well when the teacher made use of the well-known song "*madhadha ten*" in the learning process. The song is shown below.

Madhadha ten



Many pupils enjoyed the lesson and the whole class sang happily as the activities were performed by everybody. Each pupil had small stones symbolizing the ducks and performed activities on subtraction as they sung. Whenever the teacher led in song, the whole class would come to life. Fig 5 shows the pupils in the learning process singing the song "*madhadha ten".*

Fig 5: Pupils learning through song, Madhadha ten

The pupils wrote an exercise and the results were as follows: Only two pupils got zero out of five. Nobody got a one. Four pupils got two out of five. Five pupils got three out of five. Six pupils got four out of five. Nine pupils totalized the exercise. Twenty pupils passed the exercise.

4.5 ADMINISTERED TEST

4.5.1(ii)How did the children perform in the test on subtraction when songs were used throughout the week to help children learn?

One pupil got a zero out of ten. No one got a one or a three out of ten. One pupil got a two out of ten One pupil got a four out of ten. One pupil got a five out of ten. Two pupils got six out of ten. Three pupils got seven out of ten. Four pupils got eight out of ten. Five pupils got nine and again five pupils totalized the test. Twenty out of twenty six pupils passed the test.

4.5.2(i) What could have contributed to the behavior the children portrayed in the test?

It seemed pupils had the subject matter still fresh in their minds. They could quickly recall what they learnt. Pupils could solve the problems quickly and they had subject matter on their fingertips. The concepts were still fresh in their minds.

Analysis of research question 2

When songs were employed in the subtraction lessons, the learning environment was child-friendly and the teacher won children's attention. Songs and activities made the subtraction lessons concrete. Pupils performed better in the non-threatening classroom atmosphere. They could recall the learnt content afterwards.

4.6 CONCLUSION

The study examines the role played by songs in enhancing learning of subtraction concepts focusing on the grade two pupils at Gwenzimukulu Primary School in Zhombe. This chapter dealt with the presentation and analysis of research findings. Data was collected from observations the researcher made as the children were learning. The scores that children got are narrated and pictures are provided to show how the pupils were learning at various levels of song engagement. The scores that children got are an indicator of the impact of songs in helping children to learn. Data was also collected from interviews and narrations were written down as a way of presenting the data. According to the responses, songs play a positive role in teaching and learning of subtraction.

CHAPTER FIVE: SUMMARY, CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

5.1 SUMMARY

In Chapter One, the researcher highlighted the background of the study. As the background unfolded, it became clear how songs can become an aid in making learning of subtraction concepts easier. The statement of the problem was spelt out. The researcher also justified the need for the research on enhancing the learning of subtraction concepts through the aid of songs. It was indicated that songs are not exploited during mathematics lessons at Gwenzimukulu Primary. Advertisers among others were noted to have used songs as aids to help customers remember products well. The researcher thus argued for the necessity of this research borrowing from this and from her past experiences when she lived with her grandmother who taught her many things a long time ago she can remember now.

Chapter Two is all about literature review. Through various researches read, the researcher proved the importance and feasibility of her study. It was clarified that songs make the learning environment relaxed and enjoyable. It was highlighted that children learn through play so songs were presented as a means to enable young learners to play. Many researchers agreed that teachers should make the learning atmosphere child friendly and fun if meaningful learning should is to take place. It was also indicated that songs help pupils recall learnt concepts since they stay in memory for long. The literature that was reviewed also included the idea that songs incorporate the whole brain in the learning process.

Chapter Three was an approach to describe and explain how the research was carried out and the description of the methodology used to collect data. The research is qualitative in nature.

An action research was employed in the study with the population of the study being the Grade Twos at Gwenzimukulu Primary School. The Grade Two Red class was selected as a sample basing on convenience. The interviews and observations were used as data collection instruments. Ethical considerations were observed as the research was conducted.

Chapter Four is a reflection of the data that was collected in the field. An analysis of the data was also done as per each research question. In presenting data, the researcher used two research questions as a guide. Sub-questions feeding into the research questions were also used in data presentation. Data was presented in a narrative way with the researcher deriving common themes from each research instrument.

5.2 CONCLUSIONS

Research question 1

How can songs be used in the classroom environment to help pupils learn subtraction concepts?

From the data collected on research question 1, it is clear that there are different ways songs can be used when teaching subtraction. Songs need to be sung meaningfully at various stages of learning to appeal to pupils' senses. A tense learning environment has a negative impact in the learning process. Learning does not prevail if lessons are teacher-dominated and less engaging. Less practice and teaching abstract ideas does not help in making children learn. Exploitation of songs at various stages of the mathematical subtraction lesson enhance learning. Furthermore, marrying songs with interesting activities or actions helps pupils learn mathematical subtraction concepts.

Research question 2

To what extent do songs promote learning of subtraction concepts?

All pupils can learn mathematical concepts provided the teacher puts an effort in helping them to learn. From the data collected based on research question 2, songs do play an important role in teaching and learning of mathematical subtraction concepts if used correctly. Since many children are fond of singing, utilizing songs in a mathematics subtraction lesson helps to improve the child's passion for learning. Their repetitive nature helps in reinforcing learnt concepts. Songs help pupils to view learning as play and help learners to learn unaware. Songs help the teacher to be able to capture the attention of most of the learners and they do help learners to remember concepts under exam conditions for they stay in memory for long.

5.3 DISCUSSION

From the study, the researcher discovered that songs enhance learning of subtraction concepts. Many children grasp concepts being put across if the learning environment is friendly. Since songs are enjoyable, capitalizing on them is one way of engaging all the children to learn and the researcher realized that songs break monotony in the classroom. Songs are a way of making the classroom atmosphere live. A song coupled by movement and activities is a way of getting many children get absorbed in the learning process. It is true that learning can only take place when the children are active participants in the learning process. Songs help counter docility in a classroom set-up. Learners get involved in the learning situation unaware. The use of songs and media helps pupils to get the meaning of what they are required to do as the lessons unfold.

5.4 RECOMMENDATIONS

From the findings of this study, the following recommendations were made in an effort to enhance learning of subtraction concepts through songs so as to help counter the problem of high failure rate in mathematics.

5.4.1 Recommendations for practice

In support of the observations the researcher made and the interviews that were carried out, it is recommended that subtraction concepts be learnt through the aid of songs to help pupils grasp and remember learnt concepts because children's attention is captured when songs are used. The researcher observed that learners got more engaged in the learning process when they actively participated in the lesson. It is thus recommended to marry songs with various activities for pupils to get engaged in the learning process. As one interviewee clarified, it is a good practice to use learning aids like counters together with a song to help learners conceptualize the mathematical subtraction concept being learnt.

The researcher recommends the use of songs and meaningfully exploiting them in a mathematics subtraction lesson for this help to maintain pupils' interest to learn. Turning the mathematics subtraction lesson musical is a good practice for it is one way to ensure one does not lose the pupils and be alone when teaching. In support of interviewees, actively engaging pupils during the learning process helps them to get sense of what the teacher says. From the observations made, subtraction problems should not be solved in abstract if children are to grasp and retain them. The use of song is thus recommended as a way of promoting learning of subtraction concepts through practical means. Recommendations clarify the need for concrete ways of teaching and learning mathematical subtraction concepts, pupil engaging activities and enjoyable learning atmosphere if meaningful learning is to take place.

5.4.2Recommendations for further study

- This study should not be considered final as there are other aspects that help increase students' performance when songs are used in the teaching and learning process that need to be exploited further.
- Since the study did not cover all the grades in the primary schools, it is suggested that future researchers could replicate the study to include other primary schools grades.
- Further study could be conducted to quantify other possible solutions or means of improving students and teacher perception of songs in the teaching learning process.
- Studies on effective ways to use songs to improve students' test scores should be explored further.
- Since the study only focused on one concept that is subtraction, further studies on enhancing learning of many other mathematical concepts using songs should be pursued.

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APPENDIX 1

INTRODUCTORY LETTER

MIDLANDS STATE UNIVERSITY
P. BAG 9055, Gweru.
TEL: (263) 54 260450 Ext 2161
FAX: (263) 54 260223

FACULTY OF SOCIAL SCIENCES
MUSIC AND MUSICOLOGY

.....(date)

Dear Sir/ Madam

RE: INTRODUCTION TO PROJECT RESEARCH

The bearer RATIDZO SHANANGURAI Registration Number R150826 is a student at Midlands State University. He/ She is studying for a Bachelor of Science Honours Degree in Music and Musicology and is conducting a research entitled:

ENHANCING THE LEARNING OF SUBTRACTION CONCEPTS THROUGH SONGS TO GRADE TWO PUPILS AT CHIENGI MUKUMU PRIMARY SCHOOL

He /She is visiting you in person/your company/your institution for the purpose of data collection. Please assist him/her in every possible way.

.....
Dr P. Matiure
CHAIRPERSON

MIDLANDS STATE UNIVERSITY
DEPARTMENT OF MUSIC AND MUSICOLOGY
PRIVATE BAG 9055, GWERU

APPENDIX 2

APPROVAL LETTER

Gwenzimukulu Primary School
Post Office Box 299
Kwekwe

05 May 2017

To whom it may concern

REF: APPROVAL LETTER FOR RATIDZO SHANANGURAI

On behalf of the Ministry of Primary and Secondary Education, I Muumbe E the head of Gwenzimukulu Primary School is granting permission to the above named teacher to carry out her research at this school. She is free to collect data which will contribute towards the success of her studies.

Yours faithfully

.....
Muumbe E.
Head

THE HEAD
GWENZIMUKULU PRIMARY SCHOOL
05 MAY 2017
P. O. BOX 299
KWEKWE, ZIMBABWE

APPENDIX 3

CONSENT LETTERS

Midlands State University
Department of Music and Musicology
Private Bag 9055
Gweru

May 2017

Dear research participant

My name is Ratidzo Shanangurai and I am a student at Midlands State University. I am currently conducting a research on the following topic: Promoting learning of subtraction concepts to the grade two pupils at Gwenzimukulu Primary School in Zhombe under the supervision of Mrs T. Shoko at Midlands State University. This is in partial fulfilment for the requirements of the Honours Degree in Music and Musicology.

I am interested in interviewing teachers who are experienced in teaching the grade twos. I think your knowledge and experience will provide insight into this topic. I shall strictly keep all the information confidential and use pseudonyms to maintain your anonymity. The data will be stored on my password protected computer and the only person who will have access to the research data will be my supervisor. The contents of this interview will be used for my research project which will include a final paper. There are no benefits or risks to participation. I will show you a copy of the transcript to ensure accuracy. I am kindly asking for your assistance in order for me to be able to compile my research project. You are free to withdraw once you feel your privacy has been violated. I am counting on your participation for the success of this research.

I therefore kindly request you to sign this consent form if you agree to be interviewed. I am very grateful for your participation.

I acknowledge that the topic of this interview has been explained to me. I hereby declare that I have understood the above information and I concur with the researcher on this.....12th.....of May 2017.

Signature.....

Yours faithfully

Ratidzo Shanangurai

Midlands State University
Department of Music and Musicology
Private Bag 9055
Gweru

May 2017

Dear research participant

My name is Ratidzo Shanangurai and I am a student at Midlands State University. I am currently conducting a research on the following topic: Promoting learning of subtraction concepts to the grade two pupils at Gwenzimukulu Primary School in Zhombe under the supervision of Mrs T. Shoko at Midlands State University. This is in partial fulfilment for the requirements of the Honours Degree in Music and Musicology.

I am interested in interviewing teachers who are experienced in teaching the grade twos. I think your knowledge and experience will provide insight into this topic. I shall strictly keep all the information confidential and use pseudonyms to maintain your anonymity. The data will be stored on my password protected computer and the only person who will have access to the research data will be my supervisor. The contents of this interview will be used for my research project which will include a final paper. There are no benefits or risks to participation. I will show you a copy of the transcript to ensure accuracy. I am kindly asking for your assistance in order for me to be able to compile my research project. You are free to withdraw once you feel your privacy has been violated. I am counting on your participation for the success of this research.

I therefore kindly request you to sign this consent form if you agree to be interviewed. I am very grateful for your participation.

I acknowledge that the topic of this interview has been explained to me. I hereby declare that I have understood the above information and I concur with the researcher on this.....16th.....of May 2017.

Signature.....

Yours faithfully

Ratidzo Shanangurai

Midlands State University
Department of Music and Musicology
Private Bag 9055
Gweru

May 2017

Dear research participant

My name is Ratidzo Shanangurai and I am a student at Midlands State University. I am currently conducting a research on the following topic: Promoting learning of subtraction concepts to the grade two pupils at Gwenzimukulu Primary School in Zhombe under the supervision of Mrs T. Shoko at Midlands State University. This is in partial fulfilment for the requirements of the Honours Degree in Music and Musicology.

I am interested in interviewing teachers who are experienced in teaching the grade twos. I think your knowledge and experience will provide insight into this topic. I shall strictly keep all the information confidential and use pseudonyms to maintain your anonymity. The data will be stored on my password protected computer and the only person who will have access to the research data will be my supervisor. The contents of this interview will be used for my research project which will include a final paper. There are no benefits or risks to participation. I will show you a copy of the transcript to ensure accuracy. I am kindly asking for your assistance in order for me to be able to compile my research project. You are free to withdraw once you feel your privacy has been violated. I am counting on your participation for the success of this research.

I therefore kindly request you to sign this consent form if you agree to be interviewed. I am very grateful for your participation.

I acknowledge that the topic of this interview has been explained to me. I hereby declare that I have understood the above information and I concur with the researcher on this.....15.....of May 2017.

Signature.....

Yours faithfully

Ratidzo Shanangurai

APPENDIX 4

INTERVIEW GUIDE

My name is RatidzoShanangurai. I am in my final year at the Midlands State University. I am currently working on my project entitled Promoting learning of subtraction concepts through the medium of songs to the Grade two pupils at Gwenzimukulu Primary School in Zhombe. I am kindly asking for your cooperation by answering these interview questions. Please feel free to say out what you think and your honesty contribution will be greatly appreciated. Be assured that the information you will give will be used for education purposes and no name will be disclosed. Thank you for your assistance.

Questions

i. At what stages of the lesson can teachers incorporate the song during a subtraction lesson?

ii. What activities can teachers incorporate to help pupils learn subtraction concepts?

iii. Do you think teaching and learning subtraction concepts through song can be a good or bad initiative? Explain your answer.

iv. Do you think songs help learners grasp and retain learnt subtraction concepts? Explain your answer.

v. Can you describe the learning environment that is created if teachers use songs to teach subtraction concept

APPENDIX5

OBSERVATION GUIDE

i. Which sections of the lesson hindered children's understanding?

ii. What made pupils fail the exercise given when the song was incorporated in teaching subtraction?

iii. How best could the teacher have used the song to help pupils learn?

iv. How did the pupils perform in exercises and tests given when songs were not used extensively?

v. How did the pupils perform in exercises and tests given when songs were used extensively?

vi. Did the pupils find it easy to learn subtraction concepts when songs were engaged in the teaching learning process?

vii. Were the children actively involved in the learning process when a song was used to help pupils learn?

APPENDIX6

LESSON PLANS

LESSON PLAN 1

DATE 10-05-17

TIME 0830- 0900hrs

CONCEPT Subtraction

REFERENCES Maths Syllabus Page 6, Grade 2 step in New Primary MathsPupils Book Page 20

Media work cards with questions, counters

Objectives

By the end of the lesson pupils should be able to:

- illustrate at least four numbers correctly using counters
- solve at least four problems correctly on subtraction.

Introduction

Teacher tells pupils a story illustrating subtraction.

Step 1

Illustrating numbers using counters as a class.

Step 2

The teacher demonstrate how subtraction should be done with the aid of counters and chalkboard illustrations.

Step 3

Children imitate the teacher's example with the teacher's help.

Step 4

Group work tasks and reports

Step 5

Individual work

1. 4-1 =_ 2. 8-3= _ 3. 5-3= _ 4. 7 take away 4 =_ 5. 6 count back 3 = _

Conclusion

The teacher picks a pupil from each group to solve the given problems.

EVALUATION

Strengths

Eleven pupils passed the given exercise. They could follow the teachers' demonstrations correctly.

Weaknesses

More than half the class failed the given exercise. Fifteen pupils failed the exercise. Pupils participation was low during the lesson. Many slow learners were not fully engaged during the lesson. Group work tasks were done by the vociferous pupils.

Way forward

The teacher will try better ways to help all learners become engaged in the learning process.

LESSON PLAN 2

Date 19-05-17

Time	1030-1100hrs
Concept	Subtraction
References	Maths syllabus Page 6, Step In New Primary Maths Grade 2 Page 20
Media	Work cards with questions

Objectives

By the end of the lesson pupils should be able to:

- answer at least four given problems based on subtraction

Introduction

The teacher and the pupils sing the song five little missionaries

Step 1

Recap of the previous lesson

Step 2

Explanations and demonstrations on how to solve subtraction problems

Step 3

Imitation by the class

Step 4

Group work tasks and reports

Step 5

Individual work

1.4-1= 2. 8-3= 3. 5-3 = 4. 7 take away 4= 5. 6 count back 3 =

Conclusion

Pupils sing the song ten little missionaries

Evaluation

Strengths: Thirteen pupils passed the given exercise. The teacher captured children's interest when she introduced the lesson using a song.

Weaknesses: Thirteen pupils failed the given exercise. It seems pupils just sang the song and did not benefit anything from it. Vocabulary like take away and count back seemed problematic for pupils to understand.

Way forward: A song which involve vocabulary like take away and count back will be used in the next lesson to help pupils get the meaning of the words.

LESSON PLAN 3

Date 26-05-17

Time0730-0830

Conceptsubtraction

ReferenceMathsSyllabus Page6,Step in Maths Grade 2 Pupils Book Page

Mediacounters

Objectives

By the end of the lesson pupils should be able to

- answer at least five questions correctly from the given test questions

Introduction

Discussions on what they were learning in the previous weeks

Step 1

Explanation on test writing

Step 2

Distributing the question papers

Step 3

The teacher reads the test questions while children listen

Step 4

Children write the test individually

Conclusion

Review of the work done

Evaluation

Strengths: Twenty pupils passed the test. It seems what they learnt in the past weeks was still in memory. Pupils participated very well during the lessons.

Weaknesses: Six pupils failed the given tests. They seem to have failed to grasp what they were taught in the past weeks. The teacher realized that pupils cannot read and write.

Way forward: There is need for practice to help pupils learn. Pupils seem not to know what take away means and what count back is for they confuse these for addition. The teacher should emphasize the meaning of the two words to help pupils learn. Activities should be interesting to help pupils engaged in lessons.

LESSON PLAN 4

Date 26-05- 17

Time 0930- 1000

Concept Subtraction

References Maths Syllabus Page 7, Step in New Primary Maths Page 21

Media Work cards with questions

Objectives

By the end of the lesson pupils should be able to:

- sing the song ten oranges in a basket
- answer at least four questions based on subtraction

Introduction

Singing the song ten oranges in a basket

Step 1

Recap of the previous lesson

Step 2

Teachers explanation and demonstrations on solving subtraction problems with the aid of the song.

Step 3

Imitation by the class

Step 4

Group work tasks and reports

Step 5

Individual work

1.4-0= 2. 3-3= 3. 4-2= 4. 7 take away 2= 5. 6 count back 4=

Conclusion

Singing the song ten oranges in a basket.

Evaluation

Strengths: The song helped pupils understand what take away and count back meant. Sixteen pupils passed the given exercise.

Weaknesses: Ten pupils did not do well in the exercise given. Some pupils seem to confuse addition and subtraction signs.

Way forward Next time the teacher will include a lot of activity to be done by pupils during the lesson as they solve their tasks in groups and individually Pupils should sing and perform actions in accordance with the song.

LESSON PLAN 5

Date	01-06-17
Time 1030-1100	
Concept Subtraction	
References	Maths Syllabus Page 8, Step in New Primary Maths Grade 2 Page 22
Media	Sample tree with paw paws, work cards with subtraction questions

Objectives

By the end of the lesson pupils should be able to

- sing the song ten green paw paws and perform actions along with the song
- answer at least four questions based on subtraction

Introduction

The teacher and the pupils sing the song ten green paw paws and perform actions

Step 1

Discussion on what they were singing about

Step 2

Teachers explanation and demonstration on subtraction relating to the song ten green apples

Step 3

Imitation by the pupils with the teachers help

Step 4

Group work tasks and reports

Step 5

Individual work

1.8-4 = 2. 7-2= 3. 6 take away 1= 4. 9 take away 6 = 5. 5 count back 4=

Conclusion

Pupils sing the song ten green apples and perform actions

Evaluation

Strengths: Many pupils concentrated during the lesson. They participated pleasingly and many passed the given exercise. Referring to the song continually as the lesson was progressing helped many pupils to get sense of what was being said. Nineteen pupils passed the given exercise. It was interesting to see children singing and performing some actions as ways of finding answers to given problems. Many pupils were involved in the learning process. Pupils great participation helped them pass the given exercise.

Weaknesses Seven pupils failed the exercise. The media sample tree with paw paws that were used was were not enough for everyone to use. Some pupils did not have time to practice. As the teacher demonstrated subtraction using the media some of the pupils did not imitate what the teacher did as she was subtracting. This could have helped pupils to learn.

Way forward Next time the teacher will make sure that media is enough to help pupils learn

LESSON PLAN 6

Date 16-06-17

Time 0830-0900

Concept Subtraction

References Step In New Mathematics Pupils Book Grade 2 Page 22,Maths Syllabus Grade 2 Page 7

Media Counters representing ducks, work cards with questions

Objectives

By the end of the lesson pupils should be able to

- sing the song *madhadha* ten miming actions to show subtraction
- answer at least five problems correctly on subtraction

Introduction

Singing the song *madhadha* ten miming actions

Step 1

Class discussion on the meaning of the song

Step 2

Teachers explanations and demonstrations on subtraction relating to the song

Step 3

Children imitate what was done by the teacher as they solve the given problems

Step 4

Group work tasks and reports

Step 5

Individual work

1.4-1= 2. 9-8= 3.8-6= 4.10 take away 5 = 5. 5 count back 3 =

Conclusion

Singing the song *madhadha* ten miming actions

Evaluation

Strengths: Many pupils concentrated during the lesson. They participated pleasingly and twenty pupils passed the given exercise. Referring to the song continually as the lesson was progressing helped many pupils to get sense of what was being said. . The counters (sample ducks) that were used was were enough for everyone to use. Pupils had time to practice. As the teacher demonstrated subtraction using the media, all the pupils imitated what the teacher did as she was subtracting. This helped pupils to learn.

Weaknesses: Six pupils who could not read and write did well in the oral exercises and they failed the written exercise.

Way forward. There is need to teach reading and writing to the pupils for improval.

LESSON PLAN 7

Date 6-07-17

Time 0900-1000

Concept Subtraction

References Maths Syllabus Page 7**,** Step in New Primary Maths Grade 2 Pupils Book Page20-23

Media Counters

Objectives

By the end of the lesson pupils should be able to get five marks and above correct from the ten test questions given.

Introduction

Teacher asks pupils what they were doing in the previous weeks in maths

Step 1

Explanations on test writing

Step 2

Distributing question papers

Step 3

The teacher helps children read the instructions

Step 4

Writing the test individually

1.3-2 2. 5-3= 3.7-4= 4.8-3= 5. 6-3= 6.10 take away 7= 7. 8 take away 6= 8. 6 count back 1= 9. 8 count back 7= 10. 10 count back 8=

Conclusion

Review of the work done

Evaluation

Strengths: Twenty pupils passed the test. They could recall what they learnt in the previous weeks.

Weaknesses: Only six pupils failed the test. The teacher realized the pupils could not read.

Way forward

The teacher will work with the pupils one on one to help them improve.