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Learners' Perception on the Importance of Utilizing Teaching Resources in Grade 9 Mathematics Classroom

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ABSTRACT Mathematics cuts across all the fields of human endeavours in its wide application and mind development. Hence, this study focuses on the learners' perception on the importance of utilizing teaching resources in mathematics. It adopted case study research design of qualitative approach. A purposive sampling technique was used to select two learners in a selected high school in East London Education District South Africa. A semi- structured interview was used to elicit information from the respondents and the data was analysed using thematic approach according to the themes from the research questions formulated. The study revealed the efficacy of teaching resources for mathematics and how it helps the educators and learners to achieve their target goals. It also revealed the type of resources available in teaching mathematics. The study concluded that effective teaching of mathematics is through availability of resources and recommended that the school should endeavour to provide more recent resources that are technologically inclined.

INTRODUCTION

The gross enrolment ratio of 93 percent which South Africa achieved on General Education and Training Band (GET) which is Grade R to 9 has been tremendous, Department of Education (DoE 2014). In fact access to education by the minority has been seen as another success because the so called minority now have access to quality education. Credit should be given to South African government for creating enabling environment and for spending money on education sector.

The incidences of youth unemployment in South Africa in general and Eastern Cape in particular are closely linked to the quality of schooling and availability of teaching resources especially in mathematics. While successive governments of post-apartheid South African have sought to address the canker of falling standard of education in the province, only limited improvements have been documented. Out of the 81 districts in the country, the 10 districts performing below 60 percent in the 2012 Department of Education Annual National Assessment (ANA) are all in the Eastern Cape. The 3 poorest performing Districts are Fort Beaufort (44.7%), Mt Frere (49.6%) and Qumbu (49.1%). The other 7 poorly performing districts are Butterworth (53.9%), Dutywa (59.4%), King Williams Town (59.4%), Libode (59.4%), Lusikisiki (59.4%), Mbizana (57.6%) and Sterkspruit (56.1%). It is the intent of this research to investigate if the use of teaching resources contributes to the improvement of learners' performance in mathematics (DoE 2014).

The impact of inadequate teaching resources on teaching and learning in South African schools is still a problem as there is still underperformance in most rural and township schools in the country. Apart from underperformance, the learning process is not exciting enough for learners to remember due to the inadequacy of teaching resources in schools. If schools were well resourced, first-hand experiences to learning would build interest to learners' education (Owoko 2010).

According to Owoko (2010), the term resources refers not only to teaching methods and materials but also the time available for instruction, the knowledge and skills of educators acquired through training and experience. Educators are then expected to make it happen for the learners to move to the next grade with more experience, but how one would have this experience when the government does not respond to the requests for better school resources. As of now the resources most township schools have are textbooks and few posters donated may be by student- teachers or learners themselves

Kibuuka (2010) said that teaching resources are used to support the teaching and learning process which may be human resources including teaching and non-teaching staff, financial, infrastructure and instructional materials. Therefore, teaching resources are not to be under-

mined. There are three key players that interact during classroom activities. These three key players are: educator, learner and teaching resources. The interactions between these three key players promote learning and motivate the educators to be fulfilled in discharging their professional duties especially in teaching mathematics (Adu 2013). Without the teaching resources, classroom activities are incomplete.

Research Objective

This study tends to investigate the views of learners on the importance of using teaching resources in Grade 9 mathematics classrooms.

Research Questions

1. What are the learners' perceptions on the effect of utilizing teaching resources in Grade 9 mathematics?
2. Which types of teaching resources do educators use in teaching you mathematics?
3. How do the uses of teaching resources affect your performance?

Literature Review

Resources in the Learning Environment for Mathematics

The learning environment has a lot of influence on academic achievement of learners in all subjects and not mathematics alone. Conducive environment gives learners and educators opportunity to interact with the available resources successfully. The availability of resources for teaching in schools allow learners to see schools as home away from home. Different skills are enhanced when learners have needed resources and educator utilizes them judiciously. Learners always feel comfortable when they have resources to use, it gives them a sense of belonging and promotes solving abilities skills during the classroom activities. Materials or resources encourage collaboration among learners. The successful implementation of new schools in South Africa called "Model C" has been successful with the availability of teaching resources even though there is inequality in resource distribution which led to the problem of equity in South Africa schools. Availability of materials enables educators to discharge their professional duties to learners and learners on the other hand will enjoy the subject matter and this promotes learning outcomes (Abu Dhabi Education Council (ADEC) 2013).

Recently, there are paradigm shift from the use of solely textbooks and instructional based materials. Learners are now enjoying practicality of what they always go through in class. Schools today provide learners with 21st century materials that make them to easily understand the subject matter and content knowledge. These materials allow learners to be at per with other learners at the globe. Even though it makes them far ahead of their current lesson and hence leads to complacency but it makes them versatile and relevant. The engagement and interactions with materials give learners planned opportunities with good learning environment (ADEC 2013).

One of the indices used to evaluate educators' achievement is how effective they discharge their duties professionally and how productive they are. Their productivity is being measured by learners' performance. Learners' performance is enhanced by availability and utilization of teaching resources. Educators make use of flexible instructional space that assists learners' activities. Learning is made visible at this stage and learners' work is evident and visible. The display of teaching resources gives the educators and learners fulfillment (ADEC 2013).

On the other hand, learners need space that will guide them in interacting successfully with one another. Educators need to guide learners in this regard. The physical and social learning environment of the learners must be serene and conducive to allow exposition and exploration of the subject matter beyond the classroom activities. Mathematics curriculum resources reflect what is familiar to the students as well as introducing new and more novel learning approaches to engage each student and teach more complex and abstract ideas and concepts. Carefully selected digital technology resources are used to enable children to access global connections and resources while also encouraging new ways of thinking. The introduction of technology rich environments and multi-sensory resources can also be useful in reaching each student's strengths and engaging learners to become life-long learners (ADEC 2013).

Concept of Mathematics and Mathematics Performance

Mathematics has become a daily occurrence in every home. The knowledge of mathematics helps individuals to make decisions and solve

problems. The tasks giving to learners in class allow them to have a deep thought about their future and career. The understanding of mathematics questions attracts skills of identification. Problems can only be solved if the source or sources are firstly identified. Mathematics helps learners with accuracy and precision. It is widely believed that for a learner to be meaningful in his or her environment/society, he must possess relative good knowledge of mathematics. The development of technology in this 21st century can be traced to the study of mathematics. Hence, mathematics provides solution to problems bedevilled mankind (Tella 2014). According to Tella (2014) the centre focus of technologies is mathematics as a discipline offers in schools.

Tella (2014) succinctly described mathematics as ingredient of thought and logical reasoning. In fact, it is a language of sciences. Scientists all over the world applaud the content knowledge of mathematics as a tool for global development. They are also of the opinion that mathematics liberates the mind. They however concluded by saying that mathematics is the basis of all sciences and technology and therefore of all human endeavours. Application of mathematics cut across all areas of human knowledge. Despite these wide applicability and importance of mathematics many pupils and learners still not find their feet in the subject as a result of their perennial failure in the subject (Tella 2014).

There are many factors responsible for the poor performance in mathematics. These factors according to mathematics educators include the following among others: shortage of personnel, inadequate textbooks, incompetent educators, learners' inability to show interest, mathematics phobia, bad teaching methods, large classes in term of student-teacher ratio, to mention but a few (Tella 2014). Just few of these studies elaborate on teaching resources especially modern resources.

Several factors have generally been identified as predictor of poor academic achievement in mathematics. Tella (2014) also found out that teachers' qualifications have direct effect or impact on the performance of the learners. The qualification can also affect the teaching methods adopted by the teachers which will in turn militate against effective teaching and learning. Apart from qualification, other teachers' quality of work life can hinder their productivity. That is, the psycho-social variables of teachers if not favourable will have negative effect on learners' mathematics performance. However, research particularly in this context is being silent about them. The interest of the researchers is to critically examine how teaching resources predict mathematics achievement in high school. The select of high school especially grade nine crowned the GET and serves as the bedrock/foundation for advancement into further education and training (FET) band educational system.

Importance of Teaching Resources in Mathematics

Ornsten and Hunkins (2014) said assets and other relevant resources are required to support all school programs to be successful. It is also important for the provision of human support in terms of application of the activities to be learnt by learners in mathematics. Schools cannot operate without teaching resources like Games and Puzzles, Graphs and Charts, Bulletin Boards and textbooks that contain appropriate examples and photo-copiable illustrations like census at school forms, and the newspapers, and magazines that have reports relating to mathematics. As one of instructional implications of Piaget's theory of cognitive development is that learners require to keep occupied by assigning them with "rich environment that allow for active exploration and hands-on activities" (Sorto and Sapire 2014:13), in order to keep learners attentive educators should capture learners 'attention through the use of appropriate and inspiring teaching materials/resources (Sorto and Sapire 2014).

The Department of Education has tried to solve the problem of inadequate learning and teaching resources by providing schools with funding through the granting of schools section 21 statuses, which allows schools to be given finances to purchase their required material/resources by themselves. In some schools educators were supplied by the Department of Education with textbooks that could be used by them as they did not contain the relevant content for the learners (Sorto and Sapire 2011).

METHODOLOGY

Research Approach

The research approach used for this study is qualitative approach. Qualitative approach is appropriate for this study as it is suitable to pro-

vide the researcher with the responses to the questions in this study. The researcher attempted to gain a clear understanding of the situations which learners deal with when making choices. Litchman (2013) emphasized that qualitative research is concerned with conditions or relationships that exist, beliefs and attitudes that are held, effects that are being felt and trends that are developed.

Research Design

Research design is a plan outlining how the researcher will explore the topic. This study adopted a case study research design. Creswell (2014) posited that a research design is the blueprint, a detailed plan, a map of the various elements of research and how they relate to each other. This study views the research design as the framework that details how a researcher intends conducting his/her investigation (Litchman 2013).

Sample and Sampling Techniques

Population is defined as the universe of elements from which sample elements are extracted. The population is also the group of elements to which we want to generalize the result of research (Yin 2011). The sample that was purposively selected for this study consisted of two educators in one school from East London Education District.

Data Gathering Instruments

The instrument used for collecting the data is semi-structured interviews. The aim of the qualitative approach during the interviews is to ascertain the learners' perceptions on the importance of teaching resources for mathematics. Opportunity was provided for them (learners) to add their own perceptions during the interview schedule. A semi-structured interview, also known as the non-standardized or qualitative interview (Saunders et al. 2009), is a hybrid type of interview which lies in between a structured interviews and an in-depth interviews. Semi-structured interview was ideal for this study since it enables the production of in-depth data by getting first-hand information in this case on the importance of teaching resources for teaching mathematics (Litchman 2013).

Data Analysis

Qualitative analysis is a systematic process of selecting, categorizing, comparing, synthesizing and interpreting to provide a description of the phenomena of interest (Litchman 2013). The data was analysed using tape recorded responses from different respondents interviewed which were later transcribed. After transcribing, data was categorized into themes. The data collected from the respondents was analysed using thematic approach of developing themes from the research questions after transcribing and coding it.

RESULTS AND DISCUSSION

Table 1 shows the demographic data of the respondents.

Table 1: Respondents' profile (Learners)

Respondent	*Age*	*Gender*	*Grades level*
R1	14 years	Female	9
R2	15 years	Male	9

Table 1 shows the profile of two leaners purposively selected for the study. It comprises one male and one female (gender sensitivity). They are from the same grade level.

Theme 1: Types of Resources for Teaching Mathematics

According to respondent A

When asked about the teaching resources their educators use in teaching them mathematics.

In mathematic lesson, teachers use different types of teaching resources when teaching us,

According to respondent B

My teacher used teaching resources like, shapes, calculator, patterns, posters, chart, cardboards and other objects that is used for different topics.

The two respondents alluded to the fact that there are many teaching resources used in class while teaching mathematics and according to ADEC (2013), educators use a wide range of stimulating and exciting materials to teach the concepts outlined in the curriculum to ensure that learners are actively involved in their learning. That these resources (internet, charts, textbooks,

shapes, posters, calculator, cardboards, etc.) allow the instructional space to be flexible, and make learners' activities and learning to be more visible.

Theme 2: The Impact of Teaching Resources on Learners' Performance

Respondent A

I quite understand the lesson better when my teacher teaches me with teaching resources, for example when teachers make use of ICT devices like internet and videos to teach me. I also have more understanding of the topic being taught and class activities become lively and interesting. For example I see mathematics as a difficult subject, but when the teacher uses teaching resources, it really assists me and removes all the difficulties. It assists me to have independent way of solving mathematics problem given by the teacher.

Respondent B

I enjoyed the teaching when my teacher uses teaching resources far better than without resources. I always become active in the class and it arouses my interest the more in mathematics. It makes me to remember what I have been taught, because "what I see I remember" It removes in me fear of the subject.

The two respondents did not undermine the efficacy of teaching resources on their performance in mathematics as a subject. They both concurred to the fact that with the help of teaching resources, their phobia for mathematics is gone. Before mathematics is too abstract to them, now they are smiling in mathematics class and enjoying the subject. This connects with Bharathi et al. (2011), who pointed out that the quality of resources and the relationship an educator has with these resources will determine his or her job satisfaction as a result of improvement in learners' performance. According to Adelabu and Adu (2015), the adoption of ICT/E-learning in education as teaching resources would arouse a new interest among learners, educators and educationists and possibly influence, if not change the attitude of teachers and learners to learning. ICT in education would also promote global interaction and sustainable development.

CONCLUSION

This study revealed some major themes and sub-themes, among them are: common types of resources for teaching mathematics, importance of using teaching resources in mathematics class, the impact of teaching resources on learners' performance. The results obtained from the interviews were supported by other researchers as presented in the literature review written in this study. The findings showed that the use of teaching resources in mathematics is very important to facilitate effective teaching and learning, it promotes learner's performance and removes mathematics phobia from learners. Learning environment becomes more fascinating and conducive when the learners interact effectively with teaching resources for mathematics.

RECOMMENDATIONS

The researchers recommended the following:

The schools should update the resources for teaching mathematics and try to be creative with the introduction of information and communication facilities in this 21st century. Some facilities like overhead projector, tablet, iPad, games, etc. can still be introduced. This will give better results. It is obvious that only the government cannot provide these resources. The duty of the government is to make sure that schools have adequate resources as they have a budget for education which includes all schools. The future of the country cannot be dependent on the government but rather to the people who are to see it. Hence, there should be a close collaboration between parents and educators to ensure that some expensive resources are provided to learners.

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