

Exploring Teachers' use of Resources for Teaching and Learning Mathematics Addition to Grade Three Learners

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ABSTRACT

Resources for teaching and learning are an essential part of the process of teaching and learning in general, and specifically in mathematics. This article examines how teaching and learning resources are used in addition to mathematics in order to comprehend teachers' perspectives towards the usage of resources in the chosen school. The purpose of this study, which focused only on primary schools, was to ascertain how teaching and learning resources were applied in the teaching of mathematics and how such applications impacted the learning results of the learners. Using a qualitative approach, the study collected data from primary school teachers via focus groups, interviews, and classroom observations. Using participatory action research, the utilization of teaching and learning resources in mathematics in primary school classes was thoroughly investigated. Teaching and learning resources have become a prevalent trend in educational contexts as a means of increasing learners' motivation and participation.

The results assisted in identifying challenges such as time constraints, large class sizes, teacher knowledge and skills, concerns about the appropriate use of resources, concerns about financial constraints, and a lack of professional development opportunities and training for teachers. They also provided recommendations for improving the effective use of resources in primary school mathematics teaching. However, the study focused on how resources would facilitate group learning, promote learner involvement, and provide tailored teaching. The results of this investigation thus provided valuable information regarding the usage of instructional resources and learning materials in primary school mathematics classes, as well as any potential effects on learners' learning outcomes in addition. It is advised that all school leaders get familiar with the resources available for teaching and learning. In addition to setting up support systems for teachers and head teachers, the government is also expected to educate administrators about the programme.

KEYWORDS: Resources, strategies, Mathematics addition, teaching and learning and challenges.

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1.0 INTRODUCTION

Using teaching and learning resources effectively is crucial for determining how learners learn in the dynamic field of mathematics education, especially when it comes to the basic operation of addition. Choosing and using teaching resources wisely becomes essential as teachers work to provide learners with a strong foundation in arithmetic ideas. The relevance of resources in the teaching and learning process is widely acknowledged in the literature on school effectiveness (Makori & Onderi, 2013). According to (Mudulia, 2012), the resources taken into consideration in this article are visual aids like charts, manipulatives objects like sticks, and textbooks. The literature review portion of this article goes into great length about each of these resources. According to (Mobegi et al., 2010) there are a number of aspects that affect how important these resources are for teaching and learning, including quality, availability, efficiency, accessibility, and learner participation. What influences learners' teaching and learning as well as their achievement is the beneficial sum effect of various resources.

The use of teaching and learning materials in educational settings has gained popularity recently due to its ability to alter the way that knowledge is acquired and retained in a range of subject areas, mathematics included. Many research have examined the possible benefits and challenges of using resources in education. This research focuses specifically on the use of resources in the teaching of addition in mathematics in primary school settings. In order to shed light on the benefits and difficulties of creating and utilizing resources early in learners' mathematical development, this study will look at the case of primary schools (Westwood, 2011). The

research was conducted based on the following research questions: How can I collaborate with grade three teachers to use teaching and learning resources in the teaching of mathematics addition? and What difficulties do teachers face when using teaching and learning resources to teach mathematics addition?

The development of teaching and learning resources has had a significant impact on society in many ways, including education. Teachers have begun to use these resources to improve the teaching and learning of mathematics (Kul et al., 2018). Utilizing resources can have a significant impact on the teaching and learning processes in the subject of mathematics education.

The study project that looked at possible teaching and learning resource utilization for mathematics teaching and learning in Kenya's Kilifi County primary schools is thoroughly discussed in this paper. Resources can facilitate improved content delivery, increased flexibility, and better assessment, all of which can assist teachers in developing and implementing outstanding mathematics programmes. These advantages have led to an increase in interest in studying the application of resources in mathematics education, particularly in primary schools where a strong mathematical foundation is crucial for future academic achievement (Adler, 2000). Additionally, the gap between abstract mathematical concepts and real-world applications may be reduced by incorporating teaching and learning resources into mathematics education. However, in spite of the possible benefits, there are still problems with resources in mathematics education that need to be fixed. Among these difficulties include resource accessibility and availability, the need for suitable teacher preparation, and learner professional development. It is essential to consider these concerns and develop solutions in order to guarantee equitable resources and the effective execution of mathematics instruction in primary schools.

1.1 Background and Rationale

The importance of teaching and learning resources in education, particularly in the study and teaching of mathematics addition, is becoming more widely recognized. Resources provide a range of opportunities to enhance the teaching and learning process by establishing engaging and interactive learning environments. Since primary schools are essential to giving learner a strong foundation in mathematics, it is important to look into how resources are used in this context. Traditionally, primary school mathematics teaching has focused primarily on memorization, lectures, and textbooks. Nevertheless, these methods frequently fail to support learners' engagement and conceptual understanding of mathematics (Hilton, 2018). These resources can transform the way mathematics is taught and make it more engaging and comprehensible for learners by providing interactive simulations, visualizations, and real-world problem-solving scenarios.

According to Adler (2000), state that by looking into the resources used in primary school mathematics teaching and learning, teachers may create a more diverse, engaging, and fruitful learning environment. This study aims to investigate how learners' mathematical achievement, motivation, and attitudes towards mathematics are influenced by teaching and learning resources, along with the challenges and opportunities teachers face when utilizing resources efficiently. The results will eventually improve mathematics teaching in primary schools by influencing educational policies and practices.

1.0 Literature Review

Scholarly investigation and substantial research have been conducted on the use of teaching and learning resources in mathematics education. Several important themes and issues have come up in this corpus of writing, especially in relation to teaching addition in mathematics in primary education settings. The goal of this review of the literature is to offer a thorough synthesis of the body of research by highlighting recurrent themes, empirical discoveries, and points of disagreement about the application of educational resources in supplemental instruction for mathematics.

The antiquated "chalk and talk" teacher-centered teaching method is rapidly being replaced by the learner-centered approach as knowledge improves daily and more relevant teaching and learning resources are made available to the educational sector (Seng, 2014). The terms that comprise the education idea include teaching and learning resources. Resources are defined as various components that improve the teaching and learning of mathematics addition. Teachers use these resources to support, communicate, enhance, develop, optimise, and even manage different information to present concepts to learners in a teaching and learning environment. Therefore, a lesson that satisfies all the requirements is a cohesive, excellent instructional item. As a result, resources support curriculum objectives, ensure significant learner participation, close learning gaps, and raise motivation and engagement levels.

2.1 The Benefits of using teaching and learning resources in teaching mathematics addition

Numerous advantages are provided by teaching and learning resources in mathematics education for both learners and teachers. Sharing information and skills to gain access to research and teaching resources is one of the most important things that teachers and learners can do. According to Kivunja (2015)), it is imperative that novel teaching methods be embraced and implemented. Lee et al. (2014) teaching resources possess the ability to drive learners' motivation to exert more effort towards acquiring necessary knowledge and resources, as well as to own learning and produce desirable and acceptable outcomes. A greater number of learners can work with resources in this way for their everyday education. I am grateful that these resources were used in the classroom arrangement.

Exploring Teachers' use of Resources for Teaching and Learning Mathematics Addition to Grade Three Learners

Utilizing resources contributes to the development of an engaging learning environment that fosters learners' collaboration and, in a sense, broadens the scope of their discussions. Conversely, learners are better equipped and more eager to assist their peers and they also possess greater resource management skills. This encourages innovation and teamwork, which in turn builds a more lively and cohesive community. In order to properly use resources, learners must debate and recommend various approaches. This is because solving issues and utilizing manipulative skills involve higher-order thinking, which is encouraged by these processes (Mainali, 2012).

The benefits of utilizing resources in mathematics teaching include enhanced learner interest, greater problem-solving skills, better visualization of abstract ideas, and opportunities for collaborative learning (Slavin & Lake, 2008). Resources can also assist formative assessment and customize learning opportunities. The role of teachers is crucial to both the learning process and the overall learning environment. Without the use of resources, a lot of teachers used to teach, and assume that they could still construct lessons. Teachers who make use of resources in their teaching also tend to foster an environment that is conducive to the teaching and learning of addition in mathematics (Kul et al., 2018). Inadequate resources make educational disparities worse and make it more difficult for marginalized learner populations to improve their mathematics achievement.

2.2 Challenges grade three teachers face in using teaching and Learning Resources

Resources are seen by most teachers as a burden when it comes to teaching and learning, which makes most of them think of them as simple annoyances. In actuality, the majority of teachers are unaware of the benefits that resources like counters have for teaching mathematics. The use of resources in teaching and learning, however, is crucial, claim Moqaddam (2016) the problem of using an antiquated system that provides no benefit and hinders learners' ability to perform in comparison to anticipated future resources. It could be challenging for teachers to use interactive teaching methods in this setting because of the size of our classes and the high learner enrollment. When teachers don't employ resources in the classroom, they can end up being so stressed out that they lose interest in teaching effectively. However, it is evident that inadequate time spent creating and utilizing resources results in low learner achievement. According to Ileri and Ibuathu (2022), there are three factors that restrict resource usage: insufficient knowledge, a dearth of resources for teaching and learning, and inadequately supported environmental policies. The study focused on how teaching and learning resources affected the way that basic mathematics was taught. They found that the use of teaching resources and learning aids increased learners' engagement and helped them better understand mathematics. The study made clear that in order for teachers to properly incorporate resources into their teaching techniques, they need support and training. According to Mwanja and Murithi (2017), there is a need for teachers to successfully integrate teaching and learning resources into their activities.

The study examined the benefits of collaborative learning settings in primary mathematics classrooms and found that leveraging resources facilitates higher-order thinking skills, enhanced peer interaction, team problem-solving exercises, and shared understanding (Staples, 2007). Accordingly, the study suggested that teachers allocate time to create supportive and inspiring learning community resources that would enhance learners' experiences with mathematics. To improve the efficiency of resource utilisation in mathematics education, it is imperative to address these deficiencies in teacher training.

2.0 METHODOLOGY

A method is pivotal in a study for the development of data collection mechanisms (Cohen et al., 2011).

3.1 Research Approach

This strategy worked well because it permitted a subjective assessment of the experiences, opinions, and attitudes of the participants (Kothari, 2004). It made it possible for the researcher to investigate the difficulties associated with using instructional materials to effectively teach addition in mathematics. A qualitative research methodology was used to investigate how the difficulties in using teaching and learning resources for effective teaching mathematics addition was utilized in primary schools to teach and learn mathematics in order to obtain specific views from participants. Qualitative research methods allowed for a more thorough examination of the complex nature of the phenomenon being studied, which improved our understanding of the topic. Qualitative approaches were used to collect rich, contextual data that shed light on the perspectives and experiences of both teachers and learners. The information obtained from this approach made it possible to better understand the benefits and downsides, which influenced educational practices and policies that enhanced the way mathematics was taught in primary schools. Classroom observations were conducted to keep an eye on the difficulties teachers were having using the resources during maths classes. Teachers were also interviewed and included in focus groups since they provided detailed information on their experiences, challenges, and opinions about using resources.

3.2 Research Design

According to Polo-Blanco and González López (2021), accounts are prepared after the data has been collected and reviewed. Using a scientific and rigorous methodology, the research design looked at how the difficulties in using teaching and learning resources

for effective teaching mathematics addition were employed in primary school mathematics teaching and learning. The design comprised several elements, including sampling, data collection, data analysis, and ethical considerations. For the purpose of thoroughly comprehending the help strategies used by maths teachers at different levels, a qualitative study was required. Due to its ability to restrict the investigation to a realistic time frame and enable interviews with only the selected teachers within a set time frame, this method was deemed appropriate. To attain the intended results in the study, it was vital to employ creative methods. This was accomplished by the researcher by looking at how they employed resources in their teaching, how they prepared for the classroom, and the difficulties they ran into. All of these factors made the researcher's approach easier to comprehend.

3.3 Target population and Location of the study

The study was carried out in a public primary school in Kenya's coastal Kilifi County. The researcher's capacity to rapidly and affordably reach the intended demographic led to the selection of the study region, which included the school. The setting of the school was in rural area and "Ngovi" was the name of the public primary school, which was a public school. For this study, three teachers were selected as participants. These teachers took part in the interviews and focus group discussions.

3.4 Research Methods

The qualitative research methodology was used throughout the activity. The methodology was designed to investigate the difficulties associated with employing teaching resources to effectively teach addition in primary school mathematics education. This was done to see if resources could be used in a typical classroom environment. Because the questions the researcher was attempting to answer could not be answered with numbers, they decided to take a qualitative method in order to fully understand the experiences of both the teacher and the learners. Furthermore, the researcher had to perform fieldwork in order to gather additional data from the participants because the literature they had gathered from the research was insufficient or lacking in quantity to provide the level of expertise required for the study.

In this case, the participatory study allowed the researcher to examine the events in their natural environment by enabling the events to be observed in the classroom and for the teachers to be questioned at their workstations. A participatory study was the right approach to use in order to completely comprehend the support strategies used by maths teachers at different levels. Because it allowed for interviews with only the targeted teachers during a prearranged window of time and constrained the investigation within a manageable time frame, the study's design was appropriate. The study would successfully address the research gap with remarkable success because so many parts were incorporated in an ordered and consistent manner. The implementation of new methods was crucial in achieving the desired results in the participatory study.

This was seen to be important because the goal of the research was to investigate how mathematics teachers use resources to transmit their knowledge. Through observing how they prepared for class, how they used resources to teach, and what challenges they faced, the researcher was able to comprehend this notion as well as other behaviours. According to Castleberry and Nolen (2018), participatory action research is a valuable tool for delving deeply into a particular location or reality and is particularly helpful when attempting to define and discuss a phenomenon.

There were three methods used to obtain study-related data. In order to identify and build a knowledge of resource consumption in educational environments, the researcher collected data through focus groups, classroom observations, and interviews. Kekeya (2019) said that the study utilized observation, interviewing, and focus group discussions (FGD) to collect qualitative study data. The many methods of gathering data made triangulation easier. Since the understood information was obtained from multiple respondents, sources of the acquired data, techniques of collecting data in explaining, and subjects in qualitative research, triangulation in this case allowed the researcher to create and construct an outline that was more accurate and reliable.

According to Kothari (2004), the most effective method for learning about someone's true feelings towards a specific phenomenon is to conduct an interview. In order to collect relevant data for this research, a range of tools or devices were employed. The researcher employed an observation checklist and an interview guide to get information from the respondents. To understand more about teachers' opinions regarding the use of teaching and learning resources in the teaching and learning of addition in mathematics, interviews were conducted in this context. The validity and reliability of these tools were established through indirect testing. To learn more about the teachers' perspectives on the use of resources when teaching addition in mathematics, interviews were conducted. This particular interviewing technique was selected because it involves asking questions, seeing the respondents, and recording their answers allowed for direct connection between the researcher and the subject (Charmaz & Belgrave, 2012).

Since it was possible to physically witness everything that was happening, the researcher decided to employ observation as the first way of conducting the research study in order to get as much information as possible. The researcher monitored the strategies and techniques the teacher used to deliver the lecture by using the observation schedule as a guide. All of this was accomplished using an authorized class observation guide.

To test whether the participants could express their ideas as outlined in the interview guide in person, the study used a focus group discussion as a sort of group interview. Because there were three participants in the focus group, the researcher had to speak with each of them individually. A laptop, audio recorder, and a smartphone were used to record all focus group participants and

interviewee participants. After the recorded material had been meticulously transcribed, the efficiently generated data could be assessed. The researcher ensured that all data collected was confidential and safe. Consequently, the gathered data was organized and made accessible, simplifying the process of data analysis. It is possible that information about the current research endeavour is incomplete or inaccurate in the research agenda or the materials under examination.

3.5 Ethical Consideration

Ethical considerations were paramount throughout the research process, and they were duly observed. Among the ideas considered were communication outcomes, anonymity, secrecy, informed consent, potential for damage, and voluntary engagement (Smith, 2010). Every participant gave their informed consent, ensuring their confidentiality and voluntary involvement. Participants' privacy was protected, and data was anonymized and safely preserved. The research conformed to the moral guidelines and legal requirements set forth by the relevant institutional review boards or ethical review committees.

3.6 Data Analysis

For identifying purposes, each interview was assigned a code or number. Subsequently, the data was analysed by classifying related responses into meaningful groups. The phone was used to record the data from one-on-one interviews in order to facilitate the researcher's ability to record every detail as the conversations progressed. A thorough transcription of the data was followed by a reading of the transcripts and a summary of the meaning (Akinyode & Khan, 2018). The interviews were meticulously recorded on tape, meticulously transcribed, and then typed into a Word document. Furthermore, the gathered information was sorted and organized into several themes that linked to the objectives of the research, and it was from these themes that the meaning was deduced. Regarding the participant analysis itself, the participants and the school were given pseudonyms (Park, 2019). Pseudonyms for the respondents were Teacher A, Teacher B, and Teacher C, and Ngovi Primary was the name of the school. The data was coded and labeled in several segments that described related phenomena. The researcher grouped threads under each of these that led to the formation of findings, which were then presented and explained narratively.

Classifying, gathering, and identifying themes pertinent to the chosen subject matter led to the subsequent development of the main ideas. The material was eventually recounted as evidence from the field during the presenting phase, where it was securely stored on the computer in a folder protected by a strong password. An Independent analysis of each participant's data was followed by an overall addition.

3.7 Validity and credibility

To ensure the validity and reliability of the outcomes, legitimacy, and credibility were crucial throughout the entire study procedure. A thorough thematic analysis of the qualitative data was carried out utilizing a strict approach in order to ensure the accuracy and reliability of the research findings. By preserving openness in data analysis techniques and documenting decision-making procedures, the research findings gained greater credibility. To improve the findings' dependability, data sources and methods were triangulated, and the results were cross-validated. Purposive sampling was once again necessary in order to select grade three teachers in a primary school that was using teaching and learning resources including addition in mathematics. This sampling technique increased the results' generalizability by controlling for school size, location, and resource utilization.

3.8 Data presentation

Basic skills including literacy and basic operations are taught to learners in primary school. In order to develop their basic and advanced mathematical concepts, today's learners want tangible resources. There is a wealth of information and resources available for both basic and sophisticated mathematical procedures. Abacuses, sticks, counters, and other manipulatives as well as visual aids like charts, textbooks, and diagrams are examples of teaching resources that can be used in teaching and learning.

According to the teachers that were interviewed, the school was using resources when teaching mathematics. When questioned about the use of resources in the teaching of addition in mathematics. They responded, "Yes, we have resources that we use when teaching mathematics addition," the respondent stated. We create counters out of items found around us, such as rocks, sticks, and bottle caps (Teacher A, research participant interview, September 20, 2023).

Additionally, teacher B mentioned that she has been teaching place value of numbers using place value tins. At times, I may write the place value chart on the board, show it to learners, or instruct them to check on page 41 of the pupils' textbook and proceed as directed (Teacher B, research participant interview, 20/09/2023).

Teacher A further stated, "It makes learners active as they interact with the resources, it motivates learners, low achievers get a chance to participate fully in class as they manipulate the resources themselves, so nobody was left behind, and the high achievers helped the others in performing the activities in the groups as they were the group leaders" in response to the question of how teaching and learning resources help learners (Teacher A, research participant focus group discussion, 5/10/2023).

In addition, a different respondent mentioned that learners are engaged and self-driven when they touch and use the resources during the learning process. The learners found learning to be engaging and pleasurable. Additionally, learners were enthusiastic, involved,

and gave their whole attention to the session; the approach was learner-centered rather than teacher-centered (Teacher C, focus group conversation with research participant, May 10, 2023).

In response to a query regarding the availability of teaching resources by the school, they stated that "for every subject, the school provides approximately ten Manilla papers per term" (Teacher A, research participant interview, 20/09/2023). In an additional interview, teacher B mentioned in response to the same issue, "I just drew some sketches on the chalkboard as I cannot provide them (resources) and the school cannot provide them for us." She went on to indicate that the administration gives out felt pens and Manilla paper. Instead of the school or office to provide, the learners themselves bring the resources especially the counters (Teacher B, research participant interview, 20/09/2023).

3.0 DISCUSSION OF THE STUDY FINDINGS

4.1 Summary of the findings

Since the study's objective was to investigate teachers' use of resources for teaching and learning mathematics addition to grade three learners utilized in primary schools in Kenya's Kilifi County, the researcher anticipated that all of the teachers chosen for the study would successfully get to use teaching and learning resources in their teaching of mathematics addition in the classrooms. There were a lot of materials available, however, it was observed and found that the teachers couldn't use them because of their poor quality when teaching and learning. It was also highlighted that the school's inadequate provision or creation of resources posed a significant obstacle to the effective use of resources in mathematics teaching and learning at the location.

Teachers and learners had extremely restricted access to resources for teaching and learning, which raised concerns and led to the conclusion that this had made teaching the mathematics curriculum more challenging in some way. The study also showed that most schools were inattentive and that there weren't enough resources, specifically, to accommodate every learner while they were learning. This was accelerated by a few obstacles, including huge classes, insufficient knowledge and skills, and financial constraints. There were few or no resources available to support the teaching and learning of addition in mathematics, as evidenced by the observation that there were no resources in the classrooms and enrollment.

Teaching and learning resources are not used by either teachers or learners, according to the research findings. However, the findings indicated that teachers do occasionally employ teaching and learning resources. Furthermore, the study's restricted access to resources in the schools and their availability had highlighted the important hindrances to teachers' attempts to create and use teaching and learning resources in the teaching and learning of mathematics addition. The study's findings showed that learning resources such as visual aides, manipulatives, and textbooks support the needs of the entire class and aid in the acquisition of addition mathematics. The registration rate was still extraordinarily high, despite the fact that there were clearly not enough counters available. Due to the high enrollment and several of the counters being hurled, the teachers were unable to employ them effectively.

CONCLUSION

The results of this study show how resources could completely transform the way that mathematics is taught and learned in primary classrooms. The study found that a lack of funding, a lack of resources, a lack of teacher skills and expertise, and a lack of teacher attitudes all hindered the utilisation of resources to improve mathematics teaching and learning in primary schools. The findings demonstrate how important it is to ensure that all learners, regardless of their financial situation, have access to and use the resources. Through the use of resources, primary schools can create inclusive and engaging learning environments that offer learners with the resources they need to successfully comprehend the subject and develop strong mathematical foundations. Accessibility and availability issues with teaching and learning resources might cause problems, which need to be recognised. Not every primary school in the country has equal access to resources, especially in less developed or wealthy areas. Finance, interest, and teacher training differences may limit the effective integration of resources in mathematics teaching. It is possible to encourage equitable access to resource development in all primary schools, which will aid learners' accomplishment in mathematics, through investments in resources, teacher professional learning and development, and growth mindset.

RECOMMENDATION

Based on research findings regarding the use of teaching and learning resources in mathematics addition, the following recommendations are offered to enhance resource utilisation in primary school classrooms. Both teachers and learners at the school should have access to these resources. It is important to support teachers in their use of teaching and learning resources. Mathematics teachers must have enough time to create and implement teaching resources for their learners. Although teachers and learners will be more motivated and involved in the lesson, it will be less expensive, when they use low cost, or free for them to implement the production of the resources in their classrooms.

The administration of the school ought to collaborate with other interested parties and committees inside the school to look at ways to improve the resources available for teaching and learning. To increase awareness of the need to assist in the creation of resources in the schools, subject panels for mathematics teachers should be present and conduct regular forums. Promote further research on

the value of employing resources for teaching and learning mathematics, with an emphasis on creating and using resources for the learners, teaching strategies, and learner accomplishments.

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