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Teaching Strategies for Enhancing Understanding of Multiplication Concepts in Grade 1

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Abstract: A solid understanding of multiplication concepts in the early years of schooling is essential for learners to thrive in Mathematics throughout their academic journey. Building this foundation in Grade 1 helps learners make sense of multiplication beyond just repeated addition and supports their ability to think critically and solve problems. This study aimed at exploring the teaching strategies for enhancing the understanding of multiplication concepts in Grade 1. The study followed a qualitative research approach, using Vygotsky's Social Cultural Theory. The population of the study was all Grade 1 teachers teaching Mathematics. Purposive sampling was used to select six teachers across three schools in Soutpansberg West Circuit. Data was collected through semi-structured interviews and classroom observations. The data was transcribed and analysed using thematic analysis to identify themes. The findings provided insights into effective practices for introducing multiplication, common misconceptions learners face, and the challenges teachers encounter. The study contributed to the growing body of knowledge in early multiplication education and offered recommendations for improving teaching strategies and curriculum design to better support conceptual understanding in Grade 1.

Keywords: *Division, Foundation Phase, Mathematics, Prepare Readiness, Repeated Addition.*

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I. INTRODUCTION

Mathematics is a foundational subject that plays a vital role in the academic and everyday lives of learners. Among the core concepts within early Mathematics education, multiplication is particularly significant, as it forms the basis for a range of future mathematical learning, including division, fractions, algebra, and problem-solving. In this study, multiplication refers to an arithmetic operation that, at its most basic, is the quick addition of an integer to zero a predetermined multitude of times, expanded to other integers according to rules that apply to arithmetic (Merriam Webster Dictionary, 2021). Developing a strong conceptual understanding of multiplication in the early years, particularly in Grade 1, is critical for fostering numeracy and long-term success in Mathematics. While many educational systems delay formal multiplication instruction until later grades, research increasingly shows that learners can grasp the foundational ideas behind multiplication when introduced through age-appropriate and contextually relevant strategies. The early understanding of multiplication is not solely about memorising times tables or performing repeated addition; rather, it involves nurturing children's ability to recognise patterns, group numbers, and understand the relationship between numbers in real-life contexts. In this regard, multiplication should be viewed as a process of making sense of quantities through grouping and repeated actions. The groundwork laid in Grade 1 can have a significant impact on learners' attitudes towards Mathematics and their ability to engage meaningfully with more complex mathematical operations in the years ahead. Globally, there is growing recognition of the importance of building early number sense and operational understanding, including the groundwork for multiplication. Researchers emphasise the importance of

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visual representations, hands-on activities, and real-life contexts in helping learners make sense of abstract ideas. For instance, using concrete materials such as counters, beads, and pictorial models allows learners to physically and visually engage with the concept of "groups of" or "sets of," which is the foundation of multiplicative thinking. Such strategies help learners transition from counting-based strategies to more advanced computational thinking (Charlesworth and Lind, 2013).

In the South African context, particularly in rural and under-resourced areas such as those found in Soutpansberg West Circuit, teaching foundational mathematics presents a unique set of challenges. These include limited resources, large class sizes, and linguistic diversity, all of which may affect the pace and depth at which learners can develop mathematical concepts such as multiplication. Educators often must balance curriculum expectations with learners' varying levels of readiness, implementing effective teaching strategies both crucial and complex. In spite of these challenges, the Re-examined Educational modules and Appraisal Approach Explanation (CAPS, 2011) stated that the Establishment Stage arithmetic provides a stage for presenting early concepts of multiplication through different strategies such as break-even with gathering, repeated addition, skip counting, and array-based representations. Be that as it may, the way these concepts are presented and strengthened in Grade 1 classrooms significantly determines the degree to which learners construct a solid conceptual understanding.

If learners struggle to internalise the meaning of increase at an early stage, they are more likely to encounter challenges in subsequent grades, where more formal and unique methods are introduced. Moreover, early introduction to duplication concepts contributes to learners' cognitive advancement by upgrading their problem-solving abilities, coherent thinking, and capacity to form scientific associations. These aptitudes are not, as it were, fundamental for scholastic accomplishment but also for functional numeracy, which learners have to explore in everyday activities such as budgeting, shopping, and time management. Therefore, it is imperative that educational stakeholders, teachers, curriculum developers, and policymakers recognise the importance of supporting the early development of multiplication understanding through well-designed instructional practices and supportive classroom environments. This study sought to explore the ways in which Grade 1 teachers introduce and develop multiplication concepts among learners in Soutpansberg West Circuit. By focusing on classroom practices, teacher experiences, and learner responses, the research aimed to identify effective strategies, as well as existing gaps in teaching practices.

- *Research Objective*

To explore the strategies used by Grade 1 teachers to introduce multiplication concepts.

- *Research Question*

What strategies do Grade 1 teachers use to introduce multiplication concepts to Grade 1 learners?

II. BACKGROUND OF THE STUDY

In South Africa, the teaching and learning of Mathematics in the early grades has become a national priority due to persistent underperformance in national and international assessments, such as the diagnostic assessment, which is used to identify strengths and weaknesses in Mathematics. Among the foundational mathematical concepts introduced in the Foundation Phase is multiplication, which plays a critical role in developing number sense, pattern recognition, and problem-solving abilities. Although multiplication is formally introduced in Grade 2 according to the South African Curriculum and Assessment Policy Statement (CAPS, 2021) Grade 1 serves as a crucial stage for building early conceptual understanding of multiplication through repeated addition, grouping, counting in equal steps, and recognising patterns. This early exposure lays the groundwork for formal operations introduced in later grades and helps learners transition from additive to multiplicative reasoning.

However, numerous Grade 1 learners in South Africa battle with fundamental number concepts, which disables their capacity to get a handle on duplication afterwards. Components contributing to this challenge include large class sizes, the need for concrete instructional resources, underqualified teachers in rural and distressed regions, and language barriers that affect comprehension of scientific vocabulary. Instructors frequently depend intensely on repetition learning instead of concept-based instruction, which limits learners' profound understanding of how duplication works. In places such as Soutpansberg West Circuit and comparable country settings, these challenges are indeed more articulated. Numerous schools need to get to manipulatives, instructor advancement programmes, and educational programmes that support structures that are basic for executing learner-centred, activity-based learning in science. As a result, the early improvement of duplication concepts is frequently neglected or insufficiently attended to.

Given the significance of increase as a key building block for higher-order Science, there is a growing need to explore how Grade 1 instructors in South Africa approach this theme. This led to this study that investigated strategies, challenges, and openings related to building early understanding in Grade 1 classrooms. It aimed to provide experiences that might help educator preparation, educational programme planning, and resource development, especially in under-resourced South African schools.

III. LITERATURE REVIEW

- *Strategies for Teaching Multiplication Concepts in Grade 1*

Methodologies for educating multiplication concepts in Grade 1 classrooms, instructors frequently utilise concrete, hands-on methodologies to present multiplication concepts in ways that are important and formatively fitting for youthful learners. One of the foremost viable strategies is the utilisation of manipulatives such as counters, 3d shapes, beans, or bottle caps. These substantial apparatuses help

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learners physically gather things to make rise to sets, making the thought of rehashed expansion less demanding to get a handle on (Carbonneau, Marley, and Selig, 2021). For example, an instructor may direct learners to bunch four counters into three rises to sets, then check all the counters to get it that 3 bunches of 4 rises to 12. This visual and material approach lays a strong foundation for unique consideration and makes a difference in learners' interface with real-life scenarios. Teachers may moreover consolidate tunes, stories, and musical chants to assist learners remember and increase their understanding and grasp the concept as a frame of expansion. Also, instructors coordinated visual supports such as number lines, clusters, and graphing supports to reinforce learners' understanding. Utilising pictorial representations like drawing circles and setting specks inside them permits learners to see duplication as grouping. Instructors moreover embed increase into day-to-day schedules, such as tallying objects within the classroom or organising learners into groups, turning unique numbers into common settings. Intelligent diversions, collaborative bunch exercises, and the integration of innovation (such as instructive apps and recordings) are becoming increasingly common. These methodologies bolster a progressive move from concrete encounters to theoretical thinking, guaranteeing that learners not only memorising facts but also get the fundamental principles of growth from an early stage.

- *Theoretical Framework*

This study is supported by the Sociocultural Theory of Vygotsky. The early development of multiplication concepts in Grade 1 is essential for learners' long-term success in Mathematics. Multiplication gives the foundation for more advanced operations such as division, fractions, and arithmetical reasoning. In South Africa, where numerous schools confront challenges such as expansive class sizes, multilingual learners, and constrained teaching assets, it is crucial to apply formatively suitable and socially responsive teaching strategies. Vygotsky's Sociocultural Hypothesis offers a system for understanding how youthful learners obtain duplication concepts through social interaction, language, and social instruments. Vygotsky said that learning is, at a very basic level, a social process that begins with interaction between people (inter-psychological) and then within the person (intra-psychological) (Fleer, 2020). In other words, children learn through guided interest in socially important activities, particularly with the support of more knowledgeable others, such as instructors or peers. Applying this theory in a Grade 1 setting is basic, as learners come from a range of phonetic and social backgrounds that shape how they learn and engage with scientific concepts, especially multiplication.

Language is a central role in Vygotsky's theory. In a multilingual society like South Africa, the use of learners' home languages can significantly enhance understanding. Teachers who use multilingual strategies, such as switching between the language of instruction and the learners' mother tongue, help bridge the gap between what the learner already knows and what they are being taught. Verbal explanations, storytelling, and classroom discussions become tools for internalising mathematical ideas, especially when learners are encouraged to explain their thinking. Vygotsky's key ideas, particularly the Zone of Proximal Development (ZPD), scaffolding, and the importance of cultural tools, are essential to designing effective learning experiences in early Mathematics. Within the setting of multiplication, learners frequently start with casual understandings drawn from their ordinary lives. These may incorporate activities such as sharing nourishment, gathering things during play or taking an interest in socially commonplace diversions that include counting and grouping.

Grade 1 learners take advantage of guideline-based approaches that build on these casual encounters and direct them towards formal numerical understanding. Instructors can utilise concrete objects such as bottle tops, stones, or globules to speak to address issues unmistakably. This aligns with Vygotsky's (1978) thought that cognitive advancement starts with outside, socially mediated activities, which are ultimately internalised by the learner (Vygotsky, 1978). In addition, multiplication can be presented through group-based problem-solving assignments that se genuine-life settings recognisable to learners, such as checking natural products sold by a merchant, arranging chairs in columns, or organising things into bundles. These sorts of relevant issues make learning more meaningful and accessible. Scaffolding could be a key instructional strategy inferred from Vygotsky's theory. Teachers provide sufficient support to assist learners unravel issues they cannot do so autonomously. For example, an instructor might start by directing a learner through a multiplication problem using counters, then gradually decrease back as the learner becomes more confident. This approach guarantees that learners work inside their ZPD, advancing towards free understanding at their own pace. Peer interaction also plays a critical part in this process. When learners clarify their thinking to each other, ask questions, or work together to unravel multiplication problems, they engage in collaborative information building.

The teacher's role is to encourage these intelligent students by creating a comprehensive, dialogic classroom environment. Gathered work, combined discourses, and entire lesson-sharing sessions can all contribute to this socially developed understanding of multiplication. Furthermore, social pertinence should not be ignored. Instructors can consolidate commonplace settings from learners' domestic and community situations to make them more relatable. Whether it is through nearby diversions, melodies, or day-to-day family assignments, learners are more likely to grasp multiplication when it is presented in ways that reflect their learning experiences. Vygotsky's (1978) Sociocultural Theory gives an important system for building early duplication concepts in Grade 1 classrooms. It sees that learning can be a socially and culturally embedded process, in which learners develop knowledge through guided participation, meaningful exchange, and socially important settings. By sing learners' ZPD and providing a suitable platform, teachers can support their progressive development from informal, everyday understandings to formal numerical thinking. Within the South African setting, applying Vygotsky's (1978) Sociocultural Theory implies leveraging learners' social foundations, domestic dialects, and social

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intelligence as key assets in the learning process. Through hands-on exercises, real-life illustrations, and collaborative learning, teachers can make science instruction that is not just successful but also comprehensive and engaging. Eventually, this approach lays a solid foundation for learners' continued numerical development and addresses the learning gaps that persist in early instruction.

IV. RESEARCH METHOLOGY

- *Qualitative Research*

This study employed a qualitative research approach to investigate and understand the instructional procedures used to improve learners' understanding of multiplication concepts in Grade 1. A qualitative approach was particularly well-suited for this study because it emphasises collaboration, empowerment, and social change**,** allowing researchers to engage closely with teachers and learners within their real classroom environments. Sutton and Austin (2021) affirm that qualitative research is "particularly effective in obtaining culturally specific information about the values, opinions, behaviours, and social contexts of particular populations." In this context, the study sought to uncover how Grade 1 teachers in South African primary schools navigate the challenges and opportunities of teaching multiplication in culturally and linguistically diverse classrooms. The findings were presented as emerging themes, revealing patterns and insights that inform more effective and context-sensitive pedagogical practices.

- *Research Design*

This research was situated within the interpretivist paradigm, which assumes that reality is socially constructed and best understood through the subjective experiences and interpretations of individuals. The researcher decided to use interpretivist paradigm because it provides a suitable philosophical foundation for this study, as it aligned with the aim of exploring ways in which Grade 1 teachers understand, experience, and implement teaching strategies to support learners in developing conceptual understanding of multiplication.

The paradigm emphasises the significance of understanding how people make sense of their world within particular social and cultural settings. Thanh and Thanh (2020) clarify that the interpretivist paradigm is based on the conviction that reality is socially built, which analysts must understand the implications that people attach to their activities to comprehend social phenomena. Therefore, this study did not aim to generalise findings but to provide contextualised interpretations of how multiplication concepts are taught and understood in Grade 1 classrooms.

- *Data Collection Methods*

Data was collected through semi-structured interviews and classroom observations to gain in-depth insights into the teaching strategies employed by Grade 1 educators when introducing multiplication concepts. Data collection methods are systematic approaches used by researchers to gather information relevant to their study objectives. In the context of this study, these methods enabled the researcher to explore how teachers implement instructional strategies, how learners respond, and what challenges arise in developing early multiplication understanding. Qualitative methods, such as interviews and observations, are particularly valuable as they uncover deeper meanings, perceptions, and lived experiences of both teachers and learners (Creswell & Poth, 2021).

- *Selection Criteria of Research Participants*

To effectively conduct the research on the topic of teaching strategies for enhancing understanding of multiplication concepts in Grade 1, it is essential to apply well-defined selection criteria for research participants. The participants were selected using purposive sampling, with six teachers chosen from three schools in the Soutpansberg West Circuit who teach Mathematics in Grade 1, ensuring they possess at least 2 years of experience, insights, and perspectives that align with the study's objectives. Two teachers were selected from each school in Soutpansberg West Circuit. All three schools had more than two teachers teaching Grade 1, and their language of teaching and learning is Tshivenda.

- *Data Analysis*

This study focused on building an early understanding of multiplication in Grade 1 learners. Data analysis involved systematically examining the collected qualitative data to identify codes, patterns, themes, and insights that reflect learners' conceptual development. Thematic analysis was used to categorise responses from interviews, and classroom observations into three themes. This helps the researcher interpret how young learners begin to grasp multiplication through repeated addition, grouping, and real-life contexts. The analysis was grounded in learners' verbal explanations, teacher reflections, and interactions observed during classroom activities. Moreover, the analysis paid special attention to developmental progressions in learners' thinking and the strategies they used when approaching multiplication problems. For instance, the shift from concrete manipulatives to pictorial and then symbolic representation is a key indicator of conceptual growth. Through data analysis, the researcher can evaluate how instructional strategies like using arrays, equal groups, or skip counting support or hinder learners' understanding.

Additionally, disaggregating the data by student responses can reveal gaps in comprehension and guide further instructional planning. A recent study by Moodley and Essien (2023) highlights the importance of analysing learner errors and reasoning to build a robust foundation for multiplication. Their findings show that data analysis not only aids in evaluating learning outcomes but also informs teaching practices tailored to young learners' cognitive development in Mathematics.

- *Ethical Considerations*

The research recognised the institutional ethical principles. The researcher obtained ethical clearance from the University of Venda Ethics Committee. The researchers sought permission from the Department of Basic Education of Vhembe District in Limpopo and the participants to adhere to ethical issues. All participants were required to sign an

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informed consent form after the purpose and nature of the study were explained to them. In this study, the researcher referred to the principles and guidelines that researchers must follow to ensure the rights, dignity, safety, and well-being of research participants are protected throughout the research process. These considerations ensured confidentiality and anonymity, avoiding harm, and maintaining transparency and integrity. The research also ensured that no psychological, emotional, or educational harm occurred to the participants because of the study. Activities used to explore multiplication should be age-appropriate, supportive, and aligned with the curriculum to avoid disrupting normal learning.

➢ *Trustworthiness*

In the context of the study on teaching strategies for enhancing understanding of multiplication concepts in Grade 1, trustworthiness ensured that the findings genuinely reflect how Grade 1 teachers use specific strategies to develop learners' conceptual understanding. Trustworthiness in qualitative research refers to the degree to which the research findings accurately reflect participants' experiences and are free from bias or distortion. This concept is fundamental for ensuring the meticulousness and quality of subjective considerations, especially in educational research. Lincoln and Guba's (1985) system traces four key criteria for assessing reliability: credibility, transferability, dependability, and confirmability.

Credibility is accomplished by utilising information triangulation (e.g., combining semi-structured interviews and classroom perceptions), part checking, and delayed engagement with members. This permits the analyst to precisely capture and approve the ways instructors clarify duplication through techniques such as concrete materials, rephrasing, and visual models.

Transferability is supported by providing detailed portrayals of the classroom setting, teaching practices, and learners' reactions. This permits teachers in comparative settings to survey whether these procedures can be adjusted to their own Grade 1 Mathematics instruction.

Dependability is ensured by maintaining a point-by-point review path for the research process, including data collection, coding, and topic development. This transparency makes a difference; others get the rationale and consistency of how the discoveries were inferred.

Confirmability guarantees that the discoveries are grounded in the data and not shaped by the analyst's predispositions. Methods such as reflexive journaling, peer questioning, and the utilise of coordinate member cites help to back objectivity.

Applying these standards fortifies the unwavering quality and legitimacy of the knowledge gained through almost successful educational techniques for early childhood learning, eventually contributing to improved Arithmetic instruction at the elementary level.

V. FINDINGS

Data collected from six Grade 1 instructors teaching Mathematics (Participants A-F) and schools 1-3 revealed key insights into how early multiplication concepts are presented and understood in the classroom. Three fundamental subjects developed from the investigation: Utilisation of Concrete Materials, Educator knowledge and Confidence, and Progression from Repeated Addition to Multiplication Language.

A. Utilisation of Concrete Materials

All participants emphasised the importance of using manipulatives to build foundational understanding. Teachers reported using objects such as counters, bottle caps, blocks, and number cards to demonstrate grouping and equal sets.

➢ *School-1*

- *Participant B* noted, "Utilisation of counters makes it simpler for learners to perceive groups. Excluding them makes learners struggle to see what multiplication means."
- *Participant A*, "highlighted that learners were more involved and retained concepts better when lessons included tangible learning."

This theme underpins Vygotsky's idea of learning through concrete encounters within the learners' Zone of Proximal Development (ZPD), emphasising how physical devices frame understanding. Despite using manipulatives, most instructors observed confusion among learners, particularly when transitioning from repeated addition to multiplication images.

➢ *School-2*

- *Participant D* specified, "They know 2 + 2 + 2, nonetheless, when I write 3 × 2, they get lost."
- *Participant C* echoed this, "noting that some learners simply memorise answers without understanding grouping."

This proposes that while practical fluency may develop, conceptual understanding often lags, demanding extended support and distinguished strategies.

B. Educator Knowledge and Confidence

Two teachers expressed doubt about the most effective strategies to practice. While some felt confident instructing multiplication, others indicated a need for further professional growth.

➢ *School-3*

- *Participant E* shared, "I'm not always sure which method to use first—should I start with repeated addition or equal groups?"
- *Participant F* expressed a desire for more training workshops.

This discovery underscores the importance of preparing Foundation Phase educators with deeper mathematical content knowledge and pedagogical strategies.

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C. Progression from Repeated Addition to Multiplication Language

All participants agreed that building understanding necessitates a gradual change from repeated addition to formal multiplication language and symbols. This progression was not always even.

- *School-2*
- *Participant C* observed, "Some learners get wedged at adding repeatedly and struggle to change to multiplication."
- Educators noted that introducing words like "groups of" and "times," and using arrays, reinforced this transition.

The need for sensibly scaffolded teaching is obvious, as premature exposure to symbolic multiplication without understanding can delay long-term mathematical development.

VI. DISCUSSION

The discoveries of this study affirmed the use of concrete materials as a basic methodology in supporting Grade 1 learners' early understanding of increase. All six members of the study reported that manipulatives such as counters, bottle tops, beans, squares, and number charts played an imperative role in helping learners get a handle on the concept of increase as repeated expansion and break-even with gathering. Instructors clarified that young children at this formative stage learn best through hands-on activities. Manipulatives give a visual and material way for learners to investigate scientific connections. One instructor noted that when they gather the objects themselves, they begin to understand that duplication is fair when putting together sets. This reflects the idea that learners build knowledge effectively, not passively, particularly when they engage deeply with the materials. The use of cluster courses of action utilising physical objects (like 2 columns of 3 counters) was too common. This helped learners recognise designs, which in turn bolstered their understanding of duplication as organised and unsurprising. Instructors noted that, at some point in recent presentations of typical documentation (e.g., 2 * 3 = 6), it was critical that learners had concrete experiences to construct a mental picture of increase. This finding aligns with Vygotsky's (1978) sociocultural hypothesis, which emphasises the use of tools (such as objects or language) to facilitate learning.

In this setting, concrete materials serve as scaffolding that helps learners move from a few concrete examples to a more nuanced understanding. Be that as it may, a few instructors moreover shared viable challenges. For example, one member said, "Sometimes I don'thave sufficient assets for all the learners to utilise during the lesson, so I ought to improvise." Despite this, all members concurred that concrete materials were particularly valuable for learners who struggled with complex concepts. One of the key subjects that emerged from the information was learners' conceptual confusion when presented with an increased rate in Grade 1. Teachers reported that many learners struggled to distinguish multiplication from other operations, especially addition and repeated addition, leading to misconceptions and wavering when solving multiplication problems. Members noted that learners frequently see increase as fair, another frame for adding numbers quickly, rather than as gathering break-even with sets. For example, one teacher shared, "When I ask them to discover 3 bunches of 4, a few still try to fairly include 3 and 4 together rather than making groups." This proposes that without a solid conceptual foundation, learners may rely on improper methodologies or memorised methods that do not reflect a genuine understanding of increase. Another common perplexity was with the dialect utilised in word issues, such as times.

Learners battled to associate these terms with the mathematical concept of increase. A few members clarified that the mathematical lexicon in the reading material or information was new or too theoretical for a Grade 1 learner. As one teacher stated, *"They get confused by the wording—they don't know what 'multiplied by' means, even if they understand the grouping."* Teachers also reported visual confusion when learners were presented with arrays or pictorial representations. Some learners miscounted objects or became overwhelmed by the structure of rows and columns, especially if their number sense was still developing. Without careful guided practice, these learners failed to make the connection between the visual model and the multiplication operation. This confusion is often a result of cognitive overload or premature introduction of symbolic notation (e.g., 3 × 2) before learners have developed a strong understanding of what multiplication means. According to developmental learning theories, particularly those of Piaget, young children are in the concrete operational stage and therefore require concrete and contextual learning experiences before they can think abstractly. In response to these challenges, several teachers emphasised the importance of slowing down instruction**,** using concrete examples**,** and explicitly teaching vocabulary. One teacher noted, *"I've learnt to use simpler language and show them with objects first, then only later use the multiplication symbols."* The themes of teacher knowledge and confidence were significant factors in how early multiplication concepts were introduced in Grade 1 classrooms.

VII. CONCLUSIONS

The findings propose that building early understanding of the increase in Grade 1 requires hands-on learning, real-world connections, tedious and lock-in techniques, and sufficient time. Whereas teachers illustrated inventiveness and commitment, they also confronted challenges such as limited time and preparation. These emphasise the significance of supporting instructors through focused professional development and the adaptability of educational programmes to better meet learners' needs. In outline, the utilisation of concrete materials is a viable and formatively suitable strategy for presenting increase concepts in Grade 1. These apparatuses bridge the gap between encounter and hypothesis, permitting learners to make sense of multiplication through control, visualisation, and redundancy. Learners' conceptual perplexity in understanding increases highlights the need for a formatively

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suitable approach that starts with concrete encounters, advances through visual representation, and ultimately presents theoretical concepts. Tending to this perplexity requires reliable use of manipulatives, clear scientific language, and scaffolded learning experiences that build confidence and precision in young learners. The level of instructor information and certainty straightforwardly impacts the quality of duplication instruction in Grade 1. Where teachers have a solid conceptual understanding and clear guidelines and procedures, learners benefit from richer, more meaningful learning experiences. On the other hand, holes in educator information can constrain learners' conceptual improvement. This highlights the significance of focusing on proficient development, collaborative planning, and access to instructional resources that prepare teachers to teach foundational mathematical concepts.

RECOMMENDATIONS

Based on the findings of the study on building early understanding of multiplication concepts in Grade 1**,** the following recommendations are proposed to improve teaching practices, learner outcomes, and support systems:

- *Provide Targeted Professional Development for Foundation Phase Teachers*

Education departments and school management teams should offer continuous professional development workshops focused specifically on teaching multiplication and other foundational mathematical concepts. These workshops should include:

- Strategies for using concrete and visual materials.
- Techniques for scaffolding learning from concrete to abstract.
- Ways to identify and address common learner misconceptions.

- *Integrate More Concrete and Visual Learning Materials*

Schools should invest in and prioritise the use of manipulatives and visual aids (e.g., counters, arrays, number lines) to support the development of conceptual understanding in early Mathematics. Teachers should be encouraged to:

- Use hands-on materials consistently in lessons.
- Incorporate pictorial representations before introducing symbolic multiplication notation.
- Use real-life scenarios to contextualise multiplication.

- *Strengthen Teacher Support Through Collaborative Planning*

Teachers should be supported in collaborative lesson planning, where they share best practices, discuss learner challenges, and co-develop lesson activities. This could involve:

- Grade-level meetings.
- Peer observations and feedback.
- Mentorship programmes for less experienced teachers.

- *Review Curriculum Pacing to Allow for Conceptual Development*

Curriculum designers and policymakers should consider adjusting the pace and sequencing of the mathematics curriculum to allow sufficient time for learners to grasp multiplication concepts deeply. Early introduction of symbolic multiplication should be delayed until learners demonstrate understanding of grouping, repeated addition, and pattern recognition.

- *Support Learner Language Development in Mathematical Contexts*

- Teachers should be trained to use and teach mathematics vocabulary explicitly to reduce conceptual confusion. Schools should also:
- Include math-specific language in reading activities.
- Encourage learners to explain their reasoning using correct terms like “groups of,” “times,” or “equal sets.”

- *Monitor and Evaluate Instructional Effectiveness*

School leaders and district advisors should implement ongoing classroom monitoring and support, including feedback on how multiplication is taught. Evaluation tools should focus on:

- Learner engagement with materials.
- The accuracy of learners' mathematical language.
- Evidence of conceptual understanding in learner responses.

By implementing these recommendations, educators, curriculum developers, and policymakers can strengthen the teaching and learning of multiplication in Grade 1. Emphasis should be placed on conceptual understanding, teacher confidence, and developmentally appropriate pedagogy to build a strong mathematical foundation for young learners.

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