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TEACHING PRACTICES IN EARLY AND PRIMARY MATHEMATICS: A PHENOMENOLOGICAL STUDY OF KINDERGARTEN AND GRADE 3 INSTRUCTION AT VILLA CRUZ ELEMENTARY SCHOOL

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ABSTRACT

This phenomenological study explored the lived experiences of Kindergarten and Grade 3 teachers in implementing mathematics instruction at Villa Cruz Elementary School. Grounded in constructivist learning theory and developmentally appropriate practice, the study examined how teachers experience, interpret, and enact mathematics teaching across early and primary grade levels (Bruner, 1966; Vygotsky, 1978). Data were collected through in-depth semi-structured interviews, classroom observations, and reflective narratives. Phenomenological analysis revealed four essential themes: (1) mathematics as play and exploration in Kindergarten, (2) tension in transitioning to formal mathematics in Grade 3, (3) negotiating the concrete–abstract shift, and (4) instructional discontinuities across grade levels. Findings indicate that although teachers value learner-centered pedagogy, curricular pacing and assessment pressures constrain instructional coherence. The study underscores the importance of vertical alignment and reflective collaboration in strengthening early mathematics education in support of Sustainable Development Goal 4 (UNESCO, 2016).

Keywords: *teaching practices, lived experiences, constructivist, value learner-centered pedagogy*

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I. INTRODUCTION

Early mathematics learning significantly influences learners' numeracy development, problem-solving skills, and long-term academic success (Duncan et al., 2007). Constructivist perspectives emphasize that children actively build mathematical understanding through interaction with concrete materials, social engagement, and meaningful contexts (Piaget, 1952; Vygotsky, 1978). In Kindergarten classrooms, mathematics instruction is typically anchored in play-based and experiential learning, consistent with developmentally appropriate practice (Copple & Bredekamp, 2009).

However, research indicates that as learners transition into the primary grades, instruction often becomes more abstract, procedural, and assessment-driven (Clements & Sarama, 2014). This shift may disrupt conceptual continuity, particularly when instructional alignment across grade levels is weak. Despite curriculum frameworks advocating spiral progression, limited qualitative research has examined how teachers experience this transition within a single school context. This study addresses this gap by exploring the lived experiences of Kindergarten and Grade 3 teachers teaching mathematics at Villa Cruz Elementary School.

2. Methodology

2.1 Research Design

A **phenomenological research design** was employed to capture teachers' shared lived experiences of mathematics instruction across early and primary grade levels. Phenomenology emphasizes understanding how individuals interpret and give meaning to their experiences within a specific social and educational context. By focusing on teachers' perceptions, beliefs, and instructional realities, this approach enabled an in-depth exploration of how mathematics teaching was experienced, negotiated, and shaped within the school setting (Creswell & Poth, 2018; van Manen, 2016).

2.2 Participants and Setting

Participants consisted of Kindergarten and Grade 3 mathematics teachers from Villa Cruz Elementary School. **Purposive sampling** was employed to ensure the inclusion of teachers with sustained experience in teaching mathematics and direct involvement in curriculum implementation across early and primary grade levels. This sampling strategy allowed the study to capture rich, information-dense accounts of instructional practices, challenges, and transitions in mathematics teaching, which are central to understanding teachers' lived experiences within the specific school context.**2.3 Data Collection**

Data were gathered using multiple qualitative methods to ensure depth, credibility, and richness of understanding. Semi-structured interviews were conducted to explore teachers' instructional beliefs, lived experiences, and perceptions of mathematics teaching across Kindergarten and Grade 3. Classroom observations were carried out to document enacted instructional practices, teacher–learner interactions, and the use of materials and strategies during mathematics lessons. In addition, reflective narratives were collected to capture teachers' personal accounts of instructional challenges, transitions between grade levels, and perceived systemic constraints. The use of methodological triangulation strengthened the trustworthiness of the findings by allowing convergence and comparison of data from multiple sources, thereby enhancing the study's credibility and analytic rigor (Lincoln & Guba, 1985).

2.4 Data Analysis

Data were analyzed using phenomenological thematic analysis guided by Moustakas' (1994) approach. The analysis began with bracketing (epoché) to suspend the

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researcher's prior assumptions and focus on participants' lived experiences. This was followed by horizontalization, wherein all significant statements from interview transcripts, observation notes, and reflective narratives were treated as having equal value. These statements were then grouped through clustering of meanings to identify core patterns and shared experiences across participants. Finally, the process culminated in the synthesis of themes, integrating textual and structural descriptions to capture the essence of teachers' experiences of mathematics instruction across Kindergarten and Grade 3. This systematic analytic procedure ensured a rigorous and faithful representation of participants' perspectives.

3. Findings

Theme 1: Mathematics as Play and Meaning-Making in Kindergarten

Teachers consistently described Kindergarten mathematics instruction as experiential, playful, and emotionally engaging, reflecting core principles of early childhood pedagogy. Rather than introducing mathematics through abstract symbols or written tasks, teachers emphasized learning through action, movement, and social interaction. One Kindergarten teacher explained, *"For my learners, math is not numbers on paper. It's counting toys, clapping hands, and singing."* This statement illustrates how mathematical concepts are embedded in everyday classroom routines, where counting, pattern recognition, and comparison are naturally integrated into play and musical activities. Another teacher shared, *"When they sing and move, they don't realize they are already learning numbers and shapes,"* highlighting how engagement and enjoyment serve as entry points to mathematical understanding.

These narratives suggest that teachers view mathematics not as a discrete subject but as a lived experience, closely connected to children's physical, social, and emotional development. Such an approach aligns with constructivist perspectives, which argue that young learners build mathematical meaning through concrete experiences and guided interaction rather than rote instruction (Piaget, 1952; Vygotsky, 1978). Empirical studies further support this practice, demonstrating that play-based and multisensory activities strengthen early numeracy by enhancing conceptual understanding, motivation, and retention (Ginsburg et al., 2008; Clements & Sarama, 2014).

Overall, teachers' accounts underscore that experiential and joyful mathematics instruction in Kindergarten creates a strong conceptual foundation upon which later formal learning can build. However, these findings also raise questions about instructional continuity as learners transition to higher grade levels, where such play-based approaches may be reduced or replaced by more abstract methods.

Theme 2: Tension in the Shift to Formal Mathematics

Grade 3 teachers articulated a clear sense of instructional tension as they attempted to balance learner-centered mathematics teaching with increasing curricular and assessment demands. While teachers expressed a strong preference for interactive and exploratory strategies, they reported feeling constrained by pacing guides, performance expectations, and written assessment requirements. One teacher shared, *"There's pressure to finish the lesson and prepare them for written work,"* capturing the shift toward task completion and output-driven instruction. Another Grade 3 teacher added, *"Sometimes I want to slow down and let them explore, but the schedule doesn't allow it,"* highlighting the conflict between pedagogical intention and institutional expectations.

These accounts suggest that teachers experience mathematics instruction in Grade 3 as a space of negotiation, where responsiveness to learners must be

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weighed against accountability pressures. This phenomenon reflects broader research indicating that standardized curricula and assessment regimes often limit teachers' pedagogical flexibility, particularly in primary mathematics (Ball et al., 2005). Studies further show that such pressures can lead teachers to prioritize procedural fluency and written performance over conceptual exploration, even when they recognize the value of learner-centered approaches (Hiebert & Grouws, 2007).

From a phenomenological perspective, this tension is not merely instructional but emotional and professional, shaping how teachers perceive their roles and responsibilities. The findings underscore the need for curricular structures that allow flexibility, enabling teachers to sustain developmentally appropriate and conceptually rich mathematics instruction while meeting formal learning standards.

Theme 3: Negotiating the Concrete-Abstract Transition

Teachers consistently identified the transition from concrete manipulatives to abstract symbolic representation as one of the most challenging aspects of Grade 3 mathematics instruction. While learners in earlier grades relied heavily on physical objects and visual aids, teachers observed that instructional expectations in Grade 3 shifted abruptly toward numerical symbols, written algorithms, and textbook-based tasks. One teacher described this transition succinctly: *"Suddenly it's numbers and symbols,"* reflecting both the speed and intensity of the shift. Another teacher elaborated, *"Some pupils still need blocks or counters, but the lesson already expects them to write and compute,"* highlighting the mismatch between learners' developmental readiness and curricular demands.

These experiences echo Bruner's (1966) theory of representation, which posits that effective learning progresses sequentially through enactive (action-based), iconic (image-based), and symbolic (abstract) modes. When instruction bypasses or shortens the concrete and visual stages, learners may struggle to construct deep conceptual understanding. Empirical studies in mathematics education support this framework, demonstrating that sustained use of manipulatives enhances conceptual clarity, reduces cognitive load, and improves long-term retention—especially during transitions to formal computation (Fyfe et al., 2014; Sarama & Clements, 2009).

From a phenomenological standpoint, teachers experienced this shift not simply as a curricular change but as a pedagogical dilemma, where they were aware of learners' needs yet constrained by expectations to move forward. These findings underscore the importance of maintaining concrete and visual supports in Grade 3 mathematics, ensuring continuity with early childhood practices and supporting learners' gradual movement toward abstraction.

Theme 4: Instructional Disconnect Across Grade Levels

Limited vertical collaboration between Kindergarten and Grade 3 teachers emerged as a persistent and shared concern, shaping how mathematics instruction was experienced across grade levels. Kindergarten teachers noted that opportunities to discuss curriculum progression, learner readiness, and instructional continuity with Grade 3 teachers were rare. One participant explained, *"We rarely sit down with Grade 3 teachers to talk about how math progresses,"* pointing to an absence of structured dialogue across grade levels. As a result, teachers described working in relative isolation, planning lessons based on their own grade-level expectations rather than a shared understanding of how mathematical concepts should develop over time.

This lack of vertical articulation often led to instructional discontinuities, particularly during the

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transition from play-based, concrete learning in Kindergarten to more abstract and formal instruction in Grade 3. Teachers observed that learners were expected to adapt quickly to new representations and assessment demands without sufficient alignment of prior experiences. These findings are consistent with research showing that weak vertical collaboration contributes to fragmented learning trajectories, curricular redundancy, or premature acceleration of content (Hiebert et al., 2005). When teachers across grade levels do not collaboratively examine learning progressions, students are more likely to experience gaps in conceptual understanding and uneven skill development.

From a phenomenological perspective, teachers experienced this fragmentation as both a professional limitation and a missed opportunity. Several expressed that regular vertical planning could help align expectations, scaffold transitions, and ensure that foundational numeracy skills developed coherently across early and primary grades. Studies on curriculum coherence emphasize that sustained vertical collaboration supports shared instructional language, continuity of pedagogical approaches, and smoother learner transitions (Stigler & Hiebert, 1999; Schmidt & Houang, 2012). The findings suggest that strengthening vertical collaboration structures is essential for improving coherence in early and primary mathematics instruction and for supporting learners' cumulative understanding of mathematical concepts.

4. Discussion

The findings reveal that teachers' experiences of mathematics instruction were shaped less by pedagogical resistance and more by systemic and structural constraints embedded within the school context. Kindergarten teachers consistently implemented developmentally appropriate, play-based, and experiential strategies aligned with early childhood pedagogy. In contrast, Grade 3 teachers described instructional environments characterized by curriculum pacing pressures, assessment demands, and expectations for written performance, which limited opportunities for sustained experiential learning. This structural mismatch created a disconnect across grade levels that undermined instructional continuity and learner progression.

From a theoretical perspective, this discontinuity contradicts the principles of constructivist and sociocultural learning theories, which emphasize that knowledge is actively constructed through social interaction, scaffolding, and gradual progression from concrete to abstract understanding (Vygotsky, 1978). When systemic demands constrain instructional flexibility, teachers are compelled to prioritize coverage over conceptual depth, weakening opportunities for learners to build meaning through guided experience. The findings suggest that instructional practices in early and primary mathematics are not solely teacher-driven choices but are deeply influenced by institutional expectations and policy-driven accountability structures.

Teachers' narratives further emphasized the need for professional dialogue and instructional alignment across grade levels to support learners' conceptual development. Participants viewed collaboration not as an optional enhancement but as a necessary condition for coherent teaching and learning. This aligns with empirical studies demonstrating that collaborative planning and shared instructional inquiry are critical for ensuring curriculum coherence and sustaining learner-centered practices (DuFour & Fullan, 2013). Without such alignment, teachers operate in silos, and learners bear the burden of navigating abrupt pedagogical shifts.

The findings underscore the importance of addressing structural conditions such as curriculum pacing, assessment policies, and opportunities for vertical collaboration to bridge instructional gaps between Kindergarten and Grade 3. Strengthening these systemic supports would enable teachers to enact pedagogies that

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are both developmentally appropriate and instructionally coherent, fostering more meaningful and sustained mathematical understanding among learners.

5. Conclusion and Implications

This study demonstrates that mathematics teaching across early and primary grades was experienced by teachers as pedagogically misaligned, despite a shared commitment to learner-centered and developmentally appropriate instruction. While Kindergarten teachers emphasized experiential, play-based learning, Grade 3 teachers operated within more restrictive curricular and assessment structures that constrained pedagogical flexibility. This misalignment was not rooted in resistance to learner-centered approaches but in systemic conditions that shaped instructional decision-making, resulting in fragmented learning trajectories for pupils.

The findings highlight the critical need to strengthen vertical collaboration among teachers across grade levels. Structured opportunities for joint planning, dialogue on learning progressions, and shared reflection on instructional practices can promote continuity between concrete and abstract mathematical learning. Consistent with prior research, professional collaboration enables teachers to align expectations, scaffold transitions, and sustain conceptual coherence across grades (DuFour & Fullan, 2013; Hiebert et al., 2005). Additionally, targeted professional learning that bridges early childhood and primary mathematics pedagogy can equip teachers to balance curricular demands with learners' developmental needs.

The study also underscores the importance of curricular flexibility, particularly during transition grades, to allow sustained use of manipulatives, visual representations, and guided exploration alongside formal computation. Such flexibility supports constructivist and sociocultural principles of learning, ensuring that abstraction emerges from meaningful experience rather than replacing it prematurely (Vygotsky, 1978).

Collectively, these initiatives contribute to advancing Sustainable Development Goal 4 (Quality Education) by promoting inclusive, equitable, and high-quality mathematics instruction that is responsive to learners' developmental trajectories. By fostering coherent teaching practices and supportive professional structures, schools can enhance early numeracy foundations and support all learners in achieving meaningful and sustained mathematical understanding (UNESCO, 2016).

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