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Review Article

Strengthening Primary Mathematics Education: Challenges, Opportunities and Implications for Teaching Practice in Timor-Leste

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ABSTRACT:

The review analyses educational difficulties alongside teaching possibilities that arise within Timor-Leste's primary school mathematics education. Many barriers obstruct effective mathematics teaching despite extensive school improvement initiatives, such as creating problems with unqualified teachers and limited educational resources, which make student understanding complex because of language barriers. The post-conflict recovery context of Timor-Leste presents more difficulties for the educational system because it has damaged the school infrastructure and teacher development processes. Recent structures of curriculum reform target the modernization of teaching techniques with peer collaborative initiatives that support educator professional development as administrative forces advance mother tongue-based educational programs for increased student comprehension through native language instruction. This review combines information from various studies about the current mathematics education status of Timor-Leste, which helps policy leaders and education professionals gain important knowledge. The mathematics education system of Timor-Leste requires special interventions that combine competent teacher training with appropriate financial resources to support teachers in resolving existing difficulties while utilizing language effectively for developmental gains.

Keywords: *Mathematics education, teacher training, teaching practice and primary schools.*

1. INTRODUCTION

Primary school education in mathematics in Timor-Leste encounters multiple obstacles but also creates openings for enhancing educational progress. Educational conditions in Timor-Leste have developed through historical, economic, and cultural elements that have directed pedagogical methods and student educational processes. Young students need high-quality math training to thrive in the future, despite the hurdles that teachers experience regarding insufficient resources and a lack of training (Ximenes, 2024; Ximenes, 2025). Institutional diversity among students requires innovative teaching approaches because students have different needs in their learning experience. Research conducted by Yilmaz (2024) emphasizes that making adaptations for disadvantaged student groups creates fair learning spaces. The educational policy should be reformed to establish a complete support network that serves teachers and students and thus promotes engagement through the entire learning process. The permanent development of mathematics education in Timor-Leste needs to focus on inclusive teaching approaches to maximize student learning results (Judd and McKinnon, 2021). The status of mathematics education in Timor-Leste depends on historical events, cultural influence and the current educational system. The government acknowledges the necessity of better teaching methods and curriculum evolution while facing obstacles in instructor education and monetary resource distribution (Ximenes, 2024). Throughout educational research, there exists varied data about new interventions that show accomplishments in educational models' development, yet continue to demonstrate noteworthy limits in assessment frameworks and policy execution procedures (Lucas & Cabrita, 2015). National priority influences the planning of primary school curricula, while the operational phase consistently fails to fulfill the needs of various students. Numerous teachers now support personalized instruction delivery that maintains cultural and educational diversity to ensure every child finds success. They tend to restrict student interest and cognitive grasp of the material (Quinn, 2021). A systematic, evidence-

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based plan should be implemented to maintain continuous progress in mathematics education throughout Timor-Leste. The development of mathematics education in Timor-Leste should enable educational methods that honor cultural uniqueness to build strong and long-lasting learning spaces for students.

The teaching of mathematics in Timor-Leste encounters multiple obstacles stemming from training issues with educators, combined with inadequate classroom supplies and a lack of effective pedagogical techniques (Ximenes, 2024, Bártolo and Ximenes, 2025). Teaching methods effective for the classroom remain out of reach for most teachers because they lack the required specialized training. Learning outcomes receive additional negative impacts from schools that lack adequate textbooks and teaching assistants, as well as essential technology tools (Ximenes, 2025). The variable implementation of the curriculum is partially attributed to both language barriers and infrequent professional development opportunities. Multiple factors result in deficient student involvement and poor mathematical performance. A structured examination must be performed to discover the underlying the causes of these issues, so practical research-based remedies can be built. By addressing these problems, this systematic review aims to examine the obstacles that primary schools of Timor-Leste face within their mathematics educational program. In addition to demonstrating the most efficient methods that have achieved success in improving mathematics teaching practices. Lastly, establish a set of policies along with practical solutions to enhance mathematics education in Timor-Leste.

2. LITERATURE REVIEW

2.1. Challenges in Teaching Mathematics

The primary education mathematical teaching process in Timor-Leste deals with various structural problems that have direct consequences on student achievement results. A major hindrance to teaching mathematics at this level arises from teachers' insufficient preparation since they lack continued professional growth (Ximenes, 2025b). Educators start their careers in teaching without proper training that includes subject-specific teaching methods primarily for mathematics education. The Teacher Development Multi-Year Study, together with *Apoio ba Lideransa no Mentoria Aprendizajen* (ALMA) initiatives, has produced inconclusive results when measured against student achievement outcomes, according to Cassity et al. (2022). These programs intended for teacher competency enhancement return inconsistent results mainly because of implementation variations, minimal post-education support, and scarce resources. Research performed on Australian teacher development initiatives in Timor-Leste demonstrates two key points: first, the training structures improved, and second, there is an urgent requirement for regular learning result tracking and enhanced educational systems (Department of Foreign Affairs & Trade [DFAT], 2015). The absence of structured professional development programs will keep mathematics instruction quality below standard, thus blocking students from gaining essential math skills.

The assessment and evaluation deficiencies in educational programs, in addition to insufficient teacher preparation, create major problems in mathematics teaching and learning practice (Saleh & Alali, 2024; Bartólo and Ximenes, 2025). Educational programs currently have insufficient methods to evaluate their lasting effects, which prevents proper identification of student learning gaps. Students experience ongoing learning difficulties because unprepared educators collaborate with insufficient evaluation methods to create a continuous cycle of fundamental math concept difficulties. Keiler et al. (2020) explain that teacher-peer mentoring has a significant impact on fostering student-centered teaching, but such success requires effective support structures designed for mentors. The research underscores the requirement for structured systems that bring mentoring together with continuing peer communication and instructional assistance, particularly when schools in rural and urban areas have staffing and resource shortages. The solution demands multiple steps that mix funding into teacher preparation and better curriculum development, as well as tough evaluations of teaching quality and student advancement (Ximenes, 2025c). According to Tapadia (2024), effective teacher professional development of high-quality leads to better teaching quality and student involvement in the learning process. Proceeds from official funding sources strengthen teachers' confidence while enabling them to adopt efficient teaching methodologies, which leads to enhanced student learning achievements. Structure evaluation systems exist to make sure teaching quality improvements continue through time.

The mathematics learning process at the primary education level in Timor-Leste encounters various complex difficulties that block national efforts toward superior educational delivery. The national priority for quality education suffers because of inadequate numbers of qualified teachers, poor teaching resource availability, and teacher professional development opportunities (Ximenes, 2025). The locally developed curriculum and

mentoring programs for educational reform have demonstrated positive results, but implementation persists as an ongoing challenge, particularly in areas that lack resources and are based in rural locations (Cassity, Chainey, & Wong, 2023). Teachers suggest implementing traditional weaving and geometric patterns into mathematics education to create more engaged students who understand the material better (Savio & Duarte, 2021). The innovation of educational technology programs has failed to overcome two main structural obstacles to achieving better student numeracy outcomes: inconsistent support from institutions and inadequate digital infrastructure (Saldanha et al., 2024; Ximenes, 2025b). The achievement of equitable mathematics teaching standards depends on resolving national development goals while upholding both cultural sensitivity and superior educational quality in the system.

2.2. Socioeconomic Factors Affecting Students' Learning Outcomes

In Timor-Leste, the combination of economic standing and educational opportunities makes it difficult for students to learn since wealth distribution creates substantial learning difficulties. Current school budgets remain low, leading to insufficient infrastructure and teaching resources for successful classroom instruction at educational institutions (World Bank, 2021; Ximenes, 2025a). Deficient learning conditions harm both the quality of teaching standards and prevent students with limited financial resources from fully participating in their studies. Rural communities and girls among marginalized groups encounter specific challenges because they face limited school access and encounter cultural norms and social expectations that block their academic success (Asian Development Bank [ADB], 2020). Fundamental literacy and numeracy proficiency show significant differences because of ongoing problems that affect students' academic growth (UNICEF, 2022; Ximenes, 2025a). If no special initiatives are implemented to address these issues, they will expand while making student groups who already need help more vulnerable to disadvantage, alongside posing threats to the progress of national educational benchmarks.

Educational equity and quality initiatives have been placed forward to address Timor-Leste's difficulties. The *Apoiu Lideransa liu-husi Mentoria no Aprendizajen* (ALMA) program combines mentorship alongside professional development to boost teachers' and leaders' instructional abilities, which consequently develops better pedagogical methods to produce improved student results (Cassity et al., 2020; Ximenes, 2026). The ALMA program ensures the success of a promising model to resolve instructional deficits because it provides essential training and assistance to educators in underserved areas. The SAGE (Science in Australian Gender Equity) programme under the regional structures concentrates its efforts on inclusive education to enhance accessibility and learning possibilities, particularly for girls along with those from disadvantaged communities (Ahmed et al., 2024). Programs like these emphasize the need for comprehensive strategies that execute both teaching quality development and intervention on structural educational disadvantages. Reliable long-term educational improvements throughout Timor-Leste depend on continuous policy dedication together with increased funds and strict monitoring of educational programs.

2.3. Opportunities for Improvement

The delivery of mathematics instruction in primary education in Timor-Leste faces specific difficulties and possibilities to advance through better arrangements for teacher education and curriculum delivery systems (Owen & Wong, 2021). The Australian Government backs the Partnership for Human Development to enhance education quality through better training methods for teachers and pedagogical teaching techniques. The ALMA serves as one of the leading programs that deliver professional training to teachers to help them develop essential abilities for effective mathematics education. The program implements national education priorities defined by the Ministry of Education, Youth and Sport to bridge teacher competence gaps while developing standard approaches for curriculum delivery. The research evidence from Cassity et al., (2022) shows that the ALMA program generated quantifiable teaching improvements because teachers enhanced their ability to use professional teaching methods after joining the program. The 2013 curriculum reform has established strong relationships between its teaching methods and modern techniques and improved student learning results (Cassity et al., 2022).

To keep mathematics education progress sustainable, additional efforts need to be focused on closing present gaps within policy design frameworks and implementation methods (Ximenes and Ximenes, 2025). The Department of Foreign Affairs & Trade (2015) reports that international support programs succeeded in delivering brief, short-term training benefits to teachers, but the sustained impact relies on both strong policy structures and continuous student outcomes assessment. Sound policy tactics need complete measurement systems to follow students'

advancement and locate learning limitations, which enables teachers to modify their instructional methods (Ximenes, 2025). Programs that develop teaching skills need continuous support to stop instructor skills from plateauing and maintain compatibility with present curricular guidelines (Owen & Wong, 2021). The educational system in Timor-Leste faces an uncertain future because policy improvements must unite with curriculum refinement and persistent teacher capacity-building to achieve sustained mathematics proficiency enhancement at primary schools (Cassity et al. 2022; Ximenes, 2025).

2.4. Innovative teaching methods and Availability of resources

Modern teaching approaches with appropriate resources must be available at Timor-Leste primary schools to achieve optimal mathematical education standards. New educational technology deploys artificial intelligence to update traditional teaching systems by giving customized educational content delivery (Saldanha et al., 2024; Ximenes, 2025). The programs utilize these technologies to produce individual learning assistance programs that match students' needs toward educational targets (Ximenes, 2026a). Differentiated instruction stands as an essential component in academic environments with various understandings of mathematics because it brings advantages to this educational context. A study by Al-Gerafi et al. (2023) reveals that AI platforms draw students into their tasks because students enhance their abilities to tackle mathematical problems and develop better math comprehension simultaneously. The implementation of AI systems in mathematics education leads to multiple operational obstacles, although it delivers numerous significant advantages (Ximenes, 2025). Educational tools fuelled doubts from teaching professionals because the technology makes them wonder if it will substitute human teaching for providing instructional assistance. In Timor-Leste, the schools face two primary barriers to implementing such innovations: inadequate technology infrastructure, limited digital expertise, and insufficient funding.

Educational institutions now acknowledge the urgent necessity to strengthen both their resilience and readiness capabilities because of global disruptions, especially during the COVID-19 pandemic. The emergency highlighted multiple drawbacks in digital systems as well as remote learning methods and teacher preparedness, thus damaging mathematical instruction throughout the crisis (Dabrowski et al., 2022). The lack of basic technological infrastructure forced numerous educational institutions to eliminate quality mathematics teaching opportunities throughout school shutdowns (Ximenes, 2025). Such gaps need a solution through teacher training specifically developed to meet current needs, together with increased funding for digital systems, and establishing policies that support educational technology adoption. Educators need to establish an innovative culture that will allow them both to adopt modern teaching methods and build techniques for adding value to current curriculum structures (Ximenes and Ximenes, 2025). Through the integration of modern technology with resistant educational structures, Timor-Leste will generate a flexible learning environment that intensifies mathematics education while laying the foundation for students' academic and professional development (Ximenes, 2025).

3. METHODOLOGY

Academic searches were conducted across several databases, starting with Google Scholar, continuing with Scopus, and then Web of Science to establish an extensive collection of scholarly articles for research purposes. The research drew strong evidence from two academic sources, namely, peer-reviewed journal articles and academic report, conference proceedings, to study a broad array of investigation topics (García-Peñalvo, 2022; Apumayta et al., 2024). A research-based keyword set, along with Boolean operators, served to improve the relevance and specificity of the obtained literature. The selected search terms comprised "Mathematics education in Timor-Leste" together with "teacher training in Southeast Asia" and "multilingual education challenges." The study's primary themes regarding Timor-Leste's education system and Southeast Asian teacher development practices, alongside multilingual teaching difficulties, served as the selection criteria for these search terms.

The search protocol included publication date restrictions that directed researchers to studies published in the last ten years to collect recent theoretical findings and contemporary advancements. The literature review follows systematic literature review best practices because it chooses contemporary studies with substantial impact for developing the research framework (Booth et al., 2021). The review process analyzed bibliographic references of essential articles to tackle the snowballing technique, which added numerous complementary resources to make the literature review deeper and broader.

3.1. Inclusion and Exclusion Criteria

A collection of inclusion and exclusion criteria served to maintain both the validity and relevance of

the reviewed research. Research articles measuring primary school mathematics education in Timor-Leste qualified for inclusion when they appeared in peer-reviewed publications and furnished empirical data about mathematical education difficulties and advantages in particular, and also other studies relating to the Timor-Leste context of education. These evaluation standards were chosen to direct the analysis toward evidence-based information instead of theoretical scholarship or anecdotal evidence. The selection results were 35 of the 72 studies were excluded from evaluation if they analyzed only college education, as well as articles presenting opinions instead of empirical evidence. Therefore, this study included 37 research articles and academic reports on education in Timor-Leste, and most of the articles were selected according to teaching and learning mathematics. The systematic review methodology demands that researchers focus on peer-reviewed empirical research to achieve reliable findings (Sgarbossa et al., 2022).

3.2. Data Extraction and Analysis

The selected research data went through a systematic extraction phase that concentrated on study objectives and research methodologies, along with essential findings and recommended actions. The authors used thematic analysis to extract findings through which they identified trends and primary themes that appeared across the literature. The data analysis adopted a systematic framework that produced orderly groupings of educational issues while exploring the educational systems in Timor-Leste. Thematic synthesis functions as an established qualitative research method to properly organize and interpret substantial text datasets, according to Saunders et al. (2023).

4. RESULTS AND DISCUSSION

Researchers evaluated ten research papers to use them as the foundation for their systematic review process by checking their relevance to study questions and adherence to predetermined inclusion criteria. The analyzed research studies provide essential educational findings about mathematics education in Timor-Leste that include both curriculum development and teaching practices and education administrative practices. **According to Lee (2012), teachers persist in their vocation through national educational development objectives**. The Tatto (2021) study results showed that educators continue pushing national advancement through major work barriers. Curriculum reforms noted positive achievements alongside ongoing reform obstacles leading to inconsistent effects and faced complexities (Odgen, 2017). Educational performance in the school system depends fundamentally on effective practical teaching methods (Kusuma et al., 2021). The topic of curriculum development reveals information about how teacher motivation relates to training while showing both beneficial changes and ongoing difficulties affecting the educational system of Timor-Leste.

4.1. Teacher Qualifications and Training

The inadequate specialized training of teachers in Timor-Leste results in severe mathematics learning problems since it reduces classroom instruction quality. A lack of proper teaching method training among Timor-Leste teachers before entering the profession results in poor student learning outcomes and disengaged classrooms (Kusuma et al., 2021). Traditional teaching preparations fail to deliver specially designed instruction approaches for bilingual learners, which causes the problem to intensify. The educational challenge for Timor-Leste students with multilingual home exposure arises because schools lack training systems that develop appropriate cultural teaching methods and supportive language approaches. The scarcity of CPD programs prevents teachers from developing their instructional methods at an effective level. The existing support structure for CPD falls short of fulfilling educator needs because curricula require new instructional approaches, leading teachers to face challenges with modern student-centered teaching methods (Petar, 2024). Standardization of teacher training programs should form part of pre-service education programs while also providing continuous professional development training to educators. The organized training should teach educators to utilize active learning techniques with problem-solving capabilities while incorporating culturally appropriate methods. A professional teaching force that demonstrates adaptability will help Timor-Leste teach mathematics better and achieve positive results while providing equal educational opportunities despite current funding limitations.

4.2. Resource Limitations and Learning Environments

Most schools across Timor-Leste operate in locations where inadequate resources create obstacles to providing effective mathematics instruction and student learning activities. **Several administrative factors, including classroom congestion, limited educational resources, and restricted technological availability, prevent educators from implementing student-focused instructional approaches (Lee, 2012).** Students face learning barriers when schools lack enough educational materials, including textbooks,

manipulatives, and digital educational equipment. Research evidence indicates that students achieve better mathematics results in settings where their educational facilities offer suitable learning materials. Educational resource inequalities spread further in the education system because they specifically target vulnerable students alongside rural schools during budget constraints (Lynch & Mancenido, 2022). The gaps in learning between students become large because students from schools without enough resources cannot achieve the same level of education provided at well-resourced schools (Khazanchi, Di Mitri, & Drachsler, 2024). Policymakers need to establish equitable resource distribution across every school system because rural schools and disadvantaged institutions need adequate support. Teachers need to implement cost-effective learning solutions by adopting open-source digital resources together with teacher-made instructional materials through partnership programs with the community. Timor-Leste will establish a comprehensive mathematics education system for students if they carry out strategic implementation effectively.

4.3. Language Barriers and Curriculum Implementation

Mathematical education faces major academic obstacles in Timor-Leste because Portuguese, along with Tetum, serves as the classroom language, although native students mainly use different languages. Students experience different learning difficulties because research demonstrates that teaching in a language other than their native language causes comprehension issues (Da Costa, 2021; Ximenes, 2025a). The language barriers make students lose interest during class activities, which leads to less active participation, resulting in failing academic outcomes. The discipline of mathematics demands deep conceptual understanding, so additional language problems make students struggle with solving problems and basic mathematical understanding.

Bilingual and multilingual approaches entered the educational reforms of Timor-Leste after stakeholders tried to fix their educational problems. Bilingual education implementation in Timor-Leste continues to meet challenges because teachers lack instructional preparedness, educational resources are minimal in local languages, and government policies need alignment with educational targets (Ogden, 2017; De Oliveira and Ximenes, 2025). Teachers struggle to deliver effective bilingual education because most of them lack complete proficiency in Portuguese. The insufficient educational resources in Tetum and other native languages prevent students from developing a bridge that connects their native tongue with the classroom instruction language. To achieve successful curriculum reform, schools should implement complete solutions. The education policies need an update to support programs using structured methods of bilingual and multilingual language instruction, and teachers must receive training in advanced multilingual education approaches, while high-quality education resources in multiple languages need to be developed. The nation will establish conditions for inclusive learning after teachers receive needed competence training and students secure educational materials. Bairy (2019) shows that Content and Language Integrated Learning (CLIL) in multilingual education settings improves conceptual knowledge while developing higher-level thinking abilities and applying mathematics to real-life situations (Ximenes, 2025b). Students who learn mathematics through multiple languages develop a deeper understanding of math and gain equal educational possibilities compared to their classmates.

5. DISCUSSION

Research shows that educational reforms and teacher education programs exist, yet structural problems obstruct proper mathematics teaching delivery. The primary teacher training problems stem from inadequate educational development programs that do not supply educators with the required pedagogical and content knowledge to strengthen their instructional performance. Kusuma et al. (2021) explain how reforms in the mathematics curriculum for primary schools create difficulties for educators to adjust their teaching practices because professional development remains constrained. The lack of continuous training platforms creates a significant problem since it affects mostly rural schools that already struggle with access limitations. Tatto (2021) shows his study's result that teacher education creates better ways to teach mathematics, while existing systemic flaws lead education programs to part ways with real classroom experiences. The absence of communication between training methods and actual teaching produces traditional methods that do not trigger students to think meaningfully about math. A fundamental requirement exists to create extensive customized professional development programs for teachers in various learning environments because these programs directly impact instructional success rates.

The implementation of curriculum reforms constitutes a primary matter that affects mathematics instruction within post-colonial education systems operating across multiple

languages. Post-colonial educational systems face two major barriers that hinder successful curriculum reform because foreign influences dominate local educational requirements. The curriculum reforms of Timor-Leste encounter major implementation challenges stemming from insufficiently prepared teachers together with insufficient local resources, according to Ogden (2017). Da Costa (2021) indicates that multilingual settings face language policy complexities that lead students to struggle with mathematics instruction because their home languages differ from the instructional language. Student performance decreases because existing obstacles prevent them from developing an effective connection with mathematical concepts. Local educational planners need to develop learning materials that align with students' cultural backgrounds, along with their linguistic abilities, in all formal teaching aspects.

Both educational resource inadequacy and educational equity concerns lead to higher challenges for teachers when instructing mathematics. **The research by Lee (2012) shows that limited school budgeting creates substantial learning inequalities because students without technology-based educational resources suffer the most.** The absence of necessary infrastructure at most educational facilities in Timor-Leste leads to difficulties in implementing curricula and delivering teacher training because teachers lack appropriate educational materials and sufficient preparation (Ximenes, 2025). The students from disadvantaged communities have the most limited access to resources since they receive substandard instruction from inadequate math teachers. The systemic problems can be resolved through multiple interventions that combine trained educator education with neighborhood-specific educational content along with programs combating education disparities. Funding both infrastructure and support systems for teachers while establishing programs for quality resource distribution and community participation during education policy creation marks the foundation for enhancing mathematics education programs.

The review delivered important conclusions, but the readers should understand specific limitations within its scope. The research field regarding mathematics education in Timor-Leste consists of a few empirical studies. Few available studies about this subject restrict researchers from fully exploring the matter, which also affects the ability to generalize insights beyond educational environments. Publication bias might influence the selected studies since researchers often report positive findings, leading to the publication of their work, although the real situation in mathematics education might differ. Research must carry out statistical studies across different educational environments within Timor-Leste to establish a comprehensive understanding of mathematics teaching problems.

6. CONCLUSION AND RECOMMENDATIONS

A systematic review demonstrates that teaching mathematics in primary schools of Timor-Leste contains multiple challenges along with various opportunities for gaining. Analysis shows that insufficient resources, together with untrained teachers and student preparation variations, exist in the educational system, but educational curricular changes and improved teaching practices yield better student results. Research shows that academic quality benefits increase significantly after teachers undergo training about the implementation of technology into their practice (Ximenes, 2025). According to Hidayat et al. (2024), the obstacles can be decreased by adopting flexible teaching approaches that match students' linguistic circumstances and cultural preferences from other Southeast Asian examples. The successful mathematics education system of Timor-Leste depends on the development of strong connections between significant participants.

Research findings expose both issues and potential opportunities that exist for primary mathematics education in each Timor-Leste primary school. The ALMA program created an educational development system that strengthened teaching quality in the National Basic Education Curriculum, according to Cassity et al. (2022). Despite the progress achieved in teaching methods and curriculum delivery, a few fundamental problems, such as uninformed resources and non-proficient teacher training, together with deficient student outcome assessments, continue to exist. Future practices need to enhance curriculum delivery by implementing specific interventions to develop teachers while establishing better support frameworks (Lucas & Cabrita, 2015).

The analysis from this review demands the following recommendations that derive from the reviewed papers:

The development of policies must focus on enhancing teacher training programs, which need continuous professional development to improve instructional quality. Tatto (2021) advocates for teacher education programs that connect classroom conditions with hands-on education about efficient mathematics teaching methods. Extended professional development programs must exist to

help teachers move from initial training to actual teaching applications because they enable better instructional quality and improved student results, according to Kusuma et al. (2021).

The enhancement of mathematics instruction necessitates the proper distribution of teaching materials together with classroom resources. **The student achievement statistics in underfunded schools suffer because these institutions lack both professional teachers and crucial learning materials, according to Lee (2012).** The education system in Timor-Leste needs strategic investments to improve educational facilities alongside the classroom supply of teaching materials and digital learning tools to improve mathematics instruction, according to Ogden (2017).

The provision of early-grade mathematics learning through mother-tongue-based instructional methods helps students better engage with the material and improve their understanding. Da Costa (2021) demonstrates how early education policy through native language use enhances educational success by enabling better mathematical perception among students. The strategy follows global best practices in multilingual education because it removes language obstacles that prevent mathematics learning success (**Moschkovich, 2023**).

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