International Journal of Science and Research Archive
eISSN: 2582-8185
Cross Ref DOI: 10.30574/ijsra
Journal homepage: https://ijsra.net/



(RESEARCH ARTICLE)

Check for updates

TRI-LINGUAL APPROACH AND OTHERS IN TEACHING MATHEMATICS

MARIA BELEN ZAMUDIO CONDE *

Master of arts in teaching Filipino, Tabaco College.
* Corresponding Author

International Journal of Science and Research Archive, 2026, 21(02), 077–081

Publication history: Received on 22 September 2026; revised on 01 November 2026; accepted on 03 November 2026

Article DOI: https://doi.org/10.30574/ijsra.2026.21.2.1970

Copyright © 2026 Author(s) retain the copyright of this article. This article is published under the terms of the Creative Commons Attribution License 4.0

ABSTRACT

This study examined the effectiveness of three linguistic approaches, namely English, Filipino, and Taglish, in teaching Mathematics among Grade 2 learners at Matalipni Elementary School during the School Year 2025-2026. Language plays a crucial role in mathematics instruction because it directly influences learners' comprehension, participation, and overall academic performance. Guided by Constructivist Theory, Cognitive Theory, Bilingual Education Theory, and Vygotsky's Sociocultural Theory, the study aimed to determine which language approach best facilitates mathematical understanding and learning outcomes. A descriptive-comparative research design was employed, utilizing formative assessments to measure learners' performance under the three instructional approaches. Purposive sampling was used to select participants who had demonstrated adequate academic performance and exposure to the language approaches. Findings revealed that while English remains important for introducing technical mathematical terminology and Filipino supports clearer conceptual explanations, the Taglish approach emerged as the most effective instructional medium. Learners taught through Taglish demonstrated higher levels of conceptual understanding, increased participation in classroom discussions, greater confidence in expressing ideas, and improved retention of mathematical concepts. The use of Taglish reduced language-related barriers and cognitive load, enabling students to focus more effectively on mathematical reasoning and problem-solving. The study concludes that a balanced integration of English and Filipino promotes meaningful learning and enhances learners' engagement in mathematics classes. Consequently, educators are encouraged to adopt flexible multilingual teaching strategies that support learners' linguistic needs while maintaining academic rigor in mathematics instruction.

Keywords: Taglish Approach, Mathematics Education, Language of Instruction, Student Learning

1 INTRODUCTION

Language serves as a fundamental tool in the teaching and learning process. In mathematics education, effective communication is essential because mathematical concepts require precise explanations and logical reasoning. In the Philippine educational setting, teachers often use different languages, including English, Filipino, and Taglish, to facilitate learning. The selection of an appropriate language of instruction significantly influences students' understanding, participation, and academic performance in mathematics.

Historically, the Philippine educational system has been shaped by linguistic influences from both Spanish and American colonization. These influences introduced mathematical terminologies that are still widely used today. While English remains the predominant language in mathematics instruction due to its global relevance in science and technology, Filipino is frequently utilized to clarify concepts and enhance learner comprehension. Additionally, Taglish has emerged as a practical linguistic approach that combines English and Filipino to make instruction more accessible to students.

Several educational theories support the importance of language in learning. Constructivist Theory emphasizes that students actively construct knowledge through experience and interaction. Cognitive Theory highlights the significance of mental processes in understanding concepts, while Bilingual Education Theory advocates the use of two languages to strengthen learning. Vygotsky's Sociocultural Theory further stresses the role of language and social interaction in cognitive development. These theories collectively suggest that effective language use can significantly improve mathematics learning.

This study investigates the effectiveness of English, Filipino, and Taglish as instructional languages in mathematics among Grade 2 pupils at Matalipni Elementary School. Specifically, it examines learners' levels of understanding, participation, and achievement when exposed to these approaches. Through this research, valuable insights are expected to guide educators in selecting appropriate language strategies that promote meaningful learning experiences and improve mathematics instruction in elementary education.

2 MATERIALS

The primary materials used in this study included formative assessment tools, instructional materials, lesson plans, and learning activities designed for Grade 2 Mathematics. The formative assessments served as the principal instrument for measuring students' understanding and learning outcomes after exposure to the English, Filipino, and Taglish instructional approaches. These assessments consisted of mathematics questions aligned with the competencies being taught and were administered following classroom instruction.

Instructional materials included teacher-prepared worksheets, visual aids, activity sheets, and classroom exercises that facilitated concept development and problem-solving skills. The lessons were delivered using the same mathematical content but differed according to the language medium utilized during instruction. This ensured consistency in content while allowing the study to evaluate the effectiveness of each language approach.

Additional materials included record sheets for documenting student responses, assessment scores, classroom participation, and observational notes. These records enabled the researcher to compare students' performance and engagement across the three language groups. The materials were carefully selected to support the objectives of the research and to provide reliable data regarding the impact of language use on mathematics learning. Collectively, these materials contributed to a systematic and objective evaluation of the effectiveness of English, Filipino, and Taglish in mathematics instruction.

3 METHODS

This study employed a descriptive-comparative research design to determine the effectiveness of English, Filipino, and Taglish approaches in teaching Mathematics. The design allowed the researcher to describe students' learning outcomes and compare their performance across the three language groups. The research focused on Grade 2 learners enrolled at Matalipni Elementary School during the School Year 2025-2026.

Participants were selected through purposive sampling. Students included in the study had prior exposure to the three language approaches and demonstrated academic performance of at least 80 percent. The participants were divided into three groups consisting of fourteen students each. Group one received instruction primarily in English, group two was taught in Filipino, and group three was instructed using the Taglish approach.

The research process involved implementing mathematics lessons using the designated language approach for each group. Following instruction, formative assessments were administered to evaluate students' comprehension of mathematical concepts and procedures. Classroom participation and engagement were also observed and documented throughout the instructional period.

Collected data were organized and analyzed using descriptive and comparative techniques. Frequency counts and percentage distributions were utilized to determine learners' levels of achievement and participation. Comparisons across groups were conducted to identify differences in learning outcomes attributable to language use. The findings were

interpreted in relation to the study's theoretical framework and research objectives. This methodological approach provided a systematic means of identifying the most effective language strategy for enhancing mathematics learning among elementary school students.

4 DISCUSSION

The findings of the study emphasize the significant influence of language on students' learning experiences in mathematics. Results suggest that language choice affects not only conceptual understanding but also learners' confidence, classroom engagement, and willingness to participate in discussions. These outcomes support educational theories that highlight language as an essential component of cognitive development and knowledge construction.

The English approach proved beneficial in introducing mathematical terminology and preparing students for academic content commonly encountered in textbooks and higher levels of education. However, difficulties arose when students encountered unfamiliar vocabulary, which sometimes hindered their comprehension of mathematical concepts. This finding aligns with studies indicating that language barriers may increase cognitive demands and reduce learning efficiency.

The Filipino approach enhanced conceptual understanding by presenting ideas in a familiar language. Students demonstrated greater comfort in asking questions and participating in discussions. However, some limitations were observed in explaining technical terms that are traditionally presented in English.

Among the three approaches, Taglish emerged as the most effective. The integration of English terminology with Filipino explanations allowed students to understand complex ideas while retaining familiarity with instructional communication. Students demonstrated higher participation rates, improved comprehension, and greater confidence in expressing mathematical ideas. Taglish also reduced cognitive load, enabling learners to focus on problem-solving rather than language translation.

These findings support bilingual and sociocultural theories that advocate flexible language use in instruction. The study demonstrates that a balanced multilingual approach can foster a more inclusive and effective learning environment, particularly for young learners in mathematics education.

5 RESULTS

The study revealed notable differences in students' learning outcomes based on the language used during mathematics instruction. Students exposed to the English-only approach demonstrated familiarity with mathematical terminologies; however, some experienced difficulty understanding concepts because of language-related barriers. Consequently, conceptual understanding and classroom participation were relatively limited compared to the other groups.

Students taught using the Filipino approach showed improved comprehension and greater confidence in classroom interactions. The use of a familiar language enabled learners to understand mathematical concepts more effectively and participate more actively in discussions. Nevertheless, challenges occasionally emerged when explaining technical mathematical vocabulary.

The Taglish group achieved the most favorable outcomes among the three instructional approaches. Students exhibited higher levels of understanding, active engagement, and stronger retention of mathematical concepts. The combination of English and Filipino allowed learners to grasp complex ideas while maintaining access to essential mathematical terminologies. As a result, they demonstrated increased confidence and participation during classroom activities.

Overall, the findings indicate that language significantly influences mathematics learning. While English and Filipino each offer distinct advantages, the Taglish approach provides a balanced instructional framework that supports conceptual understanding, communication, and academic achievement. Therefore, Taglish emerged as the most effective language approach for teaching mathematics among the participants of this study.

6 CONCLUSION

This study investigated the effectiveness of English, Filipino, and Taglish approaches in teaching Mathematics among Grade 2 learners. The findings demonstrate that language is a critical factor influencing students' understanding, engagement, and

academic performance in mathematics. Although each language approach provides unique advantages, their effectiveness varies depending on learners' linguistic abilities and educational needs.

English remains valuable because it introduces learners to internationally recognized mathematical terminology and prepares them for higher academic studies. However, reliance on English alone may create barriers to comprehension among young learners who are still developing language proficiency. Filipino, on the other hand, promotes clarity, familiarity, and confidence, making it easier for students to understand mathematical concepts and participate actively in classroom discussions.

The study concludes that the Taglish approach is the most effective instructional strategy among the three language methods examined. By combining the strengths of English and Filipino, Taglish bridges communication gaps and facilitates meaningful understanding of mathematical concepts. This approach minimizes language-related difficulties while preserving access to essential mathematical terminology. Students taught through Taglish demonstrated stronger comprehension, higher participation rates, greater confidence, and improved retention of learning.

Furthermore, the findings affirm the principles of constructivist, cognitive, bilingual, and sociocultural learning theories, emphasizing the importance of language in knowledge construction and social interaction. Mathematics instruction becomes more effective when learners are taught using a language they understand and can comfortably use. Therefore, educators are encouraged to adopt flexible multilingual strategies that integrate English and Filipino to enhance learning outcomes. Such practices can contribute to more inclusive, engaging, and effective mathematics education in Philippine elementary schools.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Acknowledgments

The researcher gratefully acknowledges the support of SDO Albay, Matalipni Elementary School, the Grade 2 Learners and Teachers, its School Head, and Non-Teaching Personnel, in the conduct of this study.

Funding Source

This research was supported by the Department of Education MATATAG program, with institutional assistance from the Albay Division Office of the Department of Education and is aligned with the United Nations Sustainable Development Goal 4 on Quality Education.

Disclosure of conflict of interest

No conflict of interest should be disclosed.

Statement of ethical approval

This study was conducted in compliance with institutional ethical standards and approved by the Schools Division Office of Albay.

Statement of informed consent

All participants were informed of the study's purpose, procedures, and confidentiality measures. Written consent was obtained from the Schools Division Superintendent prior to participation of Grade 2 Learners and Teachers of Matalipni Elementary School.

REFERENCES

[1] Alipio, C. (2013). Mathematics Education in the Philippines: Issues and Challenges. Philippine Journal of Education, 32(1), 1-15.

[2] Baker, C. (2001). Foundations of bilingual education and bilingualism (3rd ed.). Clevedon, UK: Multilingual Matters.

[3] Bernardo, A. B. I. (2005). Bilingual code-switching as a resource for learning and teaching: Alternative reflections on language and education in the Philippines. In D. Dayag & J. Quakenbush (Eds.), Linguistics and language education in the Philippines. Manila: Linguistic Society of the Philippines.

[4] Bernardo, A. B. I. (2002). Language and mathematics learning: A Philippine perspective. Journal of Research in Mathematics Education.

[5] Bernardo, A. B. I. (1999). Overcoming Obstacles to Understanding and Solving Word Problems in Mathematics. Educational Psychology, 19(2), 149-163

[6] Constantino, R. (1970). The Filipino in the Philippines and Other Essays. Quezon City: Malaya Books.

[7] Cummins, J. (2000). Language, power and pedagogy: Bilingual children in the crossfire. Clevedon, UK: Multilingual Matters.

[8] Cummins, J. (1981). The role of primary language development in promoting educational success for language minority students. In California State Department of Education (Ed.), Schooling and language minority students: A theoretical framework (pp. 3–49). Los Angeles, CA.

[9] Department Order No. 25, s. 1974: Implementing Guidelines for the Bilingual Education Policy. Manila, Philippines.

[10] García, O., & Wei, L. (2014). Translanguaging: Language, bilingualism and education. New York, NY: Palgrave Macmillan.

[11] Gonzales, A. (2002). Language and Mathematics Education in the Philippines. Journal of Mathematics Education, 10(2), 45-60

[12] Laguador, J. M. (2014). Cooperative learning approach in an outcomes-based environment. Asia Pacific Journal of Education, Arts and Sciences.

[13] Ortiz, E. O. L., & Corpuz, A. B. (2016). The use of the Filipino language as a medium of instruction in mathematics]. (Unpublished research paper)

[14] Piaget, J. (1926). The language and thought of the child. New York: Harcourt, Brace & Company.

[15] Tupas, R., & Lorente, B. P. (2014). A new politics of language in the Philippines: Bilingual education and the challenge of multilingualism.

[16] Vygotsky, L. S. (1978). Mind in society: The development of higher psychological processes. Cambridge, MA: Harvard University Press.