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Filipino Sign Language at Lazaro Francisco Integrated School in Teaching Mathematics Supporting Deaf Students

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ABSTRACT

This study investigated the effectiveness of Filipino Sign Language (FSL) in teaching Mathematics to Deaf learners at Lazaro Francisco Integrated School (LFIS), using a qualitative, qualitative-case study design. The research focused on the experiences, instructional strategies, and challenges faced by three purposively selected SPED teachers who utilized FSL as a primary medium instruction. Data were collected through semi-structured interviews and analyzed using thematic analysis, with credibility ensured through member checking and triangulation. Findings revealed six major themes. First, deaf learners exhibit a wide range of academic capabilities and behavioral traits, requiring individualized teaching approaches. Some students thrive with visual and scaffolded instruction, while others struggle due to limited FSL proficiency. Second, SPED teachers demonstrate strong dedication and adaptability, though many acknowledge gaps in their formal training. Third, while FSL is regularly used in Math instruction, abstract concepts such as place value, word problems, and problem-solving remain difficult to convey due to the lack of direct FSL equivalents. Fourth, teachers encounter challenges such as emotional fatigue, behavioral issues, and confusion between FSL and American Sign Language (ASL). Fifth, despite limited access to formal training, educators developed successful strategies through self-study, peer collaboration, and mentoring. These strategies contributed to significant learner progress. Sixth, FSL is widely perceived as beneficial in fostering student engagement, communication, and academic growth, but its effectiveness is limited by the lack of standardized Math-specific signs and institutional support. The study concludes that FSL is a valuable instructional tool, but its potential is constrained by systemic barriers. Recommendations include enhancing teacher-training, developing standardized FSL Math vocabulary, and improving support structures to promote inclusive education for Deaf learners.

Keywords: Filipino Sign Language, Deaf learners, Teaching Mathematics using FSL, Deaf Education, Teaching Effectiveness, SPED Teacher Experiences

1 Introduction

Inclusive education is a growing global priority, and the Philippines is among the nations striving to provide equitable learning environments for all, including Deaf learners. A landmark step toward this goal was the enactment of the Filipino Sign Language Act in 2018, which officially recognized Filipino Sign Language (FSL) as the national visual-gestural language of the Filipino Deaf. This legislation marked a paradigm shift from viewing deafness as a disability to acknowledging it as a linguistic identity, thus promoting accessibility, equity, and cultural inclusion.

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Despite this legislative progress, the integration of FSL into educational settings remains inconsistent and underdeveloped. Although FSL is mandated for use in Deaf education, the professional development of teachers—especially in mastering and applying FSL in subject-specific instruction such as Mathematics—has received limited attention. Existing studies provide minimal insight into how FSL training affects teaching efficacy, particularly in explaining abstract and technical concepts.

The Department of Education (DepEd) reinforced inclusive practices through Order No. 044, s. 2021, which aligns with the Magna Carta for Persons with Disabilities. It underscores the right of learners with disabilities to access quality education and support services, including communication tools such as FSL. Integrating FSL in the classroom is not merely a legal obligation—it is a pedagogical necessity that fosters student participation, comprehension, and sense of belonging.

Nevertheless, challenges persist. These include a shortage of qualified FSL interpreters, limited availability of specialized training programs, and a lack of standardized mathematical vocabulary in sign language. These barriers hinder both the instructional delivery of teachers and the learning outcomes of Deaf students.

This research addresses these gaps by investigating the implementation and perceived impact of FSL training on teaching Mathematics to Deaf learners. Conducted at Lazaro Francisco Integrated School, the study explores SPED teachers' experiences, the effectiveness of FSL training strategies, and the relationship between FSL proficiency and improved academic outcomes for Deaf learners. Specifically, it seeks to: (1) identify the characteristics of Deaf learners and SPED teachers; (2) examine the challenges of teaching Mathematics using FSL; (3) explore effective training strategies; (4) demonstrate classroom applications of FSL; and (5) assess the perceived effectiveness of FSL in enhancing mathematical learning among Deaf students.

Through these objectives, the study contributes to the body of knowledge on inclusive education and supports the development of responsive training programs and policies that uphold the rights of Deaf learners and promote inclusive, learner-centered instruction.

Statement of the Problem

This study sought to describe the use of Filipino Sign Language in supporting Deaf learners at Lazaro Francisco Integrated School. Specifically, answered the following questions:

1. What are the characteristics of Deaf learners at Lazaro Francisco Integrated School?
2. What are the characteristics of SPED teachers at Lazaro Francisco Integrated School?
3. In what instances is Filipino Sign Language being utilized in teaching Mathematics to Deaf learners at Lazaro Francisco Integrated School?
4. What are the difficulties in explaining concepts in Mathematics using Filipino Sign Language?
5. How did the strategies you used in Filipino Sign Language training contributed to Deaf learners' academic portfolio in Mathematics?
6. How effective is Filipino Sign Language in enhancing the learning process of Deaf learners in Mathematics, as perceived by SPED teachers?

2 Methodology

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This study employed a qualitative case study design to explore the use of Filipino Sign Language (FSL) in teaching Deaf learners at Lazaro Francisco Integrated School. A qualitative approach was deemed appropriate to capture the lived experiences, perceptions, and teaching practices of Special Education (SPED) teachers in a naturalistic setting. Specifically, a **descriptive case study** was utilized, aiming to provide an in-depth and accurate representation of how FSL is applied in classroom instruction. This design allowed the researchers to document real-life educational experiences without manipulation or intervention, ensuring an authentic understanding of the phenomenon (Hecker & Kalpoka, 2025).

Through this approach, the researchers investigated the effectiveness of FSL as a medium for instruction, particularly in the context of teaching Mathematics to Deaf learners. The study focused on how SPED teachers implemented FSL in their teaching, the challenges they encountered, and the observed impacts on learner engagement and academic performance.

3 Results

The study of three SPED teachers at Lazaro Francisco Integrated School identified 18 themes highlighting key qualities and challenges in special education teaching.

Key Themes:

Here are the 18 key themes with concise explanations (1–3 sentences each) based on your provided information:

Key Themes

Theme 1: Personality Traits
Positive personality traits such as dedication, patience, and adaptability enhance SPED teachers' ability to support Deaf learners in math. Conversely, negative traits like frustration and emotional exhaustion can hinder teaching effectiveness and classroom management.

Theme 2: Educational Support Structure
Teachers provide tailored academic support through individualized instruction and consistent encouragement, enabling Deaf learners to progress in mathematics despite initial skill gaps.

Theme 3: Individual Characteristics of Deaf Learners
Deaf learners display unique personality traits, including expressiveness and sociability, which influence classroom interaction and communication dynamics.

Theme 4: Professional Development and Career Progression
SPED teachers often transition from general education backgrounds and build specialized skills through training and sign language certification, shaping their effectiveness in Deaf education.

Theme 5: Teacher Preparedness and Role Management
While some SPED teachers have extensive general experience, many have limited direct exposure to Deaf education, often receiving only brief assignments without consistent specialization.

Theme 6: Teaching and Learning Approaches
Teachers face challenges such as limited sign language fluency and communication mismatches, which complicate effective instruction and learner engagement in math.

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Theme 7: Communicative Approaches to Applied Math Learning
Natural communication methods, including the use of Filipino Sign Language (FSL), support Deaf learners in grasping and applying mathematical concepts in meaningful contexts.

Theme 8: Learning Through FSL-Based Strategies
Teachers adapt instructional strategies using FSL to make math concepts more accessible, facilitating better comprehension and active participation among Deaf learners.

Theme 9: Linking Instruction to Learner Needs
Aligning math instruction with the individual needs of Deaf learners presents challenges, particularly due to early and ongoing learning difficulties and diverse student profiles.

Theme 10: Challenges in FSL-Based Math Instruction
Both teachers and students encounter difficulties translating abstract math concepts into sign language, indicating a need for specialized instructional methods and resources.

Theme 11: Cognitive Challenges in FSL Math Instruction
Learners experience cognitive barriers such as forgetfulness and require frequent repetition, which teachers must address to ensure understanding and retention.

Theme 12: Communication Barriers in Teaching Deaf Learners
Teachers struggle to interpret inconsistent nonverbal cues from Deaf learners, complicating their ability to identify comprehension issues during lessons.

Theme 13: Teacher Emotional Resilience and Support Needs
SPED teachers recognize the emotional demands of teaching Deaf learners and highlight the importance of institutional support to manage stress and prevent burnout.

Theme 14: FSL Integration and Learner Engagement
Consistent use of FSL in math lessons enhances Deaf learners' engagement and understanding by connecting abstract concepts with relatable visual and gestural cues.

Theme 15: Clarity in Visual Delivery
Clear and precise sign language delivery, developed through FSL training, is crucial for effective math instruction and reducing student confusion.

Theme 16: FSL in Math Instruction for Deaf Learners
FSL serves as a vital instructional medium that bridges the gap between abstract mathematical ideas and Deaf learners' comprehension through visual representation.

Theme 17: Math Instruction Through Visual Support Strategies
Teachers employ various visual aids and sign-supported methods to reinforce mathematical concepts, making lessons more accessible for Deaf students.

Theme 18: Understanding FSL Use in Math Education for Deaf Learners
Deaf learners exhibit varied proficiency in FSL and math understanding; while some benefit greatly, others face inconsistent support, highlighting the need for differentiated instructional approaches.

4 Discussion

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This study explored the use of Filipino Sign Language (FSL) in teaching Deaf learners at Lazaro Francisco Integrated School (LFIS), and several important findings emerged. First, Deaf learners at LFIS exhibit a range of academic and behavioral traits. While some students excel in Mathematics, particularly when lessons are presented through visual and scaffolded methods, others struggle due to limited proficiency in FSL. Teachers observed significant variation in students' communication skills, learning pace, and confidence levels, highlighting the need for individualized instructional approaches. Despite these challenges, Deaf learners were found to be friendly, expressive, and highly motivated to participate when given the appropriate support.

The personality traits of SPED teachers played a significant role in the educational process. Patience, adaptability, and compassion emerged as crucial qualities for effective teaching. While teachers acknowledged their limited fluency in FSL, their commitment to continuously improving their skills and providing one-on-one instruction reflected their dedication to meeting the needs of their students. These qualities also contributed to their ability to create a supportive classroom environment.

The study revealed that FSL is actively used in teaching Mathematics, though its effectiveness varies. Teachers found that signing basic numbers was relatively easy, but conveying abstract mathematical concepts like place value and problem-solving posed significant challenges. Teachers often faced difficulties in translating these complex ideas into sign language, especially when no direct FSL equivalents existed. The overlap between FSL and American Sign Language (ASL) compounded these challenges. Teachers also reported emotional fatigue and behavioral issues, further complicating the teaching process.

Despite limited formal training, teachers developed effective strategies through self-study and collaboration. These strategies, including simplified activities and ongoing feedback, have contributed to positive academic growth among Deaf learners. For instance, some students showed remarkable progress in a short period, moving from basic counting to performing complex addition. These findings underscore the importance of adaptive teaching methods and the role of FSL in enhancing learner engagement.

However, the study also found significant gaps in the full realization of FSL's potential due to a lack of standardized signs, instructional resources, and institutional support. While teachers recognized the importance of FSL in fostering communication and building trust with their students, the absence of formal training and sufficient resources limited the effectiveness of FSL in the classroom.

5 Conclusion

Based on the findings, several key conclusions can be drawn. Filipino Sign Language is a powerful medium for teaching Deaf learners, particularly in subjects like Mathematics, which require visual clarity and conceptual understanding. However, its effectiveness is constrained by the lack of standardized signs and instructional resources. While SPED teachers show strong dedication and adaptability, their efforts are hampered by insufficient formal training and limited institutional support.

Deaf learners' academic success depends not only on the instructional strategies employed by teachers but also on the availability of appropriate learning materials and support from families. Strong collaboration between schools and families is essential to maximizing learning outcomes. Moreover, the study highlights the critical gap in FSL proficiency among regular teachers, which results in missed opportunities for inclusion in mainstream classrooms. Finally, the lack of visual aids, content-specific FSL terms, and learning materials represents a significant barrier to inclusive education, pointing to the need for systemic changes at the policy level.

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Recommendations

1. **For School Administrators and Policymakers**: School administrators and policymakers may implement regular seminars and training sessions on Filipino Sign Language for both SPED and regular education teachers. Integrating FSL into the professional development curriculum across all grade levels will ensure that teachers continuously develop their sign language skills. Furthermore, allocating sufficient budget and resources is essential for the creation and dissemination of FSL-integrated teaching materials, particularly in Mathematics, where clear communication of abstract concepts is critical.

2**. For LFIS, CAB East, and Similar Schools**: Schools such as LFIS, CAB East, and others with comparable programs may establish partnerships with organizations specializing in Deaf education and Filipino Sign Language. These collaborations can facilitate in-service training and mentoring programs that strengthen teachers' communication skills in FSL. Encouraging peer learning among teachers and involving SPED teachers in coaching sessions for their regular education counterparts will promote better inclusion and instructional effectiveness.

3. **For Future SPED Teachers and Education Students:** Future SPED teachers and education students may advocate for the inclusion of intensive FSL training within the Bachelor of Special Needs Education curriculum. They are encouraged to actively participate in workshops, outreach programs, and community engagements involving Deaf individuals to enhance both communication skills and cultural understanding. Additionally, taking the initiative to develop FSL-based instructional tools tailored to specific subjects—especially Mathematics—will better prepare them to address the diverse needs of Deaf learners.

4. **For the Department of Education:** The Department of Education may ensure the effective implementation of RA 11106, the Filipino Sign Language Act, by monitoring compliance and providing necessary support to schools. Creating a national standard for academic signs, particularly in subjects such as Math and Science, is imperative to ensure consistency and clarity in instruction. The Department should also promote inclusivity by establishing support systems for regular teachers who may encounter Deaf learners in mainstream classrooms but currently lack sufficient training in FSL.

5**. For the Broader Educational Community**: The broader educational community may utilize Filipino Sign Language not only as a communication tool but also as a cultural and academic bridge that empowers Deaf learners. Fostering a culture of inclusivity and equity involves integrating Deaf awareness and appreciation of FSL into school activities, community forums, and parent-teacher programs. Such efforts will cultivate understanding and support, thereby creating a more inclusive and accessible learning environment for all students.

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