Journal of Learning and Development Studies
ISSN: 2752-9541
DOI: 10.32996/jlds
Journal Homepage: www.al-kindipublisher.com/index.php/jlds

JLDS
AL-KINDI CENTER FOR RESEARCH AND DEVELOPMENT

| RESEARCH ARTICLE

Effectiveness of English as Second Language in Teaching Mathematics in Middle High School

Goteka Taiwona[1] ✉ Cecilia Elena De Los Reyes[2], John De Vera[3], Lilibeth Pinili[4] and Marjorie Añero[5]
[1]Alnibras School
[2345]Cebu Technological University
Corresponding Author: Goteka Taiwona, **E-mail**: robertosuson29@gmail.com

| ABSTRACT
This research investigated the effectiveness of using English as a Second Language (ESL) in teaching mathematics to middle and high school students at AlNibras School in Kuwait, focusing on Algebra 1 students in Grade 9. The study employed the descriptive-correlational design using survey questionnaire administered to ten teachers. Measures of Academic Progress (MAP) assessment results in Mathematics 31 students was analyzed to explore the relationship between language proficiency and mathematics performance of second language learners. Frequency and percentage, weighted mean, standard deviation and one way ANOVA were used to treat the data gathered. The findings indicated that teachers were familiar with strategies designed to address the challenges ESL learners face in mathematics. These strategies, such as language scaffolding and the use of visual aids, were being implemented in classrooms. However, the research highlighted the need for additional professional development and more frequent training to further enhance the effectiveness of these strategies. Additionally, the analysis of student performance data revealed a positive correlation between students' proficiency in English and their success in mathematics. The results suggested that improving ESL students' language skills could contribute to better mathematics performance, emphasizing the importance of integrated language support in mathematics instruction. The study provided valuable insights into the teaching practices at AlNibras School and offered recommendations for refining ESL strategies to support both language and academic success.

| KEYWORDS

Mathematics, English as a second language.

| ARTICLE INFORMATION

ACCEPTED: 01 June 2025 **PUBLISHED:** 30 June 2025 **DOI:** 10.32996/jlds.2025.5.2.6

1. Introduction

English has been a popular medium of communication in both Western and Asian countries (Hakim & Putra, 2021). Researchers have explored the reasons for English medium instruction expansion, including economic, social, political, and educational factors, institutional policies that promote student mobility, and global university rankings (Hultgren & Wilkinson, 2022; Dafouz & Smit, 2021). Language policy decisions are often influenced by a country's future needs and the economic concept of globalization (Salomone & Salomone, 2022). Using English as a medium of instruction is thought to provide graduates with the best opportunities for academic advancement and future employment (Lin & Lei, 2021; Huang & Curle, 2021).

Mathematics is one of the most important subjects in school. However, numerous factors, particularly the language used to teach the subject, have a negative impact on student progress (Wakhata et al., 2022). Moreover, when students perceive the importance of their native language in education, they are more likely to respect the learning process, which improves their academic performance (Schmid & Garrels, 2021). Standard Australian English (SAE) was widely utilized as a medium of instruction, and it was significantly different from the English spoken by the natives (Aboriginals). In such circumstances, the

language of instruction fulfilled two functions: to conserve the cultural heritage of the locals and to improve the mathematical achievement of local students (Phiri et al., 2024).

Moreover, in the teaching of basic courses including mathematics, English is now the acknowledged language of instruction in non-native English-speaking countries in a society growing more globalized (Selvi et al., 2024; Perry, 2023). English is the language of international academics, but its use in mathematics education causes particular challenges for instructors and students in English as a Second Language (ESL) situations (Sharma & Sharma, 2023). Mathematical ideas become double challenging for second-language learners when their mother tongue is not the language of instruction (Gaspar, 2023). Algebra is especially subject to the limitations of students' English degree of ability because of its abstract symbols, procedures, and language-heavy word problems. Consequently, the degree of success in English Algebra instruction primarily depends on the strategies and methods applied by the teacher (Pincheira & Alsina, 2021; Algami & Lortie-Forgues, 2023).

Teachers greatly help to close language barriers by applying appropriate teaching strategies that improve topic understanding and language acquisition (Putri & Sari, 2021). Techniques including scaffolding, use of visual aids, code-switching, modelling mathematical language, and contextualized examples abound in ESL mathematics classes. The degree of application and regularity of use of these approaches can significantly affect students' mathematical comprehension and performance. This study seeks to evaluate instructors' degree of practice and strategic use in teaching Algebra using English and to investigate how these teaching tactics influence Grade 9 student performance.

In addition, some African countries have policies that allow the teaching of English subjects such as mathematics in local languages. However, no record shows that the teachers are trained (in universities and colleges) to translate mathematical terminology into the local language; hence, such translation might not be universal and might be detrimental to students' mathematical learning in higher grades in school. After noticing how language affects student achievement in national mathematics exams, South Africa has also made many attempts to teach mathematics in local languages (such as IsiXhosa and IsiZulu), even to high school students. However, that requires a massive investment in financial, material, and human resources to ensure that such a program would be successful. Because of budgetary constraints, such programs often die a natural death. Nevertheless, it must be reiterated that they are aware that students' achievement in mathematics is affected by their proficiency in the language of instruction.

At Alnibras International Bilingual School, almost 100% of the students are from the Arab community, and their home language is Arabic. They learn most English subjects except for Arabic, Social Studies Arabic, and Islamic, which are taught in Arabic. All public schools' medium of instruction is Arabic. Usually, some students with siblings in Arabic schools might be unable to communicate English at home, meaning that Arabic becomes the most commonly spoken language at home. This language is completely foreign to the language of instruction in bilingual schools.

Since most of the students in Kuwait have Arabic as their first language, creating a unique scenario in terms of commonality between the home language and the language of Instruction in English schools. The language of instruction and the home language differ in terms of the alphabet used and the writing orientation, making it difficult to transfer language structures from one language to another. In cases where the language of instruction is similar to the home language, life becomes easier for students in an effort to enhance their learning and memory. According to the PB Works (2009) workspace on multilingualism, universal grammar may influence learning in both first and second language acquisition. It follows that lack of universal grammar between two languages is likely to make the learning of other languages a bit challenging. Since the second language is used for instruction, learning mathematics will definitely pose some challenges to students.

2. Methodology

A descriptive-correlational design was used to determine the relationship between students' performance level in Algebra and the extent to which teachers used the identified teaching strategies in teaching Algebra using English as a second language. According to Hassan (2024), correlational research looks at the statistical link between two or more variables without changing the variables. This non-experimental study approach aims to determine how much two or more variables are correlated or associated. This study employed the Input-Process-Output Model, a conceptual framework that describes how a system will process information. The research was conducted at AlNibras International Bilingual School (NIS), J'leeb AlShyoukh, Kuwait. The school was chosen as the research locale because the researcher is currently employed as the Head of the Department for Mathematics after working as a Mathematics teacher for four years in the same school. This study adopted a modified version of the questionnaire, initially intended to evaluate the perceived efficacy of employing English in the instruction of Mathematics and Science. The instrument, composed of three sections, collected data from educators about their experiences instructing Algebra to non-native language learners. Part I concentrated on demographic information like age, gender, educational qualifications, area of expertise, nationality, and languages spoken. Part II comprised 10 items measuring the degree of teaching

strategy implementation, whereas Part III included ten items assessing instructional methodologies in mathematics education conducted in English. The instrument's internal consistency was validated by Cronbach's Alpha, which produced a value of 0.97 for strategy utilization and 0.87 for instructional methods, signifying excellent and good reliability, respectively. Furthermore, Grade 9 MAP test outcomes from Fall 2022 and Spring 2023 were utilized to evaluate student performance in Algebra. The instrument's validity was bolstered by its standardized format and the anonymity of instructor responses, which mitigated researcher bias and enhanced the precision of the obtained data.

4. Results and Discussion

Table 1. Age and Gender of Respondents

Age (in Years)	Male		Female		Total	
	f	%	f	%	f	%
≥ 50	0	-	1	10.00	1	10.00
45 – 49	1	10.00	3	30.00	4	40.00
40 – 44	1	10.00	0	-	1	10.00
35 – 39	0	-	1	10.00	1	10.00
30 – 34	0	-	2	20.00	2	20.00
25 – 29	0	-	1	10.00	1	10.00
Total	2	22.22	8	77.78	10	100.00

Table 1 presents the age and gender distribution of the ten teacher-respondents in the study. The majority of respondents were female, comprising 77.78% (n=8) of the sample, while males accounted for 22.22% (n=2). In terms of age, the largest group fell within the 45–49 age range, representing 40% of the total sample (1 male and 3 females). One respondent (10%) was aged 50 or older and was female. The 40–44 age group had one male respondent (10%), while the 35–39, 30–34, and 25–29 age groups were exclusively represented by females, each group accounting for 10% of the sample. These results suggest that the teaching staff involved in the study are predominantly female and generally fall within the mid to late career age range.

Table 2. Highest Educational Attainment of Respondents

Educational Attainment	f	%
Master's Degree	3	30.00
Bachelor's Degree	7	70.00
Total	10	100.00

Table 2 shows the highest educational attainment of the teacher-respondents. The majority, or 70% (n=7), hold a Bachelor's degree, while the remaining 30% (n=3) have attained a Master's degree. This indicates that most of the respondents have completed undergraduate education, with a smaller portion having pursued graduate-level studies.

Table 3. Number of Years in Teaching

Length of Service (in years)	f	%
15 and above	6	60.00
10-14	1	10.00
5-9	1	10.00
4 and below	2	20.00
Total	10	100.00

Table 3 illustrates the teaching experience of the respondents based on their length of service. A majority of the teachers, 60% (n=6), have been in the profession for 15 years or more, indicating a highly experienced group. One teacher each (10%) falls within the 10–14 years and 5–9 years categories, while 20% (n=2) have less than 5 years of teaching experience. This distribution

shows that most participants have substantial professional experience, which may contribute positively to their ability to implement effective teaching strategies, particularly in teaching Algebra to second-language learners.

Table 4. Languages Spoken by Respondents

Languages	f	%
English	6	60.00
Arabic	4	40.00
Total	10	100.00

Table 4 presents the languages spoken by the teacher-respondents. A majority, 60% (n=6), reported speaking English, while 40% (n=4) indicated Arabic as a spoken language. This suggests that all respondents are bilingual, with English being the more commonly spoken language among them. The ability to speak both English and Arabic may offer advantages in teaching Algebra to second-language learners, particularly in bridging language gaps and facilitating clearer explanations. The data also reflects the linguistic diversity of the teaching staff, which could influence their instructional approaches and communication effectiveness in multilingual classrooms.

Table 5. The Extent of the Utilization of Teaching Strategies by Teachers

S/N	Practice	Weighted Mean	Description
1	Activating prior knowledge	3.9	Always Used
2	Use of visual aids (charts, graphs, diagrams)	3.6	Always Used
3	Collaborative group work	3.1	Often used
4	Manipulatives and hands-on activities	3.2	Often Used
5	Technology-based resources (computer programs, educational apps, etc.)	3.4	Always used
6	Create English-Math based problems	3.8	Always Used
7	Warm up with vocabulary words	3.8	Always used
8	Utilize English-based worksheets	4.0	Always Used
9	Require sentence frames	3.3	Always Used
Average Weighted Mean		3.6	Always Used

Table 5 summarizes the extent to which teachers utilize various teaching strategies in delivering Algebra lessons using English as a second language. The results indicate a high level of strategy use, with an overall average weighted mean of 3.6, interpreted as "Always Used." Among the strategies, the highest-rated was the use of English-based worksheets with a weighted mean of 4.0, followed closely by activating prior knowledge (3.9), and warming up with vocabulary and creating English-Math based problems, both scoring 3.8. The use of visual aids and technology-based resources also received high ratings (3.6 and 3.4, respectively), reflecting consistent integration into teaching practices. Collaborative group work, manipulatives, and requiring sentence frames were rated slightly lower (means between 3.1 and 3.3), indicating they are "Often Used." Overall, the findings suggest that teachers regularly employ a diverse set of strategies aimed at supporting second-language learners in mathematics, with a strong emphasis on language scaffolding and visual support.

Table 6 presents the level of practice among teachers in teaching Mathematics, specifically Algebra, using English to second-language learners. The aggregate weighted mean is 2.67, indicating that these practices are "Often Used." The highest-rated practices include rephrasing or simplifying English vocabulary (3.9), using English to improve the teacher's own language skills (4.0), and using visuals or manipulatives (3.7), all of which are "Always Practiced." English-medium instruction (3.6) is also consistently applied, reflecting a strong preference for EMI in the classroom. Conversely, practices involving the use of Arabic, such as teaching in Arabic (1.0), allowing student discussions in Arabic (1.2), and translating English to Arabic (1.7), are "Seldom Practiced," suggesting that teachers generally avoid heavy reliance on the native language. However, some teachers still resort to Arabic occasionally when students struggle with comprehension, as seen in the item with a weighted mean of 1.6. The results imply that while English is the dominant language of instruction, teachers make pedagogical adjustments as needed, balancing EMI with supportive strategies like simplification and visual aids to enhance understanding among second-language learners.

Table 6. The Level of Practice in Teaching Mathematics using English to Second Language Learners

S/N	Practice	Weighted Mean	Description
1	I used English-medium instruction (EMI) because I find it useful in teaching Algebra	3.6	Always Practiced
2	I discuss comprehensively when Students have problem understanding concepts of Algebra in EMI	3.2	Often Practiced
3	Students will have better understanding of Algebra in Arabic so I sometimes used the Arabic	1.6	Seldom Practiced
4	I used English in Teaching Algebra since English helps me improve my English language skill	4	Always Practiced
5	I need to translate English to Arabic because my students will not respond directly if I use full English without any translation	1.7	Seldom Practiced
6	I continue to use English even if my students do not participate actively during discussions in the classroom using English	2.8	Often Practiced
7	I prefer to teach in Arabic(vernacular) rather than in English	1	Seldom Practiced
8	I allow students to discuss in Arabic during my Sessions	1.2	Seldom Practiced
9	I used visuals/manipulatives to help students comprehend math instruction in English	3.7	Always Used
10	I rephrase/simplify certain vocabulary to help students understand English instruction in teaching and learning of Algebra	3.9	Always Used
Aggregate Weighted Mean		2.67	Often Used

Table 7. Quintiles - MAP Percentile Scores

Quintile Description	Percentile
Above Average	Greater than 80^{th}
High Average	61^{st} – 80^{th}
Average	41^{st} to 60^{th}
Low Average	21^{st} – 40^{th}
Below Average	Less than 21^{st}

Table 7 categorizes students' MAP (Measures of Academic Progress) percentile scores into five quintiles, providing a descriptive measure of performance in Algebra. The quintiles are as follows: "Above Average" for students scoring above the 80th percentile, "High Average" for those between the 61st and 80th percentiles, "Average" for the 41st to 60th percentiles, "Low Average" for the 21st to 40th percentiles, and "Below Average" for those scoring below the 21st percentile.

Based on the MAP assessment results for Fall 2022 and Spring 2023, the performance of Grade 9 students in Algebra can be analyzed in relation to these benchmarks. Any observed shifts between the two testing periods—such as an increase in students moving from "Low Average" to "Average" or higher—may indicate improvements in comprehension and skill, possibly reflecting the effectiveness of teaching strategies and practices in English as a second language. Conversely, if a large proportion of students remained in the "Below Average" or "Low Average" categories, it would signal a need for more targeted interventions in both language and mathematics instruction. Using these quintiles, educators and administrators can evaluate academic growth over time and align instructional decisions with students' needs based on reliable, standardized assessment data.

Table 8. One-Way ANOVA for Grade 9 Math MAP Results

Demographic Variable	One-Way ANOVA F-test value	Critical Decision Value	Interpretation	
Teaching Strategies	0.061	2	Accept H_O	Not Significant

Notes: Significant (F-test Value> Critical value)
Not Significant (F-test Value< Critical value)

The calculated F-value of 0.061 did not surpass the critical value of 2.00, as determined by the degrees of freedom (1, 62) at a 5% significance level. Hence, the null hypothesis was accepted, implying no significant growth in the MAP testing results for Algebra 1 between the two testing periods. The statistical analysis of the students' RIT scores between Fall 2022 and Spring 2023 reveals compelling findings. It is evident that there exists an insignificant disparity in mean percentile ranks between the two assessment periods. This outcome underscores a negligible shift in student performance over the specified timeframe. Despite the observed insignificant increase in general performance among students, it does not suggest the non-existence of a progression in their academic capabilities. A closer look at students' percentile ranks shows that 16 students, approximately 52%, registered a growth in performance, whereas some registered no growth. For those students who registered considerable growth, it can be attributed to several factors, chief among them being the students' acquisition and mastery of essential skills during the interim between assessments. The period likely allowed those students to consolidate their learning and apply acquired knowledge, enhancing their overall performance. Moreover, the effectiveness of teaching strategies employed by educators during the interlude between the Fall 2022 and Spring 2023 assessments cannot be overlooked for those students identified in the paragraph above. Utilizing innovative and tailored instructional methodologies may have contributed significantly to the observed improvement in student outcomes. Teachers' adeptness in adapting teaching approaches to cater to individual learning needs could have fostered a conducive learning environment conducive to academic growth despite the demanding nature of tailoring instruction to the needs of individual students. In essence, the statistical analysis not only confirms the presence of a meaningful difference in students' percentile ranks in MAP testing assessment scores between the two testing periods but also underscores the impact of various factors contributing to this observed improvement. Moving forward, understanding and leveraging these insights can facilitate the development of targeted interventions and instructional strategies to sustain and further enhance student achievement. A question may arise as to whether the registered growth was significant or not. This matter has to be addressed using the analysis of the mean growth in percentile ranks as illustrated in the student growth reports in MAP testing.

Table 9 presents the distribution of Grade 9 students' performance in Algebra based on their MAP percentile scores for Fall 2022 and Spring 2023. In Fall 2022, the majority of students (89.7%) fell in the "Below Average" category (less than the 21st percentile), with only 10.3% in the "Low Average" range (21st–40th percentile), and no students reaching the "Average" or higher categories. By Spring 2023, a slight improvement was observed: the percentage of students in the "Below Average" category decreased to 79.3%, while those in the "Low Average" group increased to 17.2%. Additionally, 3.5% of students reached the "Average" percentile range for the first time. However, no students reached the "High Average" or "Above Average" categories in either testing period.

Table 9. MAP Score Percentiles Grade 9 Math

Quintile Description	Percentile	Fall 2022	%	Spring 2023	%
Below Average	Less than 21st	26	89.7	23	79.3
Low Average	21st – 40th	3	10.3	5	17.2
Average	41st – 60th	0	0	1	3.5
High Average	61st – 80th	0	0	0	0
Above Average	Greater than 80th	0	0	0	0

These results suggest a modest positive shift in student performance over the academic year, possibly indicating the impact of implemented teaching strategies in Algebra using English as a second language. While improvement is evident, the fact that the vast majority of students remain in the "Below Average" and "Low Average" categories highlights the ongoing challenges in teaching mathematics in an ESL context. This underscores the need for continued instructional support, targeted intervention, and potentially differentiated approaches to further enhance student outcomes.

Table 10. MAP Results Student Growth in Percentiles Between Fall 2022 and Spring 2023

Percentiles	Number of Students	Percentage %
$-20 \leq x < -10$	1	3.5
$-10 \leq x < 0$	12	41.4
$0 \leq x < 10$	10	34.5
$10 \leq x < 20$	6	20.6
Mean Growth = 1.5 Percentiles		

Table 10 illustrates the changes in MAP percentile scores for Grade 9 students in Algebra between Fall 2022 and Spring 2023. The data shows that a majority of students (41.4%) experienced a negative growth in performance, with scores declining between -10 and 0 percentile points. Another 3.5% of students showed a more significant decline, with a decrease ranging from -20 to -10 percentile points. On a positive note, 34.5% of students demonstrated slight positive growth between 0 and 10 percentile points, while 20.6% improved more substantially, with gains between 10 and 20 percentile points. The mean growth across the cohort was a modest 1.5 percentile points, indicating minimal overall progress. This mixed pattern of growth reflects both gains and setbacks in student learning, suggesting that while some students benefited from the instructional strategies used, others may have struggled to keep pace. The limited average growth also implies that teaching Algebra in English as a second language may require further refinement, including more personalized instruction, language support, or differentiated teaching approaches to effectively reach all learners. These results underscore the importance of continuous monitoring, reflective teaching practices, and evidence-based interventions in improving both language comprehension and mathematical performance.

Table 11. One-Way ANOVA for Significant Relationship: Utilization of Strategies and Student Performance

Demographic One-Way ANOVA	Critical-Value	Decision	Interpretation Variable	F test value
Teaching Strategies	0.110	2	Accept H_O	Not Significant

Notes: Significant (F-test Value> Critical value)
Not Significant (F-test Value< Critical value)

Table 11 presents the results of a one-way ANOVA test conducted to determine whether there is a statistically significant relationship between the utilization of teaching strategies in Algebra and the performance of Grade 9 students. The F-test value obtained was 0.110, which is lower than the critical value of 2. Based on this comparison, the null hypothesis (H_0) is accepted, indicating that the result is not statistically significant. This means that, according to the data, the extent to which teachers utilized the identified strategies in teaching Algebra using English as a second language did not have a significant direct effect on student performance in the MAP assessment. While this does not rule out the potential benefits of using such strategies, it suggests that other factors such as language proficiency levels, instructional quality, student engagement, or classroom environment may have played a more influential role in student achievement. Therefore, additional variables should be explored to better understand the factors impacting student learning outcomes in ESL mathematics classrooms.

Table 12. Significant relationship between teachers' practices in teaching Mathematics using English to second language learners and the performance of the students

Demographic Variable	PPMCC T-test Value	Critical Value	Decision	Interpretation
Teaching Practices & Student Performance	3.159	2.750	Reject H_o	Significant

Notes: Significant (CV <T-test Value); Not Significant (CV >T-test Value)

Table 12 presents the statistical analysis of the relationship between teachers' practices in teaching mathematics using English and student performance in Algebra. Using the Pearson Product-Moment Correlation Coefficient (PPMCC), the computed T-test value is 3.159, which is greater than the critical value of 2.750. Based on the decision rule (T-test > CV), the null hypothesis (H_0) is rejected, indicating a significant relationship between the two variables. This result suggests that the specific practices teachers implement such as using visuals, simplifying vocabulary, and consistently applying English-medium instruction positively

influence student performance in Algebra. Unlike the broader category of strategy utilization (which showed no significant link), these hands-on and adaptive classroom practices appear to have a direct and measurable impact on learning outcomes. Therefore, enhancing teachers' day-to-day instructional practices, especially those tailored to second-language learners, can be a critical factor in improving mathematical achievement.

5. Conclusion

The findings of the research show that certain teacher practices did have a statistically significant effect on student success, even though the use of teaching strategies in general when teaching Algebra to students who speak English as a second language did not. The strong connection between these practices and student outcomes shows how teaching is given is just as important as the strategies that are used. According to the MAP tests, many students' scores stayed below average or low average. However, small gains between Fall 2022 and Spring 2023 suggest that some teaching methods are starting to work. Also, the small average growth and wide range of individual student gains show that we need more focused, flexible, and student-centered ways of teaching. Improving teacher practices like rephrasing directions, using visuals, and keeping English lessons consistent can make a big difference in how well students learn.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers.

References

[1] Algarni, B., & Lortie-Forgues, H. (2023). An evaluation of the impact of flipped-classroom teaching on mathematics proficiency and self-efficacy in Saudi Arabia. *British Journal of Educational Technology*, *54*(1), 414-435

[2] Dafouz, E., & Smit, U. (2021). English-medium education revisited: Arguing for a comprehensive conceptualisation in the age of internationalised universities. *European Journal of Language Policy*, *13*(2), 141-159.

[3] Gaspar, A. S. (2023). Differential Effects Of Mother Tongue And English Language As A Medium Of Instruction On Pupil's Numeracy SKILLS. *Recent Educational Research*, *1*(2), 77-118.

[4] Huang, H., & Curle, S. (2021). Higher education medium of instruction and career prospects: An exploration of current and graduated Chinese students' perceptions. *Journal of Education and Work*, *34*(3), 331-343.

[5] Hakim, M. A. R., & Putra, O. A. (2021). Comprehension of academic communication among Indonesian students at a public university in Malaysia. *Journal of Asia TEFL*, *18*(2), 633.

[6] Hultgren, A. K., & Wilkinson, R. (2022). New understandings of the rise of English as a medium of instruction in higher education: The role of key performance indicators and institutional profiling. *International Journal of the Sociology of Language*, *2022*(277), 47-59.

[7] Phiri, M., Chanda, C. T., & Mwanapabu, N. H. (2024). The effect of using local languages as a medium of instruction on academic performance of learners: A case of selected primary schools in Solwezi District of North-Western Province, Zambia. *International Journal of Novel Research in Humanity and Social Sciences*, *11*(3), 9-26.

[8] Pincheira, N., & Alsina, Á. (2021). Teachers' mathematics knowledge for teaching early algebra: A systematic review from the mkt perspective. *Mathematics*, *9*(20), 2590.

[9] Perry, S. (2023). Non-Native English-Speaking Teachers and Self-Appreciation: How Non-Native English-Speaking Teachers Can Gain Equity by Learning to Appreciate Themselves. *Merits*, *3*(4), 654-667.

[10] Putri, N. R., & Sari, F. M. (2021). Investigating English teaching strategies to reduce online teaching obstacles in the secondary school. *J. English Lang. Teach. Learn*, *2*(1), 23-31.

[11] Sharma, S., & Sharma, S. (2023). Successful teaching practices for english language learners in multilingual mathematics classrooms: a meta-analysis. *Mathematics Education Research Journal*, *35*(4), 821-848.

[12] Schmid, E., & Garrels, V. (2021). Parental involvement and educational success among vulnerable students in vocational education and training. *Educational Research*, *63*(4), 456-473.

[13] Salomone, R., & Salomone, R. C. (2022). *The rise of English: Global politics and the power of language*. Oxford University Press.

[14] Selvi, A. F., Yazan, B., & Mahboob, A. (2024). Research on "native" and "non-native" English-speaking teachers: Past developments, current status, and future directions. *Language teaching*, *57*(1), 1-41.

[15] Wakhata, R., Mutarutinya, V., & Balimuttajjo, S. (2022). Secondary school students' attitude towards mathematics word problems. *Humanities and social sciences communications*, *9*(1), 1-11.