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Local Familiar Language as a Medium of Instruction and Student Engagement in Tertiary Science Education

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ABSTRACT

This study examined the relationship between local familiar language (i.e. Filipino) utilization as a medium of instruction and student engagement in tertiary science education. A descriptive-correlational design was used with 121 Bachelor of Secondary Education majors in Science students at Sultan Kudarat State University–ACCESS Campus. Data were collected through validated questionnaires and analyzed using mean, standard deviation, and Pearson correlation. Filipino was sometimes utilized in science instruction, while students were positively engaged when Filipino was used. A significant positive relationship was found between Filipino language utilization and student engagement. Strategic Filipino use, particularly through translanguaging with English, can support comprehension, participation, and inclusive science learning.

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1. INTRODUCTION

Effective science education depends not only on curriculum content and teaching strategies but also on the language through which scientific ideas are communicated. Science subjects often involve abstract concepts, technical vocabulary, and complex explanations that may become difficult for students when instruction is delivered in a language that is not fully accessible to them. In multilingual learning contexts such as the Philippines, the medium of instruction can influence how students understand concepts, ask questions, participate in discussions, and engage with scientific learning tasks.

Student engagement remains an important concern in science education. Engagement is associated with students' interest, participation, motivation, and willingness to become actively involved in learning. Previous studies have reported declining interest in science among students, which highlights the need for teaching approaches that make science more meaningful and accessible [1, 2]. Since engagement is connected to academic performance, retention, and positive learning experiences, science educators need to consider classroom factors that may strengthen students' participation and motivation. Language is one of the classroom factors that may affect students' engagement in science. In the Philippine higher education context, English is commonly used as the dominant language of instruction, especially in science-related courses. However, the use of English may create barriers for some learners when they need to understand technical terms, explain scientific ideas, or participate confidently in classroom discussions.

The use of a familiar language can support comprehension, interaction, and learner confidence, particularly when students are dealing with complex academic content [3]. Filipino may serve as a useful instructional support in science classrooms because it allows students to connect scientific concepts with familiar language, everyday experiences, and cultural context. When students are able to express their ideas in a language they understand well, they may feel more comfortable asking questions, sharing observations, and participating in collaborative learning activities. The use of students' native or familiar language can also reduce anxiety and help them develop stronger conceptual connections during learning [4].

In science education, the use of Filipino does not necessarily mean replacing English completely. Instead, Filipino can be used strategically with English through translanguaging. Translanguaging allows teachers and students to move between languages to clarify concepts, explain technical terms, and support understanding. This practice is especially relevant in science instruction because students need access to both local linguistic resources and broader scientific discourse. Research on multilingual science classrooms in the Philippines suggests that translanguaging can support communicative functions that are necessary for teaching and learning science [5]. Although Filipino has been used in several academic areas, its use as a medium of instruction in tertiary science education remains a topic that requires further examination. Existing studies have explored Filipino language use in subjects such as history, mathematics, engineering, and science at basic education levels, but less attention has been given to its relationship with engagement among Bachelor of Secondary Education majors in Science [6-10]. This gap is important because BSED Science students are future educators who may later influence language practices in science classrooms. This study examined the relationship between the utilization of Filipino as a medium of instruction and the level of engagement of BSED major in science students at Sultan Kudarat State University–ACCESS Campus. Specifically, it aimed to determine the

extent to which Filipino was used in science instruction, describe students' level of engagement when Filipino was used, and identify whether a significant relationship existed between Filipino language utilization and student engagement. By focusing on tertiary science education, the study contributes to discussions on language, inclusivity, and engagement in multilingual science learning contexts.

2. METHODS

This study used a descriptive-correlational research design to examine the relationship between Filipino language utilization as a medium of instruction and the level of engagement of Bachelor of Secondary Education major in Science students. The descriptive component was used to determine the extent to which Filipino was utilized in science instruction and to describe students' engagement when Filipino was used in science learning activities. The correlational component was used to determine whether a significant relationship existed between Filipino language utilization and student engagement. The study was conducted at Sultan Kudarat State University–ACCESS Campus in Barangay EJC Montilla, Tacurong City, Mindanao, Philippines.

The respondents were first- to third-year Bachelor of Secondary Education major in Science students enrolled during the academic year 2023–2024. Total enumeration sampling was employed, and all 121 enrolled BSED Science students participated in the study. The scope of the study was limited to students' perceptions of Filipino language utilization and their level of engagement in science subjects. It did not involve an experimental teaching intervention. Data were collected using validated survey questionnaires. Before the main data gathering, the questionnaires were reviewed by experts and the research adviser to ensure content validity.

The instrument was also tested for reliability with a selected group of first-year Medical Technology students at Sultan Kudarat State University. After the validity and reliability of the questionnaire were established, the researchers obtained permission from the Dean of the College of Teacher Education to conduct the study. Upon approval, the questionnaires were personally distributed to the respondents. The first part of the instrument measured the extent of Filipino language utilization as a medium of instruction in science subjects. The second part measured students' level of engagement when Filipino was used in science instruction.

The responses were then organized, encoded, and analyzed with the assistance of a statistician. Mean and standard deviation were used to describe the extent of Filipino language utilization and the level of student engagement. Pearson correlation was used to determine the relationship between Filipino language utilization in science instruction and the engagement level of BSED Science students.

The interpretation of the results focused on whether the use of Filipino in science teaching was associated with students' participation, confidence, comprehension, motivation, and classroom involvement. Ethical considerations were observed during the conduct of the study. Permission was secured before data collection, and the respondents' answers were treated with confidentiality. The data were used only for academic purposes and were reported in summarized form through statistical tables and narrative discussion.

3. RESULTS AND DISCUSSION

This section presents the findings on the extent of Filipino language utilization as a medium of instruction in science subjects and the level of engagement of BSED major in Science students when Filipino is used in science instruction. The findings are based on the responses of 121 BSED Science students from Sultan Kudarat State University–ACCESS Campus. The original manuscript reports three statistical tables: **Table 1** on Filipino language utilization, **Table 2** on student engagement, and **Table 3** on the relationship between the two variables.

Table 1. Extent of utilization of the Filipino language as a medium of instruction used in teaching science subjects (n = 121).

INDICATOR	MEAN	SD	INTERPRETATION
The teacher starts the lessons by using Filipino to establish a foundation and activate students' prior knowledge of the lesson.	2.57	0.64	Often Utilized
The teacher translates technical terms into Filipino or provides clear explanations in Filipino for easier understanding.	2.98	0.71	Often Utilized
The teacher encourages students to use Filipino when asking questions.	2.09	0.73	Sometimes Utilized
The teacher uses Filipino in discussions to promote deeper understanding and participation among students.	2.54	0.74	Often Utilized
The teacher promotes the use of Filipino in completing assignments.	1.73	0.82	Least Utilized
The teacher utilizes real-life examples and situations relevant to the Filipino context to illustrate concepts in science.	2.63	0.85	Often Utilized
The teacher incorporates Filipino songs, poems, or stories related to science topics to engage students and enhance learning.	1.80	0.86	Sometimes Utilized
The teacher encourages collaborative learning activities such as group discussions, projects, debates, role-playing, and presentations in Filipino, fostering communication and critical thinking skills.	2.36	0.92	Sometimes Utilized
The teacher promotes student research in Filipino, allowing them to explore scientific concepts in their national language.	1.81	0.83	Sometimes Utilized
The teacher creates and shares Filipino-based learning materials, such as presentations, handouts, and worksheets.	1.99	0.99	Sometimes Utilized
The teacher assesses student understanding through various methods in Filipino, including presentations, debates, problem-solving activities, role-playing activities, exhibits, experiments, and the like.	2.23	0.79	Sometimes Utilized
The teacher maintains a positive and inclusive classroom environment where students feel comfortable using Filipino to express themselves in science.	2.72	0.84	Often Utilized
The teacher utilizes the Filipino language in science to potentially improve students' comprehension and engagement, especially when dealing with complex scientific concepts.	2.53	0.74	Sometimes Utilized
The teacher uses the Filipino language to foster a sense of national identity and connection to Filipino culture in teaching science.	2.38	0.81	Sometimes Utilized
The teacher combines Filipino with English strategically through translanguaging that can clarify concepts and facilitate access to broader scientific discourse.	3.17	0.73	Often Utilized
The teacher utilizes the Filipino language in science education that can contribute to a more inclusive and equitable system by catering to the diverse linguistic needs of Filipino students.	2.62	0.76	Often Utilized
Average Mean	**2.38**	**0.55**	**Sometimes Utilized**

The first part of the analysis focuses on how Filipino is used in science instruction. Filipino is not used as the sole language of instruction in science subjects. Instead, it appears to be used selectively, especially when teachers need to clarify complex ideas, translate technical terms, activate prior knowledge, or create a more inclusive classroom environment. Filipino functions as a supportive instructional language rather than a complete replacement for English. The extent of Filipino language utilization as a medium of instruction in science subjects is presented in **Table 1**.

The overall mean score for the utilization of Filipino as a medium of instruction was 2.38 with a standard deviation of 0.55, which is interpreted as Sometimes Utilized. Filipino is present in science instruction, but its use is not yet consistent across all instructional activities. Teachers appear to use Filipino more frequently in oral explanation, contextualization, and classroom interaction, but less frequently in assignments, research tasks, written learning materials, and assessment activities.

The highest-rated item was the strategic combination of Filipino and English through translanguaging, with a mean of 3.17 and a standard deviation of 0.73. Teachers most often use Filipino together with English rather than using Filipino independently. This practice is pedagogically important because science education requires access to technical vocabulary, much of which is commonly introduced in English, while Filipino can help clarify meaning and support student comprehension. Translanguaging allows teachers and students to move between languages to explain, interpret, and negotiate scientific meaning in a multilingual classroom context [5].

The frequent use of translanguaging also reflects the linguistic reality of science classrooms in the Philippines. Students may need English for formal terminology, textbooks, examinations, and wider scientific discourse, but they may use Filipino to process ideas, ask questions, and connect concepts to everyday experience. In this sense, Filipino does not function as a competing language against English. Rather, it serves as a bridge that helps students access scientific knowledge more comfortably while still remaining connected to formal scientific language.

Another highly rated item was the translation of technical terms into Filipino or the provision of clear Filipino explanations, which obtained a mean of 2.98 and was interpreted as Often Utilized. Teachers recognize the need to clarify technical vocabulary when students encounter difficult science concepts. Scientific terms can become barriers to learning when students are expected to memorize them without understanding their meaning. Using Filipino explanations can help students connect unfamiliar terms with prior knowledge and everyday language. The use of students' familiar language can support comprehension and reduce learning difficulty when dealing with complex academic content.

The use of real-life examples relevant to the Filipino context also obtained a relatively high mean of 2.63 and was interpreted as Often Utilized. Teachers use culturally and locally familiar situations to explain science concepts. Contextualized instruction is important because students may become more engaged when they can relate scientific ideas to their own environment, experiences, and community. In multilingual and culturally diverse contexts, the language of instruction can help connect abstract academic content with learners' lived realities [3].

Teachers maintain a positive and inclusive classroom environment where students feel comfortable using Filipino, and also received a high mean of 2.72. Filipinos may contribute to a classroom atmosphere where students feel safer expressing their ideas. A familiar language can reduce hesitation, especially when students are uncertain about scientific vocabulary or afraid of making mistakes in English. When students can communicate ideas in a language they understand well, they may be more willing to ask questions, explain observations, and join discussions. The use of mother tongue or familiar language in instruction can support learners' confidence and participation [4]. However, several items received lower mean scores. The lowest-rated item was the promotion of Filipinos in completing assignments, with a mean of 1.73 and an interpretation of Least Utilized. Written academic tasks in science are still largely conducted in English. This may be because English remains the dominant language for academic writing, scientific references, and formal educational outputs in higher education. English is often treated as the primary language for academic production, particularly in research writing and formal documentation [11, 12].

The limited use of Filipino in assignments may also reflect institutional expectations. Even when teachers use Filipino during oral explanations, classroom discussions, and clarification of concepts, they may still require students to submit assignments in English. This creates a distinction between Filipino as a language for classroom interaction and English as a language for formal academic output. Such a pattern suggests that Filipino is more commonly used to support comprehension and participation than to replace English in written academic requirements.

The creation and sharing of Filipino-based learning materials also received a low mean of 1.99, interpreted as Sometimes Utilized. This finding suggests that teachers may lack sufficient Filipino-based science materials, such as presentations, handouts, worksheets, or modules. Since many science resources are written in English, teachers may need additional time and support to develop localized or Filipino-based materials. Previous studies on Filipino-based science materials suggest that translated or localized learning resources can support conceptual understanding, but their availability and quality remain important considerations [7, 8].

Similarly, student research in Filipino obtained a low mean of 1.81. Students and teachers still associate research activities with English-language academic conventions. Although Filipinos can support discussion and conceptual clarification, research writing may remain tied to English because of publication standards, scientific terminology, and institutional requirements. The use of Filipino in science education is strongest in classroom interaction but weaker in formal research and written academic production.

The results in **Table 1** show that Filipino is used strategically but unevenly in science instruction. It is most commonly used for translanguaging, explaining technical terms, contextualizing concepts, and creating an inclusive classroom environment. However, it is less commonly used in assignments, research tasks, learning materials, and formal assessments. Filipino functions mainly as a supportive instructional language that enhances accessibility, participation, and comprehension, while English continues to dominate formal academic outputs in science education.

The second part of the analysis focuses on students' level of engagement in science subjects when Filipino is used as a medium of instruction. While the first set of findings showed that Filipino was only sometimes utilized in science instruction, the engagement

results indicate that students responded positively when Filipino was integrated into science learning. Even selective use of Filipino may support participation, confidence, and connection to scientific content.

The students' level of engagement in science subjects using Filipino as a medium of instruction is presented in **Table 2**. The mean score for students' engagement was 3.08 with a standard deviation of 0.48, which is interpreted as Positively Engaged. Students generally perceived Filipino language use as supportive of their engagement in science subjects.

Although Filipino was not consistently used across all instructional activities, students reported positive engagement when it was integrated into discussions, explanations, collaborative activities, and classroom interactions. The highest-rated item was the belief that familiar language fosters a sense of ownership and connection to the subject matter, with a mean of 3.38 and a standard deviation of 0.54. This result was interpreted as Very Positively Engaged. Students feel more connected to science learning when instruction includes language that is familiar to them. Familiar language may help students view science as less distant or intimidating, allowing them to relate scientific concepts to their own experiences and ways of thinking.

This result supports the idea that language accessibility influences engagement. When students can process scientific ideas through a familiar language, they may become more motivated to explore concepts, ask questions, and participate in learning activities. The use of a familiar language can help students connect new scientific content with available knowledge and prior experience, making the learning process more meaningful.

Another highly rated indicator was students' deeper comprehension of scientific terminology in their native language, with a mean of 3.18. Students perceived Filipino as helpful in understanding complex ideas. Science learning often requires students to interpret technical terms, abstract explanations, and conceptual relationships. When these concepts are explained in Filipino or connected to Filipino expressions, students may find it easier to understand and discuss them. This supports the view that language functions as a cognitive tool in science learning because it helps students develop reasoning, explanation, and problem-solving abilities.

The indicators related to confidence and free expression also received strong ratings. Students reported that using Filipino helped them express their ideas and creativity, with a mean of 3.16. They also reported that classroom discussions in Filipino encouraged them to express their thoughts more freely, with a mean of 3.16. These findings suggest that Filipino language use can reduce communication barriers in science classrooms. When students are less worried about language accuracy, they may participate more actively in discussion, ask more questions, and explain their understanding more confidently.

The use of Filipino may also support collaborative learning. The item on collaborative learning activities conducted in Filipino received a mean of 3.11, interpreted as Positively Engaged. Students value Filipino as a language for group discussion, peer interaction, and exchange of ideas. In collaborative science learning, students need to negotiate meaning, explain reasoning, and respond to others. A familiar language can help make these interactions more natural and inclusive. Studies on native language use in classrooms suggest that students' familiar language can enhance interaction and participation in learning activities.

Table 2. Students' Level of engagement in science subjects using Filipino as a medium of instruction (n = 121).

INDICATOR	MEAN	SD	INTERPRETATION
I feel more comfortable participating in discussions and asking questions in Filipino, leading to increased engagement in the learning process.	3.13	0.63	Positively Engaged
I believe using familiar language fosters a sense of ownership and connection to the subject matter, motivating students to explore and understand scientific concepts.	3.38	0.54	Very Positively Engaged
I find that a deeper comprehension of scientific terminology in my native language allows me to grasp complex ideas and participate more actively in learning activities.	3.18	0.66	Positively Engaged
I find that utilizing Filipino allows me to connect science to my daily life by using familiar examples and contexts, enhancing my interest and engagement.	3.14	0.64	Positively Engaged
I enjoy collaborative learning activities conducted in Filipino because they encourage me to communicate effectively and share diverse perspectives, fostering a positive learning environment.	3.11	0.67	Positively Engaged
I feel empowered during student-led presentations or discussions in Filipino, as they provide opportunities for me to demonstrate understanding and leadership, promoting my active engagement.	3.09	0.70	Positively Engaged
I am motivated by research projects conducted in Filipino, as they empower me to explore my scientific interests in my native language, fostering deeper engagement.	2.74	0.73	Positively Engaged
I enjoy engaging activities like songs, poems, or stories presented in Filipino, as they create a fun and interactive learning environment, enhancing my participation as a student.	2.79	0.84	Positively Engaged
I feel more confident in expressing my ideas and creativity when using my native language, leading to increased participation and deeper engagement in science subjects.	3.16	0.79	Positively Engaged
I find that actively using Filipino in science discussions has improved my understanding of scientific concepts.	3.10	0.72	Positively Engaged
I believe that increased understanding of scientific concepts due to Filipino instruction can lead to higher levels of motivation and curiosity for further exploration.	3.09	0.67	Positively Engaged
I find that classroom discussions in Filipino encourage me to express my thoughts more freely, leading to increased participation in science activities.	3.16	0.66	Positively Engaged
I cultivate a positive attitude towards the subject when Filipino is integrated into science lessons.	3.02	0.63	Positively Engaged
I feel that my interest and enthusiasm for the subject increase when I engage in science activities that incorporate the Filipino language.	3.07	0.70	Positively Engaged
Average Mean	**3.08**	**0.48**	**Positively Engaged**

Students also reported that Filipino helped them connect science to daily life. This item received a mean of 3.14, interpreted as Positively Engaged. This result is important because science learning becomes more meaningful when students can link abstract concepts to familiar contexts. Filipinos can help teachers use local examples, culturally relevant explanations, and everyday language to explain scientific ideas. This supports culturally

responsive science instruction, where language serves as a bridge between academic content and students' lived experiences.

The item on actively using Filipino in science discussions, improving understanding, obtained a mean of 3.10. This finding further supports the role of Filipinos in facilitating comprehension. Students may understand scientific concepts better when they can discuss them in a language that allows clearer expression. This does not mean that English scientific terminology should be removed. Rather, Filipino can be used alongside English to explain, clarify, and deepen understanding.

The lowest-rated item in **Table 2** was the motivation produced by research projects conducted in Filipino, with a mean of 2.74. Although still interpreted as Positively Engaged, this was the weakest engagement indicator. This finding is consistent with the earlier result in **Table 1**, where the promotion of student research in Filipino was also rated relatively low. Students may still associate scientific research, academic writing, and formal publication with English. English remains dominant in academic and scientific writing, which may explain why students are less motivated to conduct research projects fully in Filipino [11, 12].

The second-lowest item was students' enjoyment of songs, poems, or stories presented in Filipino, with a mean of 2.79. Although positive, this result may suggest that tertiary-level science students find such activities less central to their engagement compared with discussion, explanation, terminology clarification, and real-life contextualization. Since the respondents are BSED Science students, they may prefer Filipino use in concept explanation, discussion, and participation rather than in creative language-based activities such as songs or poems.

Table 2 shows that Filipino language use can positively support student engagement in science subjects. The strongest areas of engagement were ownership of learning, comprehension of scientific terminology, confidence in expressing ideas, and free participation in discussions. Filipino is most effective when it helps students understand concepts, connect science with everyday experience, and participate more confidently in classroom interaction. The third part of the analysis examines whether Filipino language utilization is significantly related to student engagement. Since the descriptive findings show that Filipino is sometimes utilized and students are positively engaged, the correlation analysis provides further evidence on whether the two variables move together statistically.

The relationship between Filipino language utilization in science instruction and BSED Science students' level of engagement is presented in **Table 3**. The relationship between Filipino language utilization and student engagement was statistically significant, with a p-value of 0.000. Since the p-value is below the 0.001 level of significance, the null hypothesis is rejected. The Pearson correlation coefficient was 0.417, indicating a low positive correlation between Filipino language utilization and student engagement. Greater use of Filipino in science instruction is associated with higher student engagement, although the strength of the relationship is not strong. Language is an important but not exclusive factor in science engagement. Filipino language utilization may help students understand concepts, participate in discussions, and feel more comfortable in the classroom. However, engagement is also influenced by other factors, such as teaching quality, classroom environment, emotional well-being, academic confidence, peer interaction, and interest in the subject. Student engagement is multidimensional and may involve emotional, social, and academic factors that interact with instructional practices [13].

Table 3. Relationship between the utilization of the Filipino language in science instruction and BSED science students' level of engagement in science subjects.

VARIABLES	N	MEAN	SD	PEARSON R	P-VALUE	INTERPRETATION
Utilization of the Filipino Language	121	2.38	0.55	0.417	0.000	Significant
Level of Engagement	121	3.08	0.48			

The significant positive relationship found in this study supports the argument that language choice matters in science instruction. When Filipino is used strategically, students may experience greater accessibility and confidence in learning. This may explain why students reported positive engagement even though Filipino was only sometimes utilized. The use of Filipino may be especially valuable when teachers clarify technical terms, encourage discussion, provide culturally familiar examples, and create an inclusive classroom environment.

The finding also supports previous studies showing that the use of students' native or familiar language can improve classroom interaction and engagement. Native language use can help students participate more actively because they are better able to explain ideas, ask questions, and connect learning with prior knowledge. In the context of science education, Filipino can serve as a linguistic bridge that helps students access difficult concepts while maintaining a connection with formal scientific discourse.

At the same time, the low positive correlation should be interpreted carefully. A correlation of 0.417 indicates that Filipino language utilization contributes to engagement, but it does not fully explain it. Students may become engaged not only because Filipino is used, but also because of how it is used. For example, Filipino may be more effective when used for translanguaging, concept clarification, and discussion than when used mechanically or without a pedagogical purpose. Therefore, the quality of language integration is as important as the frequency of language use.

Teachers should consider Filipino as a strategic instructional resource in tertiary science education. Filipino may be used to activate prior knowledge, clarify difficult concepts, encourage student questions, support collaborative learning, and make classroom discussions more inclusive. However, English remains important for scientific terminology, academic writing, and access to international scientific literature. A balanced translanguaging approach may therefore be more appropriate than a strict choice between Filipino and English.

Filipino is sometimes utilized in science instruction; students are positively engaged when Filipino is used, and there is a significant positive relationship between Filipino language utilization and student engagement. Filipino can support engagement in tertiary science education, especially when used strategically with English to promote comprehension, participation, and inclusivity.

5. CONCLUSION

The use of Filipino as a medium of instruction supports student engagement in tertiary science education. Although Filipino is not used consistently in all learning activities, it plays an important role in clarifying scientific concepts, supporting classroom discussion, and creating a more inclusive learning environment. Students become more comfortable,

confident, and motivated when Filipino is integrated into science instruction. A familiar language helps them connect scientific ideas with prior knowledge, daily experiences, and active classroom participation. Also, Filipino should be used strategically alongside English. Filipino can support comprehension and engagement, while English remains important for scientific terminology, academic writing, and wider scientific communication. Therefore, a balanced translanguaging approach is recommended for science instruction. Future studies may examine how the use of Filipino affects science achievement, conceptual understanding, and long-term student engagement through experimental or quasi-experimental designs.

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7. AUTHORS' NOTE

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8. REFERENCES

[1] Martin, K. M., Davis, L. S., and Sandretto, S. (2021). Engagement with science across the middle years in New Zealand. *New Zealand Journal of Educational Studies, 56*(1), 83-99.

[2] Steidtmann, L., Kleickmann, T., and Steffensky, M. (2023). Declining interest in science in lower secondary school classes: Quasi-experimental and longitudinal evidence on the role of teaching and teaching quality. *Journal of Research in Science Teaching, 60*(1), 164-195.

[3] Santiago, J. M., and David, E. S. (2019). The use of two media of instruction in biology: A quasi-experimental study. *International Journal of Advanced Engineering, Management and Science, 5*(2), 111-115.

[4] Trujillo, J. S. (2020). The use of mother tongue in instruction: Pupil's performance across the years. *Globus Journal of Progressive Education, 10*(1), 59-67.

[5] De Los Reyes, R. A., and Bagona, E. R. (2024). Translanguaging in teaching and learning science in selected multilingual elementary classrooms in the Philippines. *Journal of Language, Identity and Education, 23*(6), 940-954.

[6] Alvarez, J. I., and Galman, A. S. M. A. (2023). Use of Filipino language as medium of instruction in teaching advanced algebra class. *European Journal of Science, Innovation and Technology, 3*(2), 157-171.

[7] Cajurao, E. C., Cajurao, I. P., Romero, J. N., Bolivar, J. T., Diestro, J. L., and Merida, M. C. E. (2023). Filipino-based learning activity sheets (LAS): Impacts on grade 10 students' conceptual understanding of plate boundaries and earthquake. *International Journal of Multidisciplinary: Applied Business and Education Research, 4*(7), 2535-2543.

[8] Marces, I. (2020). Catalyzing the scientific content mastery and conceptual understanding of grade 11 STEM students through Filipino translated comics in earth science. *International Journal of Trend in Scientific Research and Development, 4*(2), 42-44.

[9] Melegrito, M. C. (2022). The use of Filipino and English as mediums of instruction in the teaching of engineering courses at the tertiary level. *European Online Journal of Natural and Social Sciences, 11*(3), 668–678.

[10] Villegas, R. R. C., Romero, H. J., Cabanero, E. D., and Tirao, J. B. (2021). Correlates of

Filipino students' perspectives on filipinizing the Philippine history curriculum, language preference and demographics. *The Research Probe, 1*(1), 100-121.

[11] Balan, S. (2021). English as the language of research: But are we missing the mark?. *Exploratory Research in Clinical and Social Pharmacy, 3*, 100043.

[12] Rao, V. C. S. (2022). The academic language used in scientific research. *Journal for Research Scholars and Professionals of English Language Teaching, 6*(29), 2456-8104.

[13] Kang, H. S., and Pak, Y. (2024). Student engagement in online graduate program in education: A mixed-methods study. *American Journal of Distance Education, 38*(4), 401-417.