Original Research Article

INSTRUCTIONAL SCAFFOLDING AND METACOGNITIVE STRATEGIES OF LANGUAGE TEACHERS IN

PUBLIC SECONDARY SCHOOLS

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ABSTRACT

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| This study aimed to examine the relationship between instructional scaffolding and metacognitive strategies of language teachers in selected public secondary schools in the Division of Island Garden City of Samal. A descriptive-correlational research design was used with a sample of 132 language teachers. Data were collected through standardized questionnaires administered via face-to-face surveys. The data were analyzed using mean, standard deviation (SD), Pearson product-moment correlation, and multiple linear regression analyses. The results revealed that both instructional scaffolding and metacognitive strategies were rated very high. Correlation analysis indicated a significant positive relationship between these variables. Furthermore, specific domains of instructional scaffolding, including situation, visual, question stems, graphic organizers, and processing, were found to significantly influence teachers' metacognitive strategies. It is recommended that school administrators focus on further strengthening instructional scaffolding to enhance the development of metacognitive strategies among teachers. Promoting teacher collaboration, providing professional development opportunities, and encouraging reflective practices will help sustain strong levels of metacognitive strategies and improve teaching effectiveness in schools. |

*Keywords*: Instructional Scaffolding, Metacognitive Strategies, Language Teachers, Public Secondary Schools, Descriptive-Correlational, Education

1. INTRODUCTION

Effective and efficient teachers consistently utilize metacognitive strategies to enhance learning (Perry et al., 2019). However, students with learning disabilities often lack these skills, making it difficult for them to direct their own learning. Once these students are taught the metacognitive strategies that proficient teachers use, they can begin to apply them in various contexts, leading to improved academic outcomes (Budin et al., 2022). To become effective learners, students must not only rely on memory and internalized language skills but also develop their own unique approaches to learning. This involves gaining awareness of their cognitive processes and gradually acquiring the ability to regulate and control their mental functions more effectively (Horwitz, 2020).

A key component in this process is the development of inner language, which enables students to cultivate the high-level thinking skills associated with metacognition. The use of metacognitive strategies has proven effective in helping students become more active participants in their learning. These strategies empower students to mobilize their cognitive resources in pursuit of successful learning experiences. To do this, students must understand how they learn and be conscious of the steps and methods they employ to acquire knowledge, solve problems, and complete tasks (Santangelo et al., 2021).

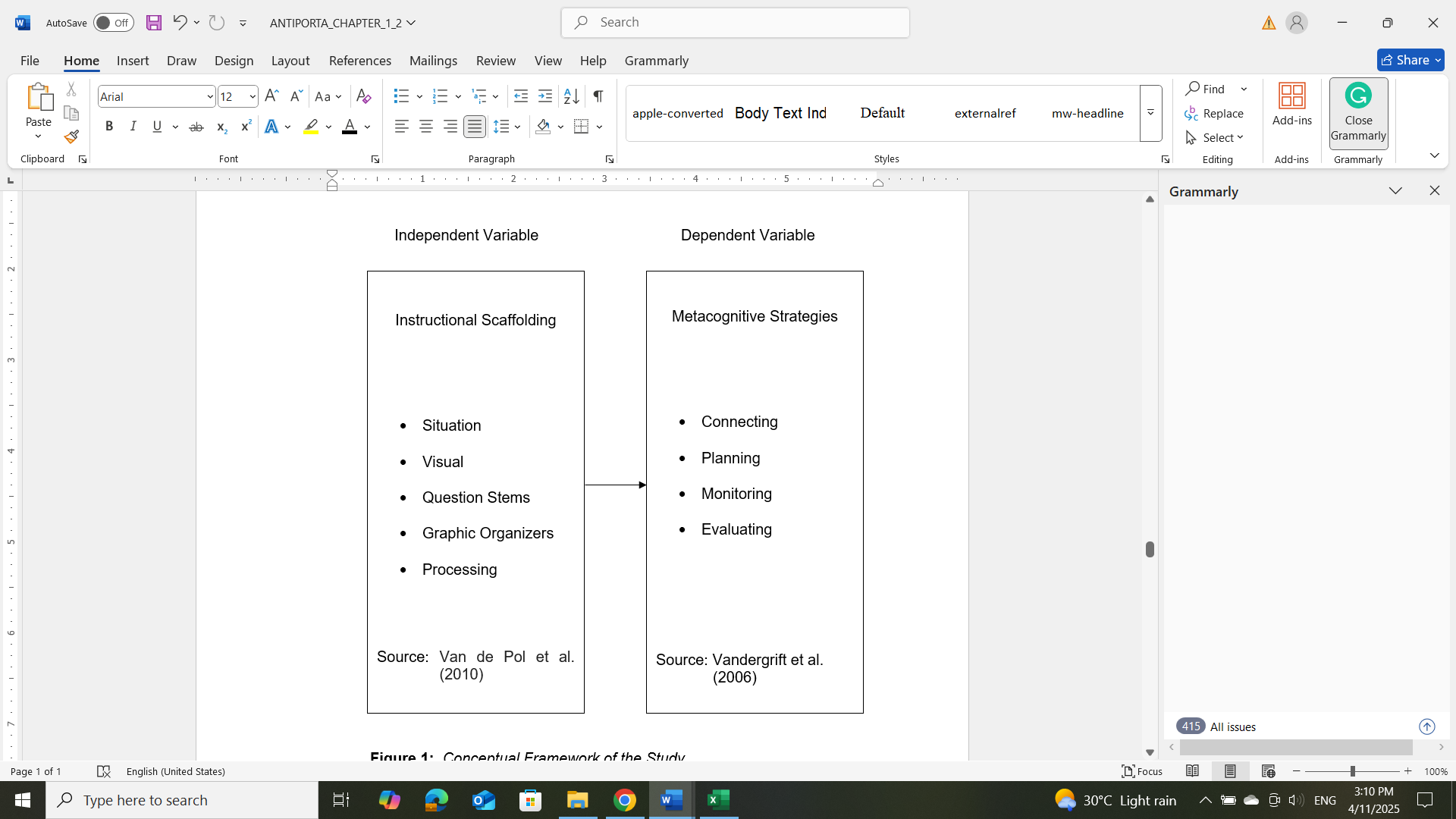
Metacognition—commonly described as “thinking about thinking”—plays a vital role in academic success. For example, good readers demonstrate metacognitive awareness when they clarify their purpose before reading and preview the text to anticipate its structure and content (Nisah, 2021). Simply put, metacognitive strategies involve being aware of and understanding one’s own cognitive processes. Examples include a student discovering which methods help them best retain information, recognizing their personal learning style, or identifying the most effective strategies for problem-solving. As students become more aware of their cognitive strengths and weaknesses, they also become more autonomous learners. This self-awareness leads to improved regulation of mental processes and a stronger self-image (Rivas et al., 2022).

Research has shown that even students with language difficulties can significantly improve their learning capacity by applying metacognitive strategies (Khasawneh et al., 2020). In the Philippines, Antonio (2020) emphasized that metacognition involves reflecting before, during, and after a learning task. It begins when students consider which strategies to use, continues as they evaluate their effectiveness during the task, and culminates when they assess whether the results meet expectations. Teaching a variety of strategies is essential, as students must learn to select the most suitable ones for each learning situation.

Instructional scaffolding complements metacognitive strategies by providing temporary support to students as they engage with challenging tasks. Much like physical scaffolds used in construction, these educational supports are gradually removed as students gain competence and confidence. According to Puntambekar (2022), one of the key advantages of scaffolded instruction is that it fosters a supportive learning environment where students feel comfortable asking questions, offering feedback, and assisting their peers.

When teachers apply scaffolding in the classroom, their role shifts from being the primary source of knowledge to that of a mentor and facilitator. This approach encourages students to take an active role in their own learning, promoting ownership and deeper engagement. Scaffolding prompts learners to extend their current knowledge and skills through meaningful interactions, resulting in shared responsibility between teacher and student (Hmelo‐Silver et al., 2019).

The need for scaffolding becomes evident when a student struggles to progress in a task or has difficulty grasping a particular concept. While scaffolding can be tailored to individual learners, it can also be effectively applied to entire classes. When implemented thoughtfully, scaffolding and metacognitive strategies together create an enriched learning environment that supports student growth, independence, and academic achievement (Van de Pol et al., 2019).



**Figure 1:** Conceptual Framework of the Study

2. methodology

**2.1 Research Design**

This study employed the non-experimental quantitative research design utilizing correlational method. Quantitative research design relates to the design of a research which uses quantitative research methods. The design varies depending on the method used, which could be telephone interviews, face-to-face interviews, online surveys, or surveys by post for instance (Baguio & Baguio, 2025).

Quantitative research design is aimed at discovering how many people think, act or feel in a specific way. Quantitative research design involve large sample sizes, concentrating on the quantity of responses, as opposed to gaining the more focused or emotional insight that is the aim of qualitative research. The standard format in quantitative research design is for each respondent to be asked the same questions, which ensures that the entire data sample can be analyzed fairly. The data is supplied in a numerical format, and can be analyzed in a quantifiable way using statistical methods. Surveys can, however, be tailored to branch off if the respondent answers in a certain way - for instance people who are satisfied or dissatisfied with a service may be asked different questions subsequently (Pregoner, 2024). This method used since the variables of this research study measures the relationship between instructional scaffolding and metacognitive strategies of language teachers in selected public secondary schools. This is also

**2.2 Research Respondents**

The respondents of the study were language teachers in selected public secondary schools. There were 132 respondents of language teachers in selected public secondary schools of the Division of Island Garden City of Samal. Universal sampling will be used to determine the respondents on the relationship in instructional scaffolding and metacognitive strategies of public secondary school language teachers. The respondents are connected in the service for at least three years experiences and above, wherein they can provide more information regarding the study. This study was conducted in the school year 2023-2024.

**2.3 Research Instrument**

The instruments that were used in this study is the instructional scaffolding and metacognitive strategies of public secondary school language teachers. These were constructed based on some relevant studies and literature reviewed. Prior to the administration, this instrument was be tested for content validity and reliability by the panel of experts in the field of Doctor of Educational Management.

Based from their comments and suggestions, revisions were made. To test for reliability and validity, the instruments were tested in one separate school in the same district among 30 teachers. The instruments were found to be reliable with a Cronbach’s Alpha mean rating of 0.852. In taking the test the participants answered the 45 items questions in a 5 subscales.

**2.4 Data Gathering Procedure**

# The data were gathered through the following procedure. The researcher first sought permission and endorsement from the Dean of the Graduate School of Rizal Memorial Colleges for the approval of the Schools Division Superintendent. After receiving the Dean's approval, a formal request letter was submitted to the Office of the Schools Division Superintendent. Upon the superintendent’s approval, an endorsement letter was then submitted to the respective School Heads. A letter requesting permission from the School Heads was included in the appendices. Following this, a schedule was arranged for the distribution of the test questionnaires for pilot testing to determine the reliability and validity of the instrument. Instructions and an explanation of the study were incorporated into the questionnaire. After obtaining the results from the pilot testing, the actual survey was administered to all identified respondents. Once completed, the researcher retrieved all the questionnaires and submitted them to the statistician for statistical treatment. The data were then tallied, tabulated, analyzed, and interpreted accordingly.

# 2.5 Data Analysis

The following statistical tools were used in this study:

*Weighted Mean.* This was used to measure the level of instructional scaffolding and metacognitive strategies of language teachers in selected public secondary schools.

*Product Moment Correlation Coefficient (Pearson r).* This was used to determine the relationships between the instructional scaffolding and metacognitive strategies of language teachers in selected public secondary schools.

*Multiple Regression Analysis.* This was used to determine the influence between the instructional scaffolding and metacognitive strategies of language teachers in selected public secondary schools.

3. results and discussion

**3.1 Level of Instructional Scaffolding of Language Teachers**

Table 1. *Level of Instructional Scaffolding of Language Teachers*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Indicators** | | **SD** | **Mean** | | **Descriptive Level** |
| Situation | | 0.78 | 4.36 | | Very High |
| Visual | | 0.84 | 4.34 | | Very High |
| Question Stems | | 0.76 | 4.23 | | Very High |
| Graphic Organizers | | 0.82 | 4.38 | | Very High |
| Processing | | 0.80 | 4.40 | | Very High |
| **Overall** | **0.74** | | **4.36** | **Very High** | | |

Presented in Table 1 is the level of instructional scaffolding used by language teachers, including situation, visual, question stems, graphic organizers, and processing, based on the mean scores and standard deviations. The processing indicator received the highest mean of 4.40, categorized as very high, followed by graphic organizers with a mean of 4.38. The situation indicator had a mean of 4.36, also categorized as very high, while visual strategies had a mean of 4.34. The question stems indicator had a mean of 4.23, categorized as very high. The overall mean of 4.36 is described as very high, indicating that instructional scaffolding practices used by language teachers are generally perceived as highly effective across these domains. The overall standard deviation of 0.74 suggests that the responses were tightly clustered around the mean.

This finding indicates that language teachers consistently demonstrate very high levels of instructional scaffolding in their teaching practices. The strong performance across all indicators—processing, graphic organizers, situation, visual, and question stems, suggests that teachers are highly effective in using various scaffolding strategies to support student learning. These practices help facilitate students’ understanding, encourage critical thinking, and provide students with the tools they need to succeed in their academic tasks.

This finding aligns with the research of Schwartz et al. (2021), who emphasized that strong instructional scaffolding empowers teachers to support students in mastering academic tasks that may initially be beyond their independent reach. By providing structured guidance through strategies like modeling, questioning, visual aids, and interactive discussions, teachers can effectively bridge gaps in students’ understanding. Similarly, Atanda (2019) highlighted that well-implemented scaffolding encourages student participation and deeper thinking, helping learners gradually take control of their own learning process. Moreover, Acosta-Gonzaga and Ramirez-Arellano (2022) observed that strong instructional scaffolding fosters student motivation and confidence by making challenging content more accessible and meaningful.

**3.2 Level of Metacognitive Strategies of Language Teachers**

Table 2. *Level of Metacognitive Strategies of Language Teachers*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Indicators** | | **SD** | **Mean** | | **Descriptive Level** |
| Connecting | | 0.82 | 4.37 | | Very High |
| Planning | | 0.77 | 4.34 | | Very High |
| Monitoring | | 0.85 | 4.39 | | Very High |
| Evaluating | | 0.87 | 4.40 | | Very High |
| **Overall** | **0.75** | | **4.38** | **Very High** | | |

Presented in Table 2 is the level of metacognitive strategies of language teachers, including evaluating, monitoring, connecting, and planning, based on the mean scores and standard deviations. The evaluating indicator received the highest mean of 4.40, categorized as very high, followed by monitoring with a mean of 4.39. The connecting indicator had a mean of 4.37, while planning received the lowest mean of 4.34; nevertheless, all domains were rated as very high. The overall mean of 4.38 is also described as very high, indicating that language teachers are consistently utilizing metacognitive strategies across all areas of classroom instruction. The overall standard deviation of 0.75 shows that the responses were tightly clustered around the mean.

This finding indicates that teachers are highly engaged in evaluating the outcomes of their instruction and the learning progress of students, which is crucial in refining future teaching practices. High performance in the monitoring domain shows that teachers consistently track their students’ understanding and use real-time feedback to make instructional adjustments. In addition, the high rating in connecting implies that teachers help students relate new concepts to previous knowledge and real-life contexts, strengthening comprehension and retention. Lastly, while planning received the lowest mean among the domains, its very high rating still reflects the teachers’ deliberate and organized approach to lesson design, learning objectives, and classroom delivery.

These results emphasize that language teachers are not only planning and delivering instruction effectively, but are also deeply reflective and strategic in managing the learning process. The consistently high ratings across all four metacognitive domains affirm that the teachers are fostering self-regulated learning among students by encouraging awareness, evaluation, and adaptation of thinking strategies. This creates a supportive and cognitively engaging environment where learners can thrive academically and independently.

This finding is supported by the work of Nobutoshi (2023), who highlighted that strong metacognitive strategies enable teachers to reflect on their own thinking and teaching practices, leading to improved instructional effectiveness. By fostering metacognition, teachers can become more aware of their thought processes, decision-making, and teaching strategies, ultimately enhancing their ability to guide students effectively. Similarly, Silver et al. (2023) found that teachers who engage in metacognitive practices are better equipped to adapt their approaches to meet diverse student needs, as they continuously assess and adjust their instructional methods. Additionally, Greene (2021) emphasized that metacognitive strategies not only help teachers reflect on their teaching but also serve as a model for students, teaching them to monitor and regulate their own learning, leading to greater academic success.

**3.3 Significant Relationship between Instructional Scaffolding and Metacognitive Strategies of Language Teachers**

Table 3. *Significant Relationship between Instructional Scaffolding and Metacognitive Strategies of Language Teachers*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Variables** | **Mean** | **SD** | **R** | **R²** | **Degree of Relationship** | **p-value** | **Decision** |
| Instructional Scaffolding | 4.36 | 0.74 |  |  |  |  |  |
|  |  |  | 0.68 | 0.46 | High | 0.000 | Reject Ho1 |
| Metacognitive Strategies | 4.38 | 0.75 |  |  |  |  |  |

Presented in Table 3 is the correlation analysis between instructional scaffolding and metacognitive strategies of language teachers in public elementary schools. The relationship between these two variables has a correlation coefficient (R) of 0.68 with a p-value of 0.000, which is less than the 0.05 significance level. This indicates a high and statistically significant positive relationship between instructional scaffolding and metacognitive strategies of language teachers. The R² value of 0.46 suggests that approximately 46% of the variation in teachers' metacognitive strategies can be explained by instructional scaffolding. Since the p-value is less than 0.05, the null hypothesis (Ho1) is rejected, supporting the claim that instructional scaffolding is significantly related to the metacognitive strategies employed by language teachers.

This finding suggests that strong instructional scaffolding plays a vital role in enhancing the metacognitive strategies used by teachers. When teachers effectively implement scaffolding techniques, it appears to support the development of teachers' ability to reflect on and regulate their own teaching practices, which in turn benefits student learning. The positive relationship between instructional scaffolding and metacognitive strategies highlights the importance of providing structured support and guidance to teachers, helping them become more aware of their teaching processes, adapt their strategies, and ultimately improve their overall instructional effectiveness.

This finding aligns with the work of Kim et al. (2019), who found a significant relationship between instructional scaffolding and the metacognitive strategies of teachers. Their study demonstrated that strong instructional scaffolding positively influences teachers' ability to reflect on their teaching practices, leading to more effective decision-making in the classroom. Similarly, Zepeda (2019) emphasized the importance of scaffolding in enhancing teachers' metacognitive awareness, suggesting that when teachers are provided with clear, structured support, they are better able to regulate their own teaching strategies and adapt to student needs. Additionally, Daradoumis and Arguedas (2020) highlighted that instructional scaffolding not only improves the metacognitive skills of teachers but also promotes a reflective teaching culture, which ultimately enhances the learning experience for students and contributes to more effective teaching practices.

**3.4. Significant Influence of the Domains of Instructional Scaffolding on Metacognitive Strategies of Public Elementary School Teachers**

**Table 4.** Significant Influence of the Domains of Instructional Scaffolding on Metacognitive Strategies of Public Elementary School Teachers

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Domains** | **B** | **BE** | **Beta** | **t-stat** | **p-value** | **Decision** |
| Constant | 3.10 | 0.80 |  | 8.20 | 0.000 | Significant |
| Situation | 0.82 | 0.76 | 0.68 | 3.38 | 0.000 | Significant |
| Visual | 0.80 | 0.75 | 0.65 | 3.35 | 0.000 | Significant |
| Question Stems | 0.76 | 0.70 | 0.60 | 3.30 | 0.000 | Significant |
| Graphic Organizers | 0.84 | 0.78 | 0.70 | 3.40 | 0.000 | Significant |
| Processing | 0.78 | 0.73 | 0.72 | 3.32 | 0.000 | Significant |
|  |  |  |  |  |  |  |
| **Regression Model** | | | | | | |
| Metacognitive Strategies =3.10 + 0.82 (Situation) + 0.80 (Visual) + 0.76 (Question Stems) + 0.84 (Graphic Organizers) + 0.78 (Processing) | | | | | | |
| R=0.70; R²=0.490; F=68.65; p-value=0.000 | | | | | | |

Presented in Table 1 is the regression analysis examining how different domains of instructional scaffolding—situation, visual, question stems, graphic organizers, and processing, significantly influence the metacognitive strategies of public elementary school teachers. The regression model indicates that all five domains positively contribute to metacognitive strategies.

Among them, graphic organizers (B = 0.84, Beta = 0.70) have the strongest influence, followed by situation (B = 0.82, Beta = 0.68), processing (B = 0.78, Beta = 0.72), visual (B = 0.80, Beta = 0.65), and question stems (B = 0.76, Beta = 0.60). The t-statistics for each domain (ranging from 3.30 to 3.40) and their corresponding p-values (all less than 0.05) confirm that these influences are statistically significant.

The regression model explains 49.0% of the variance in metacognitive strategies (R² = 0.490). Furthermore, the model’s F-value of 68.65 and its p-value of 0.000 indicate that the model is statistically significant. These findings suggest that instructional scaffolding, particularly in the areas of graphic organizers, situation, processing, visual aids, and question stems, plays a crucial role in enhancing the metacognitive strategies employed by language teachers. Strengthening these aspects of instructional practice is likely to foster more effective teaching strategies and improved student learning outcomes.

This finding supports the research of McCollum (2019), who emphasized the significant influence of instructional scaffolding on the metacognitive strategies of teachers. Their study highlighted that domains such as situation, visual aids, and processing play a critical role in shaping how teachers use metacognitive strategies to reflect on and adjust their teaching methods. Similarly, Abdala and Hamdan (2021) found that when instructional scaffolding is high, teachers are better equipped to adapt their strategies and improve their teaching practices, leading to more effective student learning outcomes. Furthermore, the work of Vo et al. (2022) noted that effective instructional scaffolding helps teachers enhance their metacognitive awareness, enabling them to evaluate their practices and make more informed decisions about their instructional approaches, which ultimately benefits both teaching and student engagement.

4. FINDINGS

This study aimed to examine the significant relationship between instructional scaffolding and the metacognitive strategies of language teachers. Specifically, it sought to assess the level of instructional scaffolding in terms of situation, visual, question stems, graphic organizers, and processing as perceived by teachers. Additionally, the study aimed to determine the level at which teachers employ metacognitive strategies, including connecting, planning, monitoring, and evaluating, in their teaching practices. Furthermore, the study aimed to determine whether a significant relationship exists between instructional scaffolding and metacognitive strategies of teachers and identified which domains of instructional scaffolding most significantly influence teachers' use of metacognitive strategies. Using a descriptive-correlational research design, a total of 132 language teachers in Division of Island Garden City of Samal, were surveyed using standardized questionnaires, and the data were analyzed using mean, standard deviation (SD), Pearson product-moment correlation, and multiple linear regression analyses.

From the data gathered, the following findings were drawn:

Firstly, the level of instructional scaffolding in terms of situation, visual, question stems, graphic organizers, and processing is very high as perceived by language teachers.

Secondly, the level of metacognitive strategies in terms of connecting, planning, monitoring, and evaluating is also very high among language teachers.

Thirdly, a significant relationship exists between instructional scaffolding and metacognitive strategies, indicating a strong positive correlation between the two variables.

Finally, when examining the influence of the domains of instructional scaffolding on metacognitive strategies, situation, graphic organizers, and processing were found to significantly impact teachers’ use of metacognitive strategies, highlighting the importance of strong instructional scaffolding in enhancing teachers' reflective practices and decision-making in the classroom.

**5. CONCLUSIONS**

Based on the findings of the study, the following conclusions were drawn:

Firstly, the level of instructional scaffolding among language teachers is always manifested, particularly in terms of situation, visual, question stems, graphic organizers, and processing. Teachers perceive the instructional scaffolding within their classrooms as a structured and supportive approach that enhances student understanding and engagement. The effective use of these scaffolding strategies helps bridge gaps in students' knowledge, supports critical thinking, and encourages deeper learning. This strong instructional scaffolding contributes to creating a productive learning environment that fosters student success and enhances teacher efficacy.

Secondly, the level of metacognitive strategies in terms of connecting, planning, monitoring, and evaluating is always manifested by the language teachers. Teachers consistently engage in metacognitive practices that promote self-awareness, reflection, and strategic thinking. These practices allow teachers to adjust their instructional approaches based on student needs, monitor their teaching effectiveness, and plan for future lessons. By actively engaging in these strategies, teachers are able to improve their instructional practices and ensure that students are actively involved in their own learning.

Thirdly, a significant relationship exists between instructional scaffolding and metacognitive strategies. This finding indicates that the use of strong instructional scaffolding positively influences teachers’ ability to implement metacognitive strategies effectively. Teachers who employ scaffolding techniques such as questioning, visual aids, and graphic organizers are more likely to engage in reflective practices, plan more effectively, and adjust their teaching strategies based on student progress.

Finally, the domains of instructional scaffolding significantly influence metacognitive strategies. Situation, graphic organizers, and processing play crucial roles in how teachers apply metacognitive strategies in the classroom. These scaffolding domains provide teachers with the tools and frameworks to support their own reflective practices and make informed decisions about their teaching. Schools that emphasize and support these instructional scaffolding techniques are likely to see improved teacher performance, higher levels of student engagement, and better overall educational outcomes.

The findings of this study, emphasizing the significant influence of instructional scaffolding on metacognitive strategies of language teachers, align with the theory of Pierce (1991), who stated that instructional scaffolding is a process through which a teacher provides support to enhance learning and help students master tasks. Pierce’s view suggests that teachers build upon students' prior knowledge and experiences, systematically providing assistance as they learn new skills. This supports the notion that instructional scaffolding is integral to promoting deeper engagement and learning outcomes, particularly when teachers help students develop critical thinking and problem-solving abilities.

Additionally, the study aligns with the theory of Shannon (1948), who posited that metacognitive strategies facilitate the learning process by teaching students how to learn. According to Shannon, these strategies are crucial in various learning contexts, including formal and informal educational experiences. Teachers who incorporate metacognitive strategies enable students to engage in reflective thinking about their learning processes, which enhances their ability to plan, monitor, and assess their own understanding. By combining instructional scaffolding and metacognitive strategies, teachers can create a supportive learning environment that promotes both skill development and self-regulation in students, leading to improved educational outcomes.

**6. RECOMMENDATIONS**

Based on the findings and conclusions of this study, the following recommendations were proposed:

Firstly, given the very high levels of instructional scaffolding observed among language teachers, it is recommended that school administrators continue to emphasize and support the key scaffolding domains, such as situation, visual aids, question stems, graphic organizers, and processing. Administrators may focus on integrating these domains into professional development programs and classroom practices to enhance their impact on teaching and student learning. Regular training workshops and collaborative learning sessions can be organized to equip teachers with the latest strategies for using instructional scaffolding effectively. Teachers may actively participate in these training opportunities and share best practices with colleagues to further strengthen the use of scaffolding techniques in their classrooms.

Secondly, with the very high level of metacognitive strategies observed among language teachers, it is recommended that school leaders continue to support and encourage practices that enhance teachers' ability to connect, plan, monitor, and evaluate their teaching. School administrators may create a conducive environment for teachers to engage in reflective practices, including providing opportunities for peer observations and collaborative lesson planning. Encouraging teachers to set clear goals for their own professional development and reflect regularly on their teaching practices will help maintain and further elevate their metacognitive strategies. Teachers can embrace these opportunities to improve their teaching and deepen their reflective practices, ensuring that their methods remain adaptive and responsive to student needs.

Thirdly, considering the significant relationship between instructional scaffolding and metacognitive strategies, it is recommended that school leaders create integrated programs that combine both areas. Programs that encourage teachers to use instructional scaffolding while simultaneously applying metacognitive strategies in their planning, delivery, and assessment practices would provide a holistic approach to teaching. School leaders may promote a culture of reflective teaching and scaffolding by organizing peer mentoring sessions and facilitating the sharing of strategies. Teachers may support these initiatives by regularly participating in peer review sessions and incorporating scaffolding techniques into their own reflective practices.

Finally, recognizing the influence of instructional scaffolding on metacognitive strategies, it is recommended that school administrators foster a culture of continuous professional development that focuses on the interconnectedness of these two areas. Future initiatives may highlight the importance of supporting teachers in both scaffolding their students' learning and reflecting on their own teaching practices. School administrators may encourage teachers to work collaboratively in developing lesson plans that incorporate both scaffolding techniques and metacognitive strategies, creating an environment that enhances both student and teacher growth. Teachers may contribute by sharing their experiences, engaging in professional learning communities, and seeking ongoing opportunities for self-improvement. Future researchers may also explore the long-term impact of combining instructional scaffolding with metacognitive strategies on teacher effectiveness and student outcomes, focusing on how these practices influence classroom engagement, academic achievement, and teacher satisfaction.

Consent (where ever applicable)

This quantitative study adhered to strict ethical guidelines to safeguard the privacy and confidentiality of all participants. Before data collection, informed consent was obtained from each participant, who was thoroughly briefed on the study's objectives and the measures in place to ensure confidentiality. To maintain anonymity, no personally identifiable information was gathered, and participants were assigned a unique code for data analysis. The collected data were securely stored on encrypted servers, with access limited to the research team. The findings were presented in an aggregated form, ensuring that individual responses could not be traced back to any specific participant. Furthermore, statistical analyses were carried out in a manner that preserved the anonymity and protected the privacy of the respondents throughout the entire study.

References

Abdala, A., & Hamdan, A. H. E. (2021). Scaffolding strategy and customized instruction efficiency in teaching English as a foreign language in the context of Saudi Arabia. *Journal of Literature, Languages and Linguistics*, *77*.

Acosta-Gonzaga, E., & Ramirez-Arellano, A. (2022). Scaffolding matters? Investigating its role in motivation, engagement and learning achievements in higher education. *Sustainability*, *14*(20), 13419.

Antonio, R. P. (2020). Developing Students' Reflective Thinking Skills in a Metacognitive and Argument-Driven Learning Environment. *International Journal of Research in Education and Science*, *6*(3), 467-483.

Atanda, A. A. (2019). *Effects of Dialogic Discourse and Scaffolding Instructional Strategies on Reading Comprehension Learning Outcomes among Senior Secondary School Students In Oyo State, Nigeria* (Doctoral dissertation).

Baguio, M. P. A. B., & Baguio, J. B. (2025). Professional Reputation and Service Efficacy of Teachers in Public Elementary Schools. *Asian Journal of Education and Social Studies*, *51*(1), 165-174.

Budin, S., Patti, A. L., & Rafferty, L. A. (2022). Teaching cognitive and metacognitive strategies to support learning and independence. In *High leverage practices for inclusive classrooms* (pp. 201-217). Routledge.

Daradoumis, T., & Arguedas, M. (2020). Cultivating students’ reflective learning in metacognitive activities through an affective pedagogical agent. *Educational Technology & Society*, *23*(2), 19-31.

Greene, J. A. (2021). Teacher support for metacognition and self-regulated learning: A compelling story and a prototypical model. *Metacognition and Learning*, *16*(3), 651-666.

Hmelo‐Silver, C. E., Bridges, S. M., & McKeown, J. M. (2019). Facilitating problem‐based learning. *The Wiley handbook of problem‐based learning*, 297-319.

Horwitz, E. K. (2020). *Becoming a language teacher: A practical guide to second language learning and teaching*. Castledown Publishers.

Khasawneh, M., Alkhawaldeh, M., & Al-Khasawneh, F. (2020). The level of metacognitive thinking among students with learning disabilities. *International Journal of English Linguistics*, *10*(5), 343-350.

Kim, N. J., Belland, B. R., & Axelrod, D. (2019). Scaffolding for optimal challenge in K–12 problem-based learning. *Interdisciplinary Journal of Problem-Based Learning*, *13*(1), 3.

McCollum, R. (2019). *The role of metacognition in visual art education* (Master's thesis, San Jose State University).

Nisah, K. (2021). *The Effect of Metacognitive Strategy on The Students’ Reading Comprehension Achievement at SMA Islam Al Ulum Terpadu Medan in The Academic Year 2020/2021* (Doctoral dissertation, Universitas Islam Negeri Sumatera Utara Medan).

Nobutoshi, M. (2023). Metacognition and reflective teaching: a Synergistic Approach to fostering critical thinking skills. *Research and Advances in Education*, *2*(9), 1-14.

Perry, J., Lundie, D., & Golder, G. (2019). Metacognition in schools: what does the literature suggest about the effectiveness of teaching metacognition in schools?. *Educational Review*, *71*(4), 483-500.

Pregoner, J. D. (2024). Research approaches in education: A comparison of quantitative, qualitative and mixed methods. *IMCC Journal of Science*, *4*(2), 31-36.

Puntambekar, S. (2022). Distributed scaffolding: Scaffolding students in classroom environments. *Educational Psychology Review*, *34*(1), 451-472.

Rivas, S. F., Saiz, C., & Ossa, C. (2022). Metacognitive strategies and development of critical thinking in higher education. *Frontiers in psychology*, *13*, 913219.

Santangelo, J., Cadieux, M., & Zapata, S. (2021). Developing student metacognitive skills using active learning with embedded metacognition instruction. *Journal of STEM Education: Innovations and Research*, *22*(2).

Schwartz, L., Adler, I., Madjar, N., & Zion, M. (2021). Rising to the challenge: The effect of individual and social metacognitive scaffolds on students’ expressions of autonomy and competence throughout an inquiry process. *Journal of Science Education and Technology*, *30*, 582-593.

Silver, N., Kaplan, M., LaVaque-Manty, D., & Meizlish, D. (Eds.). (2023). *Using reflection and metacognition to improve student learning: Across the disciplines, across the academy*. Taylor & Francis.

Van de Pol, J., Mercer, N., & Volman, M. (2019). Scaffolding student understanding in small-group work: Students’ uptake of teacher support in subsequent small-group interaction. *Journal of the Learning Sciences*, *28*(2), 206-239.

Vo, K., Sarkar, M., White, P. J., & Yuriev, E. (2022). Problem solving in chemistry supported by metacognitive scaffolding: teaching associates’ perspectives and practices. *Chemistry Education Research and Practice*, *23*(2), 436-451.

Zepeda, C. D., Hlutkowsky, C. O., Partika, A. C., & Nokes-Malach, T. J. (2019). Identifying teachers’ supports of metacognition through classroom talk and its relation to growth in conceptual learning. *Journal of educational psychology*, *111*(3), 522.