

Teaching Strategies, Supervisory Assistance, and Learner Motivation in Elementary Science in Dupax del Norte District II

Emelia H. Midon  Adriano G. Sabado 

Graduate School, Northeastern College, Santiago City, Isabela, Philippines

Corresponding author: emelia.midon001@deped.gov.ph

Article History: Received: May

Accepted: June

Revised: June 2026

Accepted: July 2026

Abstract: Learner motivation is essential for effective elementary science instruction, requiring teachers to employ appropriate instructional strategies and supportive teaching practices. This study assessed the teaching strategies of elementary science teachers in Dupax del Norte District II, focusing on instructional practices, supervisory assistance, science program implementation, professional development participation, and motivational strategies. A descriptive quantitative research design was utilized, involving 30 elementary science teachers selected through total enumeration. Data were gathered using a modified and validated survey questionnaire and analyzed through frequency, percentage, weighted mean, and standard deviation. Findings revealed that most respondents were female, married, master's degree holders, and Teacher III personnel, with the majority receiving outstanding performance ratings. Instructional practices were frequently implemented ($M = 3.86$, $SD = 0.53$), with equipment and materials obtaining the highest rating among instructional dimensions ($M = 4.02$, $SD = 0.35$). Supervisory assistance was also frequently provided ($M = 3.93$, $SD = 0.90$), reflecting regular instructional support. The science program received an overall rating of agree ($M = 3.68$, $SD = 0.54$), indicating satisfactory implementation alongside areas requiring improvement. Motivational strategies obtained the highest overall mean ($M = 4.21$, $SD = 0.24$), indicating consistent efforts to encourage learner engagement and participation. The findings highlight the importance of strengthening instructional resources, expanding professional development opportunities, and sustaining supervisory support. These measures may help improve science teaching practices, foster learner motivation, and support meaningful science learning experiences in elementary schools.

Keywords: elementary science education, learner motivation, science instruction, supervisory assistance, teaching strategies

INTRODUCTION

Science education develops learners' scientific knowledge, critical thinking, problem-solving, and understanding of the natural world. At the elementary level, effective science instruction requires meaningful learning experiences that encourage curiosity, participation, and exploration. Teachers need appropriate instructional methods, learning materials, science activities, and assessment techniques that respond to learners' needs. Instruction quality depends on curriculum delivery, teachers' pedagogical knowledge, and their ability to create learning environments that support active participation. Research highlights the importance of understanding science curricula and pedagogical content knowledge in preparing meaningful learning experiences (Aksoy, 2022; Evitasari et al., 2025). Instructional strategies help elementary learners understand scientific concepts and develop positive attitudes toward science. Inquiry-based and project-based learning let learners investigate questions, collaborate, and apply scientific knowledge to practical situations. Studies by Hairida et al. (2021) and Antipolo and Rogayan (2021) support examining how science teachers implement curriculum content, select methods, organize activities, use materials, and assess understanding within the Philippine educational context to better identify effective practices and areas needing improvement.

Learner motivation is important in elementary science instruction because learners' interest and

willingness to participate influence engagement in classroom activities. Teachers can encourage motivation by providing meaningful tasks, connecting scientific concepts to everyday experiences, recognizing learners' contributions, and creating supportive classrooms. However, sustaining engagement requires instructional approaches that accommodate different learning needs and encourage active participation. Appropriate teaching strategies must therefore be considered alongside the availability of instructional equipment and materials, the implementation of science activities, and suitable evaluation techniques. Examining teachers' motivational strategies can provide insight into how they encourage participation and maintain learners' interest in science.

Effective science instruction requires supervisory assistance and continuing professional development. School heads and instructional supervisors support teachers through classroom observation, feedback, guidance, and opportunities to improve teaching. Esllera and Escala (2024) investigated the relationship between school heads' supervisory skills and teacher self-efficacy, underscoring instructional supervision. Tiamwatt (2023) likewise examined intensive school-based instructional supervision and its influence on academic teaching performance. Professional development helps teachers strengthen pedagogical competencies and improve instructional approaches. Maloloy-On and Arnado (2023) examined elementary school teachers' proficiency in relation to the Philippine Professional Standards under flexible teaching modalities. These studies support considering supervisory assistance, school-head support, and training and seminars as dimensions of instructional improvement. However, contextualized evidence is still needed on how elementary science teachers in specific districts assess these dimensions. In this context, the present study assessed the teaching strategies of elementary science teachers in Dupax del Norte District II, examining respondents' demographic profiles, instructional practices, supervisory assistance, assessments of the science program's strengths and weaknesses, recommendations for improvement, participation in training and seminars, and implementation of motivational strategies, using a descriptive quantitative research design.

RESEARCH QUESTIONS

This study aimed to assess the teaching strategies employed by elementary science teachers in the Dupax Del Norte District II to enhance learner motivation. Specifically, this study sought to answer the following questions:

1. What is the demographic profile of the respondents in terms of gender, age, and civil status? Civil status, highest educational attainment, performance rating, and position?
2. What is the level of science teachers' instructional practices in terms of curriculum content, methods and strategies, science activities, equipment and materials, and evaluation techniques?
3. To what extent is supervisory assistance provided to science teachers in terms of supervisory assistance and supervisory assistance extended by the school heads?
4. How do the respondents assess the science program in terms of its strengths and weaknesses, and what are their recommendations for improvement?
5. What is the distribution of respondents according to their level of training and seminars attended?
6. To what extent are motivational strategies implemented in science teaching?

METHODS

Research Design

This study employed a descriptive quantitative research design to assess the teaching strategies used by elementary science teachers in Dupax Del Norte District II. The design was appropriate because it systematically described the respondents' demographic characteristics, instructional practices, supervisory assistance, science program implementation, participation in professional development

activities, and motivational strategies in teaching science without manipulating any variables. The findings served as a basis for identifying strengths and areas for improvement in science instruction.

Research Locale

This study was conducted in the Dupax Del Norte District II, where public elementary schools implement the Department of Education's K–12 Science Curriculum. The district was selected because it provides a suitable setting for examining the instructional practices and motivational strategies employed by elementary science teachers. The findings are expected to provide empirical evidence that may support instructional improvement and enhance learner motivation in science education.

Research Respondents

The respondents were 30 elementary science teachers from public elementary schools in Dupax Del Norte District II. As the target population was small, the study employed total enumeration, allowing all qualified science teachers to participate. This approach ensured a complete representation of the population and increased the reliability of the findings by gathering data from all eligible respondents.

Research Instrument

Data were collected using a modified and validated survey questionnaire adapted from instruments developed by Abulude (2009), Cheung (2009), Johnson and Johnson (1983), Johnson, Johnson, and Anderson (1983), and Gul Nazir Khan and Arshad Ali (2012). The instrument was contextualized to fit the objectives of the present study and consisted of two sections. Part I gathered the respondents' demographic profiles, while Part II measured the science teachers' instructional practices in terms of curriculum content, methods and strategies, science activities, equipment and materials, evaluation techniques, supervisory assistance, strengths and weaknesses of the science program, professional development activities, and motivational strategies in teaching science. Responses were measured on a five-point Likert scale. The instrument underwent expert validation and pilot testing to establish content validity, clarity, and reliability before final administration.

Data Gathering Procedure

After obtaining approval from the Graduate School and the Schools Division Office, permission to conduct the study was obtained from the respective school principals. The researcher personally administered the validated questionnaires to the respondents after explaining the study objectives and obtaining informed consent. Participation was voluntary, and respondents were assured of the confidentiality and anonymity of their answers. The completed questionnaires were retrieved, checked for completeness, coded, and prepared for statistical analysis.

Statistical Treatment of Data

The collected data were analyzed using appropriate descriptive statistical techniques. Frequency and percentages were used to describe the respondents' demographic profiles and their level of participation in training and seminars. The weighted mean and standard deviation were used to determine the level of science teachers' instructional practices, supervisory assistance, science program implementation, and motivational strategies in teaching science. The results were interpreted using the established descriptive equivalents corresponding to a five-point Likert scale.

RESULTS AND DISCUSSION

Table 1. Demographic Profile of the Respondents

Variable	Category	Frequency	Percentage (%)
Gender	Male	8	26.70
	Female	22	73.30

Age	21–30	6	20.00
	31–40	13	43.30
	41–50	4	13.30
	51–60	4	13.30
	61–65	3	10.00
Civil Status	Single	6	20.00
	Married	23	76.70
	Widow	1	3.30
Highest Educational Attainment	Bachelor's Degree	13	43.30
	Master's Degree	15	50.00
	Doctorate Degree	2	6.70
Performance Rating	Outstanding	17	56.70
	Very Satisfactory	13	43.30
Position	Teacher I	9	30.00
	Teacher II	2	6.70
	Teacher III	17	56.70
	Master Teacher I/II	2	6.70

Table 1 presents the respondents' demographic characteristics. Most were female teachers (73.30%), while 26.70% were male, indicating that female educators represent elementary science teaching in the district. Most respondents were 31–40 years old (43.30%), suggesting that the teaching workforce comprises individuals in their early to mid-career stages who possess both teaching experience and professional maturity. In terms of civil status, 76.70% were married, reflecting a stable and experienced teaching population in the school. Regarding educational attainment, 50.00% had completed a master's degree, while 43.30% held a bachelor's degree, and 6.70% had earned a doctorate, demonstrating that many teachers have pursued graduate education to enhance their professional competence. More than half of the respondents (56.70%) received an outstanding performance rating, indicating a high level of teaching effectiveness based on the institutional evaluation. Similarly, Teacher III comprised the largest proportion of respondents (56.70%), reflecting the presence of experienced teachers who have advanced in their professional ranks. Overall, the demographic profile suggests that the respondents possessed adequate academic qualifications, teaching experience, and professional competence, providing a credible basis for evaluating instructional practices and motivational strategies in elementary science education.

Table 2. Assessment of Science Teachers' Instruction

Dimension	No. of Items	Mean	SD	Interpretation
Curriculum Content	5	3.99	0.14	Often
Methods and Strategies	16	3.69	0.62	Effective
Science Activities	5	3.81	0.97	Often
Equipment and Materials	6	4.02	0.35	Often
Evaluation Techniques	12	3.77	0.55	Often
Overall	44	3.86	0.53	Often

Table 2 shows that science teachers' instruction was rated "Often" ($M = 3.86$, $SD = 0.53$), indicating that effective instructional practices are consistently implemented in the classroom, which supports quality science teaching and learning (Aksoy, 2022; Evitasari et al., 2025). Among the instructional dimensions, Equipment and Materials obtained the highest mean ($M = 4.02$, $SD = 0.35$), suggesting that teachers regularly use appropriate learning resources to enhance instruction (Hairida et al., 2021). Curriculum Content also received a high rating ($M = 3.99$, $SD = 0.14$), indicating that teachers effectively delivered the prescribed science curriculum (Antipolo & Rogayan, 2021). Similarly,

Science Activities ($M = 3.81$, $SD = 0.97$) and Evaluation Techniques ($M = 3.77$, $SD = 0.55$) were positively assessed, reflecting teachers' efforts to engage learners through meaningful activities and appropriate assessment strategies (Aksoy, 2022; Hayride et al., 2021). Although Methods and Strategies obtained the lowest mean ($M = 3.69$, $SD = 0.62$), it was still interpreted as "Effective," indicating that teachers employ suitable instructional approaches while continuing to improve learner-centered teaching practices through professional development (Maloloy-On & Arnado, 2023). Overall, the findings suggest that science teachers demonstrate sound instructional practices that contribute to effective science education and learner engagement (Antipolo & Rogayan, 2025; Antipolo & Rogayan, 2021).

Table 3. Extent of Supervisory Assistance

Dimension	Overall Mean	SD	Interpretation
Supervisory Assistance	4.01	1.22	Often
Supervisory Assistance Extended by School Head	3.84	0.58	Often
Overall	3.93	0.90	Often

This table represents the frequency or extent to which supervisory assistance is provided, with the interpretation that assistance is frequently given. The slightly higher mean and SD in "Supervisory Assistance" compared to "Assistance Extended by School Head" suggests that general supervisory support is perceived as more frequent and variable, while the school head's extended assistance is regularly observed, but with less variation. This aligns with findings in the educational supervision literature, indicating that principals and school heads adopt intensive instructional supervision and provide substantial support to teachers, which correlates positively with teacher performance and self-efficacy (Esllera & Escala, 2024; Tiamwatt, 2023). The "Often" interpretation underscores a consistent supervisory presence, which research identifies as crucial for improving instructional quality and academic outcomes (Tiamwatt, 2023).

Table 4. Strengths, Weaknesses, and Recommendations for the Science Program

Dimension	Overall Mean	SD	Interpretation
Strengths	3.11	0.42	Moderately Agree
Weaknesses	3.48	0.93	Agree
Recommendations	4.44	0.28	Strongly Agree
Overall	3.68	0.54	Agree

Table 4 presents the respondents' assessment of the science program. Overall, the science program was rated "Agree" ($M = 3.68$, $SD = 0.54$), indicating that while the program demonstrates several strengths, there remain areas requiring improvement. Among the three dimensions, Recommendations obtained the highest mean ($M = 4.44$, $SD = 0.28$) and were interpreted as "Strongly Agree," suggesting that teachers strongly support initiatives such as additional training, improved instructional resources, and increased institutional support to enhance science education (Maloloy-On & Arnado, 2023). Weaknesses were rated "Agree" ($M = 3.48$, $SD = 0.93$), reflecting concerns related to instructional facilities, resources, and teacher support that may affect the quality of science instruction (Antipolo & Rogayan, 2021). Meanwhile, Strengths received the lowest mean ($M = 3.11$, $SD = 0.42$) but remained within the "Moderately Agree" level, indicating that existing instructional practices provide a foundation for further improvement. Overall, the findings highlight the need for continuous investment in teacher development, adequate learning resources, and strengthened school support systems to improve science education (Aksoy, 2022; Maloloy-On & Arnado, 2023).

Table 5. Distribution of Respondents by Level of Trainings and Seminars Attended

Level of Training	Frequency

School/District	30
Division	30
Regional	21
National	20
International	3

Table 5 shows the distribution of respondents according to their level of training and seminars attended. All respondents participated in school/district- and division-level training ($n = 30$), while fewer attended regional ($n = 21$), national ($n = 20$), and international ($n = 3$) training programs. These findings indicate that teachers actively participate in local professional development activities but have fewer opportunities to attend higher-level training sessions. Participation in continuous professional development enhances teachers' pedagogical knowledge, instructional competence, and classroom effectiveness, contributing to improved learner outcomes (Maloloy-On & Arnado, 2023). Expanding teachers' access to regional, national, and international training programs may further strengthen science instruction by exposing educators to innovative teaching practices and current developments in science education (Antipolo & Rogayan, 2021; Esllera & Escala, 2024).

Table 6. Motivational Strategies in Teaching Science

Dimension	Overall Mean	SD	Interpretation
Motivational Strategies in Teaching Science	4.21	0.24	Always Observed

Table 6 shows that the respondents always observed the use of motivational strategies in teaching science, as reflected by the overall mean of 4.21 ($SD = 0.24$). This finding indicates that teachers consistently employ strategies that encourage learner participation, sustain students' interest, and create a positive classroom environment. The consistent use of motivational approaches is essential in promoting active learning, improving students' engagement, and enhancing academic achievement in science (Hairida et al., 2021). Moreover, teachers who effectively motivate learners are more likely to foster curiosity, confidence, and positive attitudes toward science learning (Aksoy, 2022). These findings support previous studies that emphasize that motivating instructional practices contribute significantly to meaningful learning experiences and improved classroom performance (Maloloy-On & Arnado, 2023; Hairida et al., 2021).

Table 7. Summary of the Major Findings

Variable	Overall Mean	SD	Interpretation
Assessment of Instruction	3.86	0.53	Often
Supervisory Assistance	3.93	0.90	Often
Science Program	3.68	0.54	Agree
Motivational Strategies	4.21	0.24	Always Observed

Table 7 summarizes the major findings of the study across different instructional dimensions. Among the variables, motivational strategies obtained the highest overall mean ($M = 4.21$, $SD = 0.24$) and was interpreted as "Always Observed," indicating that teachers consistently apply practices that motivate learners during science instruction. This was followed by supervisory assistance ($M = 3.93$, $SD = 0.90$) and assessment of instruction ($M = 3.86$, $SD = 0.53$), both interpreted as "Often," reflecting regular instructional support and effective teaching practices. Meanwhile, the science program received the lowest overall mean ($M = 3.68$, $SD = 0.54$), although it was still interpreted as "Agree," suggesting that the existing program is effective but requires further enhancement. Overall, the findings indicate that teachers demonstrate strong instructional practices supported by effective supervision and motivational strategies, while continuous professional development and improved instructional resources remain necessary to further strengthen science education (Aksoy, 2022;

CONCLUSION

This study evaluated the teaching strategies employed by elementary science teachers in Dupax del Norte District II, with a focus on instructional practices, supervisory assistance, science program implementation, professional development, and motivation strategies. The findings indicated that teachers frequently implemented effective instructional practices, particularly in the areas of instructional materials, curriculum delivery, and learner motivation. Supervisory assistance from school administrators was also regularly provided, contributing to instructional improvement and teacher support. While the science program demonstrated several strengths, respondents also identified areas that could benefit from enhancement, particularly in instructional resources, facilities, and continuous teacher development. Furthermore, teachers actively participated in professional development activities, primarily at the school, district, and division levels, although opportunities for regional, national, and international training were limited. Overall, the findings suggest that elementary science teachers exhibit strong instructional competence and commitment to quality teaching; however, sustained institutional support, adequate learning resources, and expanded professional development opportunities would be essential to further strengthen science instruction and improve learners' educational experiences.

LIMITATIONS OF THE STUDY

This study was limited to 30 elementary science teachers from public elementary schools in Dupax del Norte District II. Data were collected using a survey questionnaire, and the findings were based on the respondents' self-reported perceptions. Because of the limited number of respondents and the specific research setting, the results may not be generalizable to other districts or regions.

FUTURE RESEARCH DIRECTIONS

Future researchers should conduct similar studies involving larger samples and different school divisions to validate the findings. Comparative or mixed-methods studies may also be conducted to examine other factors affecting science teaching and learner motivation. Further research should evaluate the effectiveness of specific instructional strategies or intervention programs in improving science learning outcomes.

ETHICS STATEMENT

Permission to conduct the study was obtained from the appropriate school authorities prior to data collection. Informed consent was secured from all participants, and their participation was voluntary. The confidentiality and anonymity of the respondents were maintained, and all information gathered was used solely for academic and research purposes in accordance with accepted ethical principles.

LIMITATIONS OF THE STUDY

This study was limited to 40 Grade 6 pupils from Kakiduguen Elementary School, Kasibu West District, during the school year 2025–2026. Data were collected using a researcher-developed questionnaire, and the findings were based on the respondents' self-reported responses. Because the study was conducted in only one school with a relatively small number of participants, the results may not be generalizable to other schools or populations with different educational and linguistic contexts.

FUTURE RESEARCH DIRECTIONS

Future researchers should conduct similar studies involving larger samples from different schools or districts to validate these findings. Mixed-methods or experimental research designs may also be

employed to examine the effectiveness of specific instructional interventions in improving pupils' oral proficiency. Future studies should investigate other factors, such as learners' motivation, language anxiety, parental support, and technology-assisted language learning, that may influence the development of English oral communication skills.

ETHICS STATEMENT

Permission to conduct the study was obtained from the appropriate school authorities before data collection. Informed consent was secured from the parents or guardians of the participating pupils, and assent was obtained from the pupils. Participation was voluntary, and the respondents were informed of the purpose of the study and their right to withdraw at any time. Confidentiality and anonymity were maintained throughout the research, and all information collected was used solely for academic and research purposes in accordance with accepted ethical principles.

REFERENCES

- Aksoy, G. (2022). Exploration of Pre-Service Science Teachers' Perceptions towards Secondary School Science Curriculum. *International Journal of Contemporary Educational Research*, 6(1), 11–28. <https://doi.org/10.33200/ijcer.543360>
- Alali, R., & Wardat, Y. (2024). Innovative Teaching: Building Engagement, Critical Thinking, and Lifelong Learning Skills. *International Journal of Religion*, 5(10), 2152–2163. <https://doi.org/10.61707/fdpxd919>
- Antipolo, A. M. R., & Rogayan, D. V. J. (2021). Filipino prospective teachers' experiences in teaching in K12 science curriculum: Cross-sectional research. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, 7(1), 1–10. <https://doi.org/10.22219/jpbi.v7i1.15468>
- Carracedo, J. M. C. (2025). Inquiry-Based Learning in Phonetics and Phonology: Promotion of Critical Thinking Skills in an EFL Higher Education Context. *International Journal of Instruction*, 18(1), 1–22. <https://doi.org/10.29333/iji.2025.1811a>
- Del Valle, J. (2022). Tough Teachers Actually Care: An Ethnographic Look into the 'Problematic' Role of Teachers as Figures of Authority Under Learner-Centered Education. *Australian Journal of Teacher Education*, 47(6), 19–36. <https://doi.org/10.14221/ajte.2022v47n6.2>
- Esslera, R. A., & Escala, E. (2024). Exploring the impact of school heads' supervisory skills on teacher self-efficacy: A mixed-methods study. *International Journal of Educational Management & Development Studies*, 5(3), 50–73. <https://doi.org/10.53378/ijemds.353086>
- Etcoy, D. M. P., Jovert, A. K. A., & Paligutan, M. J. A. (2023). ESL Pedagogy in Philippine Colleges: Issues and Reforms through 21st Century Teaching Perspective. *Diversitas Journal*, 8(4). <https://doi.org/10.48017/dj.v8i4.2761>
- Evitasari, A. D., Wilujeng, I., Tohani, E., Astuti, A. D., Triyanti, M., & Musyadad, F. (2025). Prospective elementary school teachers' science PCK: An analysis of perceptions and implicit knowledge. *European Journal of STEM Education*, 10(1), 37. <https://doi.org/10.20897/ejsteme/17652>
- Hairida, H., Marmawi, M., & Kartono, K. (2021). An Analysis of Students' Collaboration Skills in Science Learning Through Inquiry and Project-Based Learning. *Tadris: Jurnal Keguruan Dan Ilmu Tarbiyah*, 6(2), 219–228. <https://doi.org/10.24042/tadris.v6i2.9320>
- Hatmanto, E. D., & Rahmawati, F. (2023). Unleashing the Potential: Exploring Attitudes and Overcoming Challenges in Implementing Differentiated Instruction in the Philippines' English Language Classrooms. *E3S Web of Conferences*, 425, 02001. <https://doi.org/10.1051/e3sconf/202342502001>
- Maloloy-On, M. C., & Arnado, A. A. (2023). Elementary School Teachers' Proficiency: Philippine Professional Standards under Flexible Teaching Modality. *International Journal of Membrane Science and Technology*, 10(2), 857–865. <https://doi.org/10.15379/ijmst.v10i2.1286>
- Mubarok, A. S., Nurazizah, Z., Herawan, E., & Putri, D. P. (2025). Deep Learning with Project-Based Learning (PjBL) Model for Student Creativity. *Pedagogia: Jurnal Pendidikan*, 14(2), 239–252.

- <https://doi.org/10.21070/pedagogia.v14i2.1957>
- Nazim, M., Alzubi, A. A. F., & Fakhri, A.-H. (2024). Teachers' attitudes towards student-centered pedagogy and assessment practices: instruction efficacy in perspective. *International Journal of Evaluation and Research in Education (IJERE)*, 13(2), 1276. <https://doi.org/10.11591/ijere.v13i2.28139>
- Nur Arsyad, S., Tangkin, W. P., Sumartono, S., & Astuti, B. (2024). IMPLICATIONS OF BRUNER'S COGNITIVE THEORY ON ELEMENTARY SCHOOL EDUCATION IN THE 21ST CENTURY. *KLASIKAL: JOURNAL OF EDUCATION, LANGUAGE TEACHING AND SCIENCE*, 6(3), 697–704. <https://doi.org/10.52208/klasikal.v6i3.1225>
- Silitubun, E., Costa, B., & Nizam, Z. (2024). The Role of Project-Based Learning in Developing 21st Century Skills. *International Journal of Educational Narratives*, 2(6), 525–534. <https://doi.org/10.70177/ijen.v2i6.1689>
- Syammary, N. A., Yahya, A., Firmansyah, H. F. H., Fiddin, R., & Alam, F. N. S. (2024). Progressivism Philosophy and Its Implications for 21st Century Educational Practices in Indonesia. *EDUKASIA: Jurnal Pendidikan Dan Pembelajaran*, 5(2), 93–104. <https://doi.org/10.62775/edukasia.v5i2.854>
- Thaanyane, M., & Jita, T. (2024). The Impact of ICT on Fostering Creativity in Business Education Pre-service Teachers: A Comprehensive Literature Review. *International Journal of Religion*, 5(12), 1132–1139. <https://doi.org/10.61707/wmpvv336>
- Thomas, M. B., Muscat, A., Zuccolo, A., Luguetti, C. N., & Watt, A. (2025). Navigating Pedagogical Innovation in Higher Education: Education Academics' Experiences with Active and Inquiry-Based Learning in Intensive Teaching. *Innovative Higher Education*, 50(6), 1917–1943. <https://doi.org/10.1007/s10755-025-09807-y>
- Tiamwatt, J. M. (2023). Intensive School-Based Instructional Supervision (ISBIS) Influences Academic Teaching Performance. *International Journal of Membrane Science and Technology*, 10(2), 149–154. <https://doi.org/10.15379/ijmst.v10i2.1177>

AI DISCLOSURE STATEMENT

During the preparation of this work, the author(s) used ChatGPT to enhance the grammar, improve the language clarity, and assist in refining the presentation of the manuscript. After using this tool, the author(s) carefully reviewed, revised, and edited the content as needed and took full responsibility for the accuracy, originality, and integrity of the published work.