USING MULTISENSORY STRATEGIES IN IMPROVING PUPILS' VOCABULARY DEFICIENCY

El Dixon G. Plazo[1*], Melani Joy S. Gallardo[1], Khenn D. Temporosa[1], Kenth C. Novo[1], Rachel A. Estafia[1], Joyjoy L. Montenegro[1]

[1]*Staff, North Eastern Mindanao State University, Tandag City, Philippines*

ABSTRACT

This study investigates the effectiveness of multisensory strategies in improving vocabulary deficiencies among Grade 3 pupils at Payasan Elementary School. Using an Explanatory Sequential Mixed-Methods Design, the study combined quantitative pre-test and post-test data with qualitative insights from participant interviews. Ten (10) Grade 3 pupils identified with vocabulary deficiencies participated in a two-week intervention involving four multisensory activities engaging visual, auditory, and kinesthetic senses. Results showed significant improvement, with all participants initially at the Beginning level in the pre-test. After the intervention, 4 pupils reached the Proficient level and 6 attained the Advanced level. Pupils reported that visual aids, interactive games, and hands-on activities improved their understanding and retention of vocabulary. These findings support prior studies that emphasize the benefits of multisensory approaches in enhancing engagement, motivation, and retention. This study concludes that multisensory strategies are effective in addressing vocabulary deficiencies, particularly among young learners. Educators are encouraged to integrate these strategies to create engaging learning experiences that cater to diverse learning styles. Future research is recommended to explore the long-term impacts of multisensory strategies and their adaptability across various educational contexts.

Keyword: *multisensory strategies, vocabulary deficiency, educational intervention, mixed-methods research, language development*

1. INTRODUCTION

Vocabulary plays a fundamental role in language development and is critical for effective communication and academic achievement. Research emphasizes that vocabulary proficiency is essential for reading comprehension, writing skills, and overall cognitive growth (Corpuz et al., 2024; He & Deocampo, 2023) . Students with vocabulary deficiencies often struggle to understand text, express themselves clearly, and participate actively in learning activities, limiting their academic success and social interactions (Bhandari, 2023; Hasan, 2024). Consequently, addressing these deficiencies is vital to improving learning outcomes, particularly in early education where vocabulary development is foundational to future literacy skills (Sun & Yin, 2022).

In recent years, multisensory strategies have gained increasing attention as effective approaches for enhancing vocabulary skills (Mirkina & Enkuleva, 2024). Multisensory learning involves engaging multiple senses visual, auditory, and kinesthetic simultaneously to enhance cognitive connections and improve memory retention (S & G, 2023). According to Gardner's (1993) Multiple Intelligences Theory, learners vary in how they best acquire information, underscoring the importance of instructional methods that cater to diverse learning styles. Studies have shown that multisensory interventions promote higher engagement, improved recall, and increased motivation among learners, particularly those facing learning difficulties (Rahmatullah, 2024; Romero, 2020; "The Effectiveness of a Program Based on the Multisensory Approach in Improving the Working Memory of Students

with Learning Disabilities," 2023). Furthermore, research by Oktafianto et al. (2018) and Pishghadam et al., (2024) found that students exposed to multisensory strategies showed superior language retention compared to those taught using traditional methods.

At Payasan Elementary School, several Grade 3 pupils exhibited significant vocabulary deficiencies based on the Philippine Informal Reading Inventory (Phil-IRI) test. Phil-IRI serves as a diagnostic instrument to identify students' reading levels and inform remediation strategies (Fabella & Abaoag, 2023). Many of these pupils struggled to recognize word meanings, limiting their ability to comprehend text and express their thoughts. Similarly in the study of Belbes et al. (2022) pupils in Grades 1 to 3 in selected public elementary schools in the Division of Cabuyao faced reading difficulties, impacting their ability to recognize word meanings, comprehend text, and express their thoughts effectively. Given the effectiveness of multisensory strategies in addressing similar challenges, this study was designed to investigate the impact of such strategies on improving vocabulary skills.

This study aims to assess the effectiveness of multisensory strategies as an intervention for improving vocabulary deficiencies among Grade 3 pupils. Specifically, it seeks to: (1) determine the pupils' vocabulary proficiency before the intervention, (2) evaluate their vocabulary proficiency after the intervention, and (3) examine how multisensory strategies influenced pupils' learning experiences. By identifying the benefits and challenges of this approach, the study aims to provide insights for educators seeking innovative teaching methods to enhance language development in early learners.

2. METHODOLOGY

2.1. Research Design

This study employed an Explanatory Sequential Mixed-Methods Design to comprehensively evaluate the impact of a multisensory intervention on the vocabulary proficiency of Grade 3 pupils at Payasan Elementary School. This design was selected to combine quantitative data from pre- and post-tests with qualitative insights gathered through participant interviews. The mixed-method approach ensured a thorough understanding of both the measurable outcomes and participants' subjective experiences, enhancing the study's depth and reliability (Wen & Li, 2024).

2.2. Participants

The study targeted Grade 3 pupils at Payasan Elementary School, who were identified as having significant vocabulary deficiencies based on the PHIL IRI (Philippine Informal Reading Inventory) test results. The sample consisted of ten (10) third-grade pupils, identified as being at the 'beginning' level in terms of vocabulary skills. These participants were selected through purposive sampling to ensure the intervention focused on those most in need of vocabulary improvement. The school's principal and the students' parents provided consent for the selected participants to partake in the study.

2.3. Data Collection Methods

The intervention was conducted over two weeks with a total of four (4) sessions, each lasting one hour and a half. The researchers employed four multisensory activities designed to engage pupils' visual, auditory, and kinesthetic senses.

Phase 1: Pictorial Game. The researchers introduced the concept of verbs through direct instruction followed by a pictorial game. Pupils were shown visual representations to understand word meanings. The "WHAT TO DO" game was incorporated, where pupils who failed to follow verbal instructions described the presented images to reinforce vocabulary learning.

Phase 2: Sand Tray Word Activity. After introducing the concepts of antonyms and synonyms, pupils participated in a sand tray activity. Working in groups, pupils wrote synonyms and antonyms of provided vocabulary words in the sand, integrating tactile engagement with language learning.

Phase 3: Rolling a Word Activity. Pupils participated in a dice game designed to reinforce vocabulary knowledge. Each dice roll determined the task: (1) define the word, (2) use it in a sentence, (3) act it out, (4) provide a synonym,

(5) provide an antonym, or (6) select the correct answer from given options. This activity enhanced vocabulary learning through movement and sensory engagement.

Phase 4: Literary Passage Activity. After introducing the concepts of antonyms and synonyms, pupils participated in a sand tray activity. Working in groups, pupils wrote synonyms and antonyms of provided vocabulary words in the sand, integrating tactile engagement with language learning.

Assessment Process. After introducing the concepts of antonyms and synonyms, pupils participated in a sand tray activity. Working in groups, pupils wrote synonyms and antonyms of provided vocabulary words in the sand, integrating tactile engagement with language learning.

2.4. Data Analysis

The pre-test and post-test results were analyzed using mean percentage scores to determine vocabulary improvement. The percentage scores were evaluated using the proficiency level rating scale established by DepEd Order No. 31 s. 2012 to assess the pupils' vocabulary proficiency. Frequency distribution was also applied to highlight common and outlier data points for improved clarity in result interpretation. The data collected from participant interviews were analyzed using thematic analysis. Thematic coding was performed to identify recurring patterns, insights, and experiences that reflected participants' perspectives on the intervention's success and challenges. This qualitative data served to validate and enrich the quantitative findings, offering deeper insights into the intervention's impact on vocabulary development. Table 1 below shows the proficiency level rating scale established by them, showing the percentage scores and their equivalent descriptions.

Proficiency Level

PL= No. of Score x 100

No. of items

Table 1 Table Name Should Be Palatino Linotype 8 Font and Each Letter Should Be Capital and Italik

Equivalent Numerical Value	Frequency
74% - below	Beginning
75% - 79%	Developing
80% - 84%	Approaching
85% - 89%	Proficient
90% - above	Advanced

These categories provide a structured framework for assessing and communicating a learner's vocabulary skills, helping educators identify areas where students may need additional support or enrichment. By clearly defining these levels, the scale ensures a consistent and objective measure of vocabulary proficiency, facilitating targeted instruction and support to appropriately enhance and address each student's vocabulary skills.

3. RESULTS AND DISCUSSION

This chapter presents the data that addresses the study's objectives, focusing on the impact of multisensory strategies in improving the vocabulary skills of Grade 3 pupils. The results are presented in both quantitative and qualitative forms, followed by a comprehensive discussion that aligns with previous research.

Table 2 Level of proficiency in vocabulary of the Grade 3 before the intervention.

Proficiency Level	Frequency	Percentage
Beginning	10	100%
Developing	0	0
Approaching	0	0

Proficient	0	0
Advanced	0	0
Total	10	100%

Table 2 shows the pre-test results of the participants. As it was shown above, all of the participants describe themselves as being at the beginning levels with a 100% rating. These findings strongly indicate that the students exhibited a low level of proficiency in vocabulary during the pre-test and are required to undergo the intervention plan.

Moreover, this aligns with the research study of (Deng & Trainin, 2023; Vaughn et al., 2020) that the students should be enriching their experiences in vocabulary mastery. They also need to increase their motivation and interest to learn vocabulary well. For the teacher, it is suggested to encourage them to consider a better way of teaching vocabulary in order to improve the students' ability to master vocabulary. The teacher should apply interesting methods to develop the student's ability and use interesting materials that will not make the students bored. Supported by the study of (Mahmud et al., 2023), teachers should innovate by applying various teaching methods and utilizing educational technology to create interesting and dynamic learning experiences. This approach helps engage students and prevents monotony, ultimately enhancing their learning abilities and overall educational experience.

Table 3 Level of Proficiency in vocabulary of the Grade 3 pupils after the intervention.

Proficiency Level	Frequency	Percentage
Beginning	0	0
Developing	0	0
Approaching	0	0
Proficient	4	0
Advanced	6	0
Total	10	100%

Table 3 shows the scores of the participants during the post-test. As shown in the table, out of 10 participants, there were 6 pupils who reached the advanced level, and 4 pupils were also described as proficient level out of 10 participants and was described both as advanced and proficient level.

It can be seen that there is an increase in the scores of the participants after the intervention was applied to teaching basic and fundamental vocabulary words. It responded to the weaknesses of the participants during the conduct of the pre-test activity. This implies that the participants have better learning if they are applied to effective teaching pedagogy towards quality education. The result is coherent with the study of international research conducted by Hettiarachchi et al. (2022), has concluded that children who have vocabulary deficiencies are often best attained by using multisensory strategies as a teaching method. By using multisensory strategies in teaching it can improve students vocabulary deficiency by integrating strategies to make the teaching and learning more interactive.

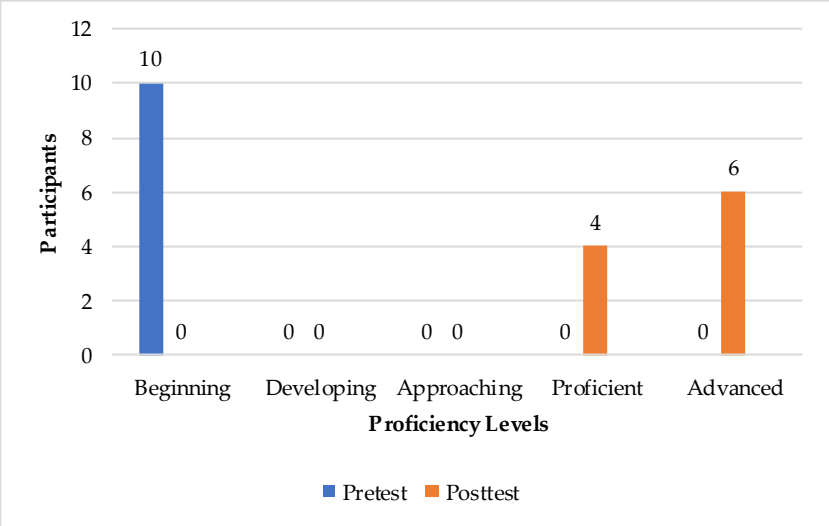

Figure 1 Comparative Result of the Pretest and Posttest of the Participants

Figure 1 shows the comparative results from the pre-test and post-test. In the result, there is a difference shown through the bar graph. This indicates that using multisensory strategies made a great impact on the performance of the pupils on the post-test result compared to the pre-test result of the pupils. It simply implies that the student being taught vocabulary has learned and acquired knowledge. From the analysis, it was revealed that the intervention helped the students improve their vocabulary.

These findings are aligned to the study of López Gómez et al. (2019), incorporating multisensory approach into your classroom successfully found out the impact of utilizing the multisensory approach based on andragogical principles to teach English vocabulary to students. Thus, it increased their motivation for rehearsing, remembering, and applying what the vocabulary learned. Consequently, it can be suggested that the use of these three senses allows the facilitator to assess learners in an entertaining way, which lows the affective filter and allows students to improve their performance at the moment of demonstrating their knowledge. Moreover, instruction is enhanced, and learning connections are made; teaching with a multisensory approach provides additional pathways for the learner to receive information (Morgan, 2021).

4. CONCLUSIONS

The findings of this study provide compelling evidence that multisensory strategies can effectively improve vocabulary proficiency among Grade 3 pupils. By incorporating visual aids, tactile activities, and interactive elements, the intervention enhanced pupils' engagement, comprehension, and retention of vocabulary. The success of this study highlights the importance of diversifying teaching strategies to cater to individual learning styles. Multisensory interventions can bridge gaps in traditional vocabulary instruction by creating more engaging and interactive learning experiences.

Despite the positive outcomes, this study is not without limitations. First, the small sample size of 10 participants limits the generalizability of the findings. Future research involving a larger sample could provide a broader understanding of the intervention's effectiveness. Second, the study was conducted over a relatively short period of two weeks. While improvements were observed, a longer intervention period may provide deeper insights into long-term retention and the sustained impact of multisensory strategies. Third, the study primarily relied on face-to-face delivery of the intervention. While effective, this format may be challenging to replicate in schools with limited resources or during periods requiring remote learning. Future research may explore digital adaptations of multisensory strategies to extend their reach. Lastly, although participant interviews provided valuable qualitative

insights, future studies could incorporate additional qualitative tools such as classroom observations to gain a more comprehensive understanding of student behavior and engagement.

The results of this study have significant implications for educators, curriculum developers, and policymakers. For Educators, teachers are encouraged to incorporate multisensory activities such as pictorial games, dice-based learning tasks, and tactile word games into their classroom practices. These methods can provide alternative learning pathways that benefit students with varied learning styles. For Curriculum Developers, the development of instructional materials that integrate multisensory elements should be prioritized. Creating resources that promote visual, auditory, and kinesthetic engagement can foster improved vocabulary acquisition and overall language proficiency. For Policymakers, the study highlights the need to provide professional development opportunities for teachers to enhance their skills in delivering multisensory instruction. Investing in teacher training programs that emphasize multisensory approaches can improve classroom outcomes and support students with diverse learning needs. By adopting these recommendations, educational institutions can create enriched learning environments that promote stronger vocabulary retention and long-term academic success.

5. REFERENCES

[1] Agalyasri. G., & G, Bhuvaneswari. (2023). Enhancing Vocabulary Instruction for Children With Speech and Hearing Impairments: The Role of Multiple Sensory Modalities. Theory and Practice in Language Studies, 13(10), 2429–2438. https://doi.org/10.17507/tpls.1310.01

[2] Belbes, M. E., Bandoy, M. M., Tan, C. S., Yazon, A. D., & Buenvinida, L. P. (2022). Effectiveness of Jolly Phonics Program towards Strengthening of Language Literacy: Experimental Case in the Philippines. International Journal of Theory and Application in Elementary and Secondary School Education, 4(2), 202–218. https://doi.org/10.31098/ijtaese.v4i2.1077

[3] Bhandari, B. L. (2023). Problems Faced by Bachelor-Level Students in Learning English Vocabulary. Curriculum Development Journal, 31(45), 1–14. https://doi.org/10.3126/cdj.v31i45.68974

[4] Corpuz, J. M. M., Morales, A. N., Clarin, A. S., Dionio, B. B., & Cocolan, J. V. (2024). Students' Vocabulary Skills in Relation to their Reading Comprehension in Language Literature. International Journal of Research and Innovation in Social Science, VIII(X), 2137–2150. https://doi.org/10.47772/IJRISS.2024.8100183

[5] Deng, Q., & Trainin, G. (2023). The Effect of a Self-Regulated Intervention on Vocabulary Knowledge and Self-Regulated Learning Skills for English Language Learners. Reading Psychology, 44(7), 761–791. https://doi.org/10.1080/02702711.2023.2187908

[6] Hasan, N. (2024). A study on Student's Challenges and Problems in Learning English Vocabulary. International Journal for Scientific Research, 3(6), 207–227. https://doi.org/10.59992/IJSR.2024.v3n6p7

[7] He, X., & Deocampo, M. F. (2023). A theoretical review of vocabulary acquisition level and its influence on students reading comprehension. The EUrASEANs: Journal on Global Socio-Economic Dynamics, 6(43), 389–398. https://doi.org/10.35678/2539-5645.6(43).2023.389-398

[8] Hettiarachchi, S., Walisundara, D. C., & Ranaweera, M. (2022). The effectiveness of a multisensory traditional storytelling programme on target vocabulary development in children with disabilities accessing English as a second language: A preliminary study. Journal of Intellectual Disabilities, 26(1), 90–108. https://doi.org/10.1177/1744629520961605

[9] López Gómez, L. F., Montes, B., Yessica, O., & Rodríguez Ramírez, E. (2019). Teaching vocabulary using multisensory approach ii.

[10] Mahmud, M. M., Mat, N. H. C., Manap, M. R., Zakaria, S. F., Tazijan, F., & Wong, S. F. (2023). Sustainability of educational technologies: An approach to ratio and feedback. Asian Journal of Contemporary Education, 7(2), 56–65. https://doi.org/10.55493/5052.v7i2.4895

[11] Mark De Guzman Fabella, & Nimfa Malbog Abaoag. (2023). Intermediate grade school learners' sex, word recognition, and reading comprehension. World Journal of Advanced Research and Reviews, 20(3), 1346–1356. https://doi.org/10.30574/wjarr.2023.20.3.2270

[12] Mirkina, Iu. Z., & Enkuleva, P. V. (2024). The multisensory approach to vocabulary skills development in young learners teaching. THE TIDINGS of the Baltic State Fishing Fleet Academy Psychological and Pedagogical Sciences (Theory and Methods of Professional Education), 3(69), 154–158. https://doi.org/10.46845/2071-5331-2024-3-69-154-158

[13] Morgan, H. (2021). Howard Gardner's Multiple Intelligences Theory and His Ideas On Howard Gardner's Multiple Intelligences Theory and His Ideas On Promoting Creativity Promoting Creativity. https://aquila.usm.edu/fac_pubs

[14] Oktafianto, K., Masitoh, S., & Hendratno, H. (2018). The Effect of Multisensory Method on Children Language Development. Proceedings of the 2nd International Conference on Education Innovation (ICEI 2018). https://doi.org/10.2991/icei-18.2018.61

[15] Pishghadam, R., Boustani, N., Gerwien, J., Shayesteh, S., & Al Abdwani, T. (2024). Audio-visual entrainment, cranio-electro stimulation, and sensory involvement: rival effects on attention and L2 vocabulary retention. Applied Psycholinguistics, 45(6), 1067–1085. https://doi.org/10.1017/S0142716424000419

[16] Rahmatullah, I. (2024). Application of Gamification-Based Multisensory Methods in Improving the Brain Ability of Children with Intellectual Disabilities in Learning English Vocabulary. East Asian Journal of Multidisciplinary Research, 3(9), 4065–4084. https://doi.org/10.55927/eajmr.v3i9.10767

[17] Romero, Y. (2020). Lazy or Dyslexic: A Multisensory Approach to Face English Language Learning Difficulties. English Language Teaching, 13(5), 34. https://doi.org/10.5539/elt.v13n5p34

[18] Sun, H., & Yin, B. (2022). Vocabulary Development in Early Language Education (pp. 57–82). https://doi.org/10.1007/978-3-030-91662-6_3

[19] The effectiveness of a program based on the multisensory approach in improving the working memory of students with learning disabilities. (2023). Zanco Journal of Humanity Sciences, 27(SpB). https://doi.org/10.21271/zjhs.27.SpB.18

[20] Vaughn, S., Capin, P., Scammacca, N., Roberts, G., Cirino, P., & Fletcher, J. M. (2020). The Critical Role of Word Reading as a Predictor of Response to Intervention. Journal of Learning Disabilities, 53(6), 415–427. https://doi.org/10.1177/0022219419891412

[21] Wen, X., & Li, H. (2024). Exploring subjective cognitive decline in older adults: a mixed methods approach. Innovation in Aging, 8(Supplement_1), 1370–1370. https://doi.org/10.1093/geroni/igae098.4367