International Journal of Education, Vocational and Social Science
https://e-journal.citakonsulindo.or.id/index.php/IJEVSS
E-ISSN : 2963 4954
IJEVSS

The Effectiveness Of A Multisensory Method Based on Project-Based Learning in Improving Reading Comprehension Skills Among Slow Learners in Grade V

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Abstract

This study aims to test the effectiveness of the Project Based Learning (PjBL)-based multisensory method in improving the reading comprehension skills of slow learner students of grade V of SD Negeri 007 Malinau Kota. The study used a quantitative approach with a pre-experimental one-group pretest-posttest design. The research subjects consisted of 6 slow learner students of grade V selected using a saturated sampling technique. The research instrument was a reading comprehension test that had been validated by three experts (expert judgment) with the Aiken's V validity test and reliability using the Intraclass Correlation Coefficient (ICC). The intervention was given in three meetings with an illustrated storyboard project that integrated multisensory activities (visual, auditory, kinesthetic, tactile) into the PjBL stages. Data analysis was carried out using the N-Gain test and paired sample t-test. The results of the study showed a very significant increase, with the average pretest score increasing from 10.17 to 19.50 in the posttest and an average N-Gain of 0.946 (94.63%) which is included in the high effective category. The paired sample t-test produced a significance of 0.000 ($p < 0.05$) and the Sign test showed 0.031 < 0.05, which confirmed a significant difference between the pretest and posttest. These findings prove that the PjBL-based multisensory method is effective in improving the reading

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comprehension skills of slow learner students.

Keywords:Multisensory Method; Project Based Learning; Reading Comprehension; Slow Learner; Elementary School.

INTRODUCTION

Reading comprehension is a core literacy skill that determines the learning success of elementary school students, because almost all subjects require students to be able to grasp the main idea, interpret information, and draw conclusions from the text.(Afriliani et al., 2024). Reading comprehension is not just about being able to read fluently, but involves cognitive processes such as constructing meaning, connecting prior knowledge, and monitoring comprehension while reading.(Rusli et al., 2025).

In heterogeneous classroom learning, the challenge of reading comprehension becomes increasingly apparent for students with special learning needs, including slow learners.(Ultabaini & Pujaningsih, 2024)This group generally requires a more gradual learning pace, meaningful repetition, and more concrete strategic support to be able to understand the text as a whole.(Jaenah, 2024). Study(Hanik & Prihandono, 2024)shows that learning with structured implementation can help improve learning outcomes and retention of slow learner students, especially when learning strategies are made more systematic.

The results of the researchers' initial observations and interviews at SD Negeri 007 Malinau Kota found that fifth-grade students, classified as slow learners, experienced difficulties with reading fluency and accuracy, difficulty understanding reading content, and some still showed delays in writing. Limited supporting infrastructure, such as internet access, projectors, and computers, also contributed to suboptimal learning.(Robi et al., 2023). This problem has an impact on the achievement of Indonesian language learning outcomes in narrative text material; most students in the target group still obtain scores below the Learning Objective Achievement Criteria (KKTP) of 70.

One approach deemed appropriate to these needs is the multisensory method, which utilizes more than one visual, auditory, kinesthetic, and tactile modality to make information easier to process and remember (Rusli et al., 2024).(Agustin & Suhartono, 2025)Studies have shown that multisensory strategies can support reading learning in students with literacy challenges. In addition to multisensory learning, the Project-Based Learning (PjBL) model is considered potential because it provides meaningful learning experiences through projects,

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collaboration, and tangible products, enabling students to process information more deeply and become actively involved.(Imbaquingo & Cardenas, 2023). Study(Tenni et al., 2025)shows that PjBL can improve reading and comprehension skills because students read to complete projects that have clear goals.

However, previous studies tend to separate the implementation of the two approaches: some emphasize PjBL to improve understanding, while others emphasize multisensory to overcome literacy barriers.(Rama Dani & Hertati, 2024), and not many have integrated the two in Indonesian language learning for slow learner students (Astuti & Adnan, 2024). This study has a novelty by testing the integration of multisensory methods within the PjBL framework to improve the reading comprehension skills of slow learner students in grade V, especially in school settings with a small number of students such as SD Negeri 007 Malinau Kota. Based on this description, this study aims to test the effectiveness of the multisensory method based on Project Based Learning (PjBL) in improving the reading comprehension skills of slow learner students in grade V of SD Negeri 007 Malinau Kota.

RESEARCH METHODS

This study used a quantitative experimental approach with a pre-experimental one-group pretest-posttest design, in which one group of subjects was given an initial test (pretest) before treatment and a final test (posttest) after treatment, without a control group. This design was chosen due to the limited number of subjects and school conditions that did not allow for a comparison group.(Charli et al., 2022), but can still provide an understanding of the direction and magnitude of changes in student scores if analyzed carefully within an appropriate inferential framework.(Kauffman et al., 2018).

The study was conducted at SD Negeri 007 Malinau Kota, Malinau Kota District, Malinau Regency, North Kalimantan. The study population was all 6 fifth-grade students, and all of them were sampled using a saturated sampling technique (total sampling) due to the small population size. The independent variable in this study was the multisensory method based on Project Based Learning, while the dependent variable was the reading comprehension skills of slow learner students.

Data collection was conducted through three techniques: observation, documentation, and testing. Observation was used to measure the suitability of the learning implementation with the principles of the multisensory method. Documentation was used to obtain data on students' daily Indonesian language scores as a reference for initial abilities. The test consisted of multiple-choice

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questions and descriptions on narrative text material, arranged based on reading comprehension skill indicators, and given in the form of a pretest before treatment and a posttest after treatment. The test instrument was validated by three experts (expert judgment) using the Aiken's V validity test, and its reliability was tested using the Intraclass Correlation Coefficient (ICC).

The treatment in the form of implementing a multisensory method based on PjBL was given in three meetings through a project to create an illustrated storyboard on the narrative text material "Sayangi Bumi", which integrates the activities of listening to stories, reading together, compiling storyboards or simple comics, role-playing, and writing parts of the story in stages by involving visual, auditory, kinesthetic, and tactile modalities simultaneously.

Data analysis begins with the Shapiro-Wilk normality test to determine the type of hypothesis test used, followed by the N-Gain calculation to measure the effectiveness of the treatment, as well as the paired sample t-test and the Sign test as non-parametric complements to test the significance of the difference between the pretest and posttest results.

RESULTS AND DISCUSSION

Prerequisite Test Results and N-Gain

The results of the Shapiro-Wilk normality test showed that the data were normally distributed, with the calculated W greater than the W table (0.908 > 0.788) and the significance value of the Test of Normality of 0.421 (> 0.05), so the hypothesis analysis was continued using the paired sample t-test.

Table 1. N-Gain results of slow learner students' reading comprehension skills

Respondents	Pretest	Posttest	N-Gain	% N-Gain
1	10	19	0.900	90.00
2	11	18	0.778	77.78
3	9	20	1,000	100.00
4	13	20	1,000	100.00
5	11	20	1,000	100.00
6	7	20	1,000	100.00
Average	10.17	19.50	0.946	94.63

The average N-Gain percentage of 94.63% is in the high effective category (>76%), which shows that the multisensory method treatment based on Project Based Learning is effective in improving the reading comprehension skills of slow learner students and is able to provide direct understanding and meaning for students.

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Hypothesis Test Results (Paired Sample T-Test and Sign Test)

The results of the paired sample t-test showed an average pretest score of 10.17 and a posttest score of 19.50, with a calculated t = 9.778 and a significance level (2-tailed) of 0.000. Since the significance value is less than 0.05, the null hypothesis (H0) is rejected, meaning there is a significant difference between the pretest and posttest scores. The 95% confidence interval ranges from -11.787 to -6.880, consistently indicating that the posttest score is always higher than the pretest. This result is supported by the non-parametric Sign test with a p-value of 0.031 <0.05: all six respondents showed a positive change, confirming a significant effect of treatment on the reading comprehension skills of slow learner students.

DISCUSSION

The almost twofold increase in scores, from an average of 10.17 to 19.50, confirms that the PjBL-based multisensory method is effective in addressing the specific learning needs of slow learner students, who have below-average cognitive capacity and therefore experience obstacles in processing high-level information such as understanding reading content, drawing conclusions, and answering text-based questions.

The effectiveness of this method can be explained through several theoretical foundations. First, the PjBL model places students at the center of learning (student-centered), in line with constructivism theory, which emphasizes that knowledge is constructed by students themselves through direct experience completing projects. Second, from the perspective of Atkinson-Shiffrin's information processing theory, information must pass through the stages of sensory memory, short-term memory, and long-term memory. Slow learners often experience obstacles in the transition from short-term memory to long-term memory.(Amelia, 2016). Multisensory activities help this process by providing repetition of information through various sensory modalities linked to real-life experiences through projects, making the transfer of information to long-term memory more effective.

This finding aligns with research by Akrom and Firdaus (2026), which showed that integrating multisensory learning into the PjBL framework significantly increased students' average scores, from 32.0 in the baseline to 72.2 in the second cycle. Similar success was also found in the development of Augmented Reality media with a constructivist approach, with an N-Gain value reaching the high category of 0.8049.(Sundari & Margaretha, 2023). In line with that, a structured learning approach such as Direct Instruction with flashcard media(Anjani & Kurniawati, 2025), sight words and phonemic awareness approach(Purnomo & Royanto, 2025),

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the animated audio-visual media Powtoon which increased the average score from 35 to 65(Purba & Pamungkas, 2025), as well as the Index Card Match method(Denavia & Sarajar, 2024), have both been shown to help slow learners improve their reading skills by providing clear expectations, explicit instruction, and consistent feedback.

The success of the intervention in this study was also supported by the gradual presentation of the material, consistent feedback, and the use of media that engages multiple senses, which psychologically contributed to increased student self-confidence. This significant improvement confirms that the root of the main problem for slow learners lies not in the inability to read words, but rather in the difficulty of processing and constructing meaning from the text they read (Purnomo & Royanto, 2025). With a structured, concrete approach, involving multiple senses, and providing clear goals through projects, slow learners have been shown to significantly develop their academic potential.

This study has several limitations, including the limited number of subjects (6 students), which requires caution in generalizing the findings; the lack of a control group, which makes it difficult to isolate specific treatment effects from other factors; and the relatively short duration of the intervention, which precludes measuring long-term retention. Nevertheless, the one-group pretest-posttest design remains valid as a preliminary study and provides strong empirical evidence for the method's effectiveness.

CONCLUSION

Based on the research results and discussion, it can be concluded that the multisensory method based on Project Based Learning (PjBL) is effective in improving the reading comprehension skills of slow learner students in grade V of SD Negeri 007 Malinau Kota. This conclusion is supported by the results of the paired sample t-test which shows a significant difference between the pretest (10.17) and posttest (19.50) with $p = 0.000$ ($p < 0.05$), as well as the results of the Sign test of 0.031 (<0.05) which indicates a significant change from before to after treatment. These findings confirm that the multisensory method based on PjBL is able to provide direct understanding and meaning for slow learner students, help overcome their cognitive barriers, and ultimately improve their literacy skills significantly.

Based on the research results, several suggestions can be given: Teachers are advised to develop and adopt multisensory methods based on PjBL and adapt them to classroom conditions. Principals are advised to provide supporting infrastructure such as letter cards and educational puzzles, and hold training or workshops for teachers. Parents are expected to provide support at

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home through pictures, books, letter cards, and games, and always provide appreciation for small progress achieved by students. For future researchers, it is recommended to use a stronger experimental design with a control group and a wider sample to make research results more accurate and generalizable.

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