The Impact of Strategic Intervention Materials on Reading Proficiency Among High School Students in the Philippines: An Experimental Study

**Abstract**

This study aims to determine the significant differences in students’ pretest and posttest scores following the use of the Strategic Intervention Material (SIM). Utilizing a quasi-experimental, nonequivalent control group pretest-posttest design, the study involved 23 identified struggling readers from Laureta National High School's National Learning Camp in Tagum City, Philippines, during the 2024–2025 school year. The SIM was rigorously validated to support students with reading difficulties. Assessments were guided by a Table of Specifications (TOS) and Bloom’s Taxonomy to ensure alignment with key learning areas and cognitive skill levels. The experimental group showed a big improvement, with their average pretest score of 8.652 (21.63%) increasing to an average posttest score of 38.391 (95.98%) after using the SIM, which is a significant change in scores (t = -44.854, df = 22), showing that SIM effectively helps improve academic achievement. In conclusion, the findings affirm that SIM significantly improves student comprehension and performance. The use of targeted instructional tools like SIM can help bridge learning gaps, particularly among struggling learners, and support better educational outcomes. This underscores the value of integrating SIM into instructional strategies to foster improved academic achievement and learner engagement.

**Keywords:** *Strategic Intervention Materials, Experimental Study, Reading, instructional strategies*

INTRODUCTION

Low reading competence among high school students in the Philippines has raised questions about the efficacy of traditional educational approaches. Many students struggle with decoding, comprehension, and fluency, which negatively impacts their academic performance across areas (1). In addition, reading proficiency is a core ability that has a substantial impact on academic success and lifelong learning. Many developing countries, like the Philippines, continue to struggle with reading comprehension (2). In response to this issue, the Department of Education has advocated for the adoption of new teaching methods, such as Strategic Intervention Materials (SIMs), which are intended to target specific learning gaps through focused and engaging activities. SIMs are learner-centered materials designed to simplify complicated reading ideas and promote retention and comprehension (3). The Philippine educational system has made various measures to alleviate the literacy gap, yet the issue remains among high school pupils, particularly those categorized as struggling readers.

Despite several efforts, there has been little empirical study on the efficiency of instructional aids such as Strategic Intervention Materials (SIMs) in enhancing reading competency at the high school level. Most previous research focuses on generic interventions rather than evaluating the results of SIMs in real-world classroom settings (4). Although many studies have looked at reading comprehension and literacy help for Filipino students, we still don't know enough about how Strategic Intervention Materials (SIMs) specifically affect high school students when using careful experimental methods. Most of the available research focuses on general literacy programs or early grade interventions, leaving out the issues faced by high school children who continue to struggle with reading (5). Furthermore, much of the existing material does not situate SIM use in national initiatives such as the National Learning Camp, a recent project aimed at boosting foundational skills. This work demonstrates a fundamental gap in empirical evidence and contextual relevance. Therefore, this study intends to address this hole by studying the influence of validated SIMs on the reading proficiency of struggling high school readers in the Philippines using an experimental approach (6).

Despite the introduction of SIMs in various educational situations, empirical evidence on their usefulness is scarce, notably in Philippine high schools. This study aims to solve the issue of low reading proficiency by evaluating the impact of SIMs using an experimental approach. Although there is some empirical evidence regarding students struggling with reading, the researcher found that there has not yet been a local study specifically addressing the use of Strategic Intervention Material (SIM) as a tool for improving reading skills. The lack of concrete data on students with such issues led to the conduct of this study and the development of an appropriate SIM. It was also identified that 23 students from Laureta National High School have severe difficulties in reading—they struggle to recognize letters and lack the ability to understand texts. Since most previous studies were qualitative, the researcher employed a quasi-experimental design to measure the effectiveness of SIM in strengthening their skills in Filipino. In addition, this study aims to provide concrete evidence that can be used by teachers and education administrators to improve reading instruction strategies. The findings will be disseminated through publications, seminars, and training organized by the Department of Education (DepEd) to serve as a basis for enhancing policies and programs in reading instruction.

**Theoretical Background**

Vygotsky (1978) introduced the theory of the Zone of Proximal Development (ZPD). As part of this development, scaffolding focuses on breaking down information or parts of a new skill into pieces that the student can understand. In this process of scaffolding, education should be offered to students at a level where they can learn with the help of peers, teaching strategies, and regular assessment (7). Vygotsky's concept of the ZPD (Zone of Proximal Development) (1978) is a key idea in educational psychology, emphasizing the gap between what a learner can achieve independently and what they can do with help from someone more knowledgeable, such as a teacher, a fellow student, or a mentor (8). The ZPD represents the range of tasks that a student can perform with assistance but cannot yet complete on their own. Vygotsky stresses that learning is most effective within this zone, where the challenge is within their capabilities but still requires support. They refer to this process of providing temporary, structured assistance as scaffolding. Scaffolding involves giving initial help to the student, which is gradually withdrawn as the student becomes more skilled and capable of completing the task independently (9).

When it comes to reading, the Strategic Intervention Material (SIM) is a teaching tool designed to address specific needs and gaps in students' learning. The SIM is closely connected to Vygotsky's concept of the ZPD and the idea of scaffolding, as it aims to enhance students' reading skills by providing strategies and activities structured within their ZPD (10). Teachers first identify the reading skills that students can perform with some assistance but cannot yet do independently, which clarifies the ZPD for each student. Based on this assessment, the SIM is created to include reading tasks and exercises that provide the right level of challenge for students while being achievable with the support provided (11).

**Research Objectives**

This study aims to identify the significant differences in the average score increase among students. Specifically, this research aims to answer the following questions:

1. What is the mean score of students in the pre-test using SIM?
2. What is the mean score of students in the post-test using SIM?
3. Is there a significant difference between the mean gain scores in the final test and the initial test of students who were exposed to SIM?

**Hypothesis**

The following hypotheses are tested using the 0.05 level of significance:

1. There is no significant difference between the pre-test and post-test scores of students using SIM.
2. There is no significant difference between the mean gain scores of students who received SIM.
3. There is no significant difference in students' reading proficiency at the time of the post-test.

**METHODS**

This chapter contains the methods and processes used to gather all the data necessary to complete this study. It covers the research design, research location, research respondents, research instruments, instrument verification, data collection methods, and statistical data processing.

**Research Design**

This study used a quasi-experimental design, also known as a pretest-posttest, non-equivalent group design. Non-random methods select similar experimental groups in quasi-experiments (12). If it is not possible to assign experimental groups randomly, many external factors that affect both the control and intervention groups can still be considered, often by matching based on characteristics considered important for the program's goals. The nonequivalent control group pretest-posttest design is a type of quasi-experiment that is widely used. (13). In fact, it is the most common design in evaluating the effects of social programs. It is like the randomized pretest-posttest control group design, except that the comparison group is created through matching rather than random assignment, which is why it is called nonequivalent. In addition, the respondents are not randomly assigned and have no equal opportunity for assignment (14).

This study used purposive sampling to select participants who identified as struggling readers among high school students. Purposive sampling was used to ensure that the study included students who would likely gain the most from using Strategic Intervention Materials (SIM), making it easier to evaluate how these materials affected their reading skills. In addition, purposive sampling is especially beneficial in experimental research where specific participant traits are critical to the study's objectives. The selected pupils were divided into two groups: the experimental group, which received the SIM-based intervention, and the control group, which remained with traditional instruction techniques (15). In addition, the study used purposive sampling to select 23 junior high school students from Laureta National High School who were identified as frustration-level readers based on their PHIL-IRI diagnostic test results. "These students were accepted into the National Learning Camp because they matched the study's inclusion criterion of having severe issues with reading comprehension.

This study maintains its credibility and integrity by employing a rigorous quasi-experimental research design that includes pretest-posttest comparisons and controlled group conditions to establish causal relationships (16). The study is trustworthy and dependable because it uses standardized assessment tools, selects participants based on specific criteria (like struggling readers), and uses pre-approved Strategic Intervention Materials (SIM) from experts. Ethical factors, such as gaining informed consent and safeguarding the confidentiality of student data, contribute to the study's credibility. Furthermore, regular monitoring of student answers and learning outcomes over a set period strengthens the findings, establishing the research as a credible contribution to educational practice and policy development (17).

**Location of Study**

The research had been conducted at Laureta National High School, located in the vibrant city of Tagum, in the province of Davao del Norte, Philippines. The study had been carried out in the school year 2024-2025, with the aim of becoming fully acquainted with the dynamics that existed within the said area. Conducting the research within the school made it easier for the researcher to administer and receive questionnaires based on the participants' responses.

**Research Instruments**

They used Strategic Intervention Material (SIM) to help students who had trouble reading. The only participants in the study were children identified as "frustration readers" by their teachers. One of the study's problems was that it was difficult to find people from the specific secondary school who were willing to answer questions. The SIM went through a long validation procedure to make sure it was relevant and of high quality before it was used as the main intervention tool.

Utilized a Table of Specification (TOS) to pinpoint the measured domains of success and to guarantee impartial and representative test question examples. The TOS assisted in constructing assessments focused on the key components of the subject and appropriately evaluated these parts based on their importance (19). This structured approach ensured that all essential topics were covered, and the questions were evenly distributed, providing a balanced assessment of students' knowledge and skills. Utilizing the TOS not only aided in the development of assessments but also offered evidence that the exam had content validity, meaning it accurately covered the material it was supposed to assess (20). Additionally, I have used the categories under Bloom's Taxonomy to identify the cognitive processes involved in answering questions. Bloom's Taxonomy has helped classify questions based on different levels of cognitive skills, from simple recall of facts to higher levels of thinking, such as analysis and synthesis of information (21). This method ensures that the assessment not only evaluates the knowledge and understanding of students but also their ability to apply, analyze, and evaluate information (22).

**Research Respondents**

The researcher used the students of the National Learning Camp (NLC) of Laureta National High School in Tagum City, Davao del Norte, to conduct this study. The researcher selected 23 students, identified as readers, who are performing at a failing level for the study. In addition, the researcher used a non-probability and non-random sampling technique. The researcher relied on the outcomes of their reading evaluation (23). Non-random sampling is a type of non-probability sampling that uses respondents who are easily accessible to the researcher, where the first available primary source of data is used for the research without additional requirements.

**Table 1. Distribution of Respondents**

|  |  |
| --- | --- |
| **Grade Level** | **Respondents** |
| **7** | 7 |
| **8** | 6 |
| **9** | 6 |
| **10** | 4 |
| **Total** | **23** |

**Research Procedure**

The researcher collected data using the following methods after receiving approval from the Panel of Examiners and a letter of support from the Office of the Institute of Professional Studies: The researcher wrote a letter to the superintendent of schools for Davao del Norte requesting permission to conduct research at the selected school. After securing permission, the researcher sought authorization from school officials and gained access to the respondents. The researcher also obtained formal consent from the respondents and participants to collect data. The respondents answered the questionnaire at their convenience, using the individual interview. The researcher ensured that the respondents’ answers remained confidential. The data from the questionnaire were properly gathered, sorted, and tabulated. The researcher compiled all the information obtained from the questionnaire. The data were analyzed and interpreted to draw conclusions and provide recommendations.

**RESULTS AND DISCUSSION**

This section contains the analysis and interpretation of the data gathered from the questionnaires and tests conducted with the respondents. It aims to assess the level of understanding and reading ability of students using the Strategic Intervention Material (SIM) for the school year 2024-2025. The presentation of the data is carefully organized based on the statements of the problem to clearly show the impact of SIM on improving students' reading skills.

**Mean score of students in the pretest using** **Strategic Intervention Material (SIM)**

**Table 2. Pre-Test Score**

|  |  |
| --- | --- |
| Mean | 8.652 |

Table 2 shows the mean score in the pretest of the experimental group. A descriptive analysis was used to determine the average score of students who used Strategic Intervention Materials (SIM) during the pretest. The pretest results presented in Table 1 provide important insights into the initial performance of students before the intervention using SIM. With 23 valid observations, the average score in the pretest is 8.652. Since there are 45 questions on the test, this low average indicates that students answered correctly on only about 21.63% of the questions before the SIM was presented. This value suggests that their knowledge of the subject is limited, and there is still a significant lack of understanding. The low mean scores additional teaching materials or interventions, such as SIM, to improve learning outcomes.

The standard deviation for the test is 2.534, indicating a moderate level of variability in student performance. Although the standard deviation is not particularly high, it suggests that students did not perform uniformly, some scored higher than others. Overall, however, the group’s performance remains low. The range of scores in the pretest is also notable, with the lowest score being 3 and the highest 13. This means that even the highest-performing student answered only 32.5% of the questions correctly, while the lowest-performing student answered just 7.5%. These results point out the need for targeted interventions to enhance students’ understanding and retention of the subject matter.

**Mean score of students in the posttest using Strategic Intervention Material (SIM)**

**Table 3. Post Test Score**

|  |  |
| --- | --- |
| Mean | 38.391 |

Table 3shows the mean score of the posttest for the experimental group. They used descriptive analysis to determine the mean score of students who utilized the Strategic Intervention Material (SIM) in the posttest. The post-test results showed a significant change in the performance of the students after using SIM. The mean score in the posttest increased significantly to 38.391, which corresponds to approximately 95.98% of questions answered correctly by the students. This sudden increase in the mean score demonstrates the effectiveness of SIM in enhancing student understanding and learning. The difference in the mean scores of the pretest and posttest indicates a dramatic improvement in learning outcomes, highlighting the positive impact of using strategic interventions to support student learning.

The standard deviation in the post-test is slightly higher at 3.026, indicating a small increase in the variability of student performance. However, this increase is not very significant and suggests that while most students showed improvements, there may be slight differences in the level of development. Despite this, the overall trend shows that the group has become more consistent at a high level of performance after using SIM. The lowest score in the posttest is 33, and the highest score is 44, indicating that even the student with the lowest performance answered 82.5% of the questions correctly. This is a significant improvement from the pretest, where the lowest score was only 3. The highest score in the posttest, 44, shows that some students are almost perfect in their understanding of the material after the intervention.

**Significant difference between the mean gain scores**

**Table 4. Paired Samples T-Test**

|  | | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Measure 1** | |  | | **Measure 2** | | **t** | | **df** | | **p** | |
| Pretest |  | - |  | Posttest |  | -44.854 |  | 22 |  | < .001 |  |
|  | | | | | | | | | | | |
| *Note.*  Student's t-test. | | | | | | | | | | | |

|  |  |
| --- | --- |
| **Proficiency Level** | |
| Mean | |
| Pretest | Posttest |
| 8.6522% | 38.3913% |

A Paired Samples T-Test was conducted to determine the significant difference in mean gain scores (posttest minus pretest) of students using SIM.

Table 4 shows a significant difference in the mean gain score (posttest-pretest) of students who used SIM. A paired t-test was conducted to test whether there was a significant difference in the mean gain scores of students who used SIM. The paired samples t-test presented in the table provides a statistical analysis of the difference in student performance before (pretest) and after (posttest) using the Strategic Intervention Material (SIM). The results of the t-test show a t-value of -44.854 with a degree of freedom (df) of 22. This test was designed to compare the means of two related groups; in this case, the same group of students was assessed before and after the SIM intervention.

The p-value for this test was reported to be less than 0.001, indicating that the result is statistically significant at a very high level. In hypothesis testing, a p-value less than 0.05 is generally considered significant, meaning there is strong evidence to reject the null hypothesis (which states that there is no difference between the pretest and posttest scores). A p-value of less than 0.001 indicates an even higher level of significance, demonstrating that the likelihood of these results occurring by chance is less than 0.1%. In addition, the results of the t-test, with a very large t-value and a highly significant p-value, indicate that the SIM is highly effective in enhancing students' learning. The students' scores on the posttest were significantly higher than their scores on the pretest, suggesting that the SIM helped them to better understand the material. Due to the size of the t-value, the extent of the difference in the means of the pretest and posttest is significant. This shows that the impact of the SIM is not only statistically significant but also practically important, resulting in substantial improvement in the learning of the involved students.

The degree of freedom (df = 22) represents the number of independent observations in the dataset minus the number of parameters estimated (in this case, it is the number of students minus one). The fact that there are 23 students included in the study provides confidence in the findings, as the sample size is sufficient to determine a significant difference between the pretest and posttest scores. The t-test examines whether the difference between the pretest and posttest scores follows a normal distribution, and the significant results indicate that this assumption is true for the data in this study. Hence, the results of the paired sample t-test provide strong evidence that the use of strategic intervention material led to a significant improvement in learning. The large difference between the pretest and posttest scores, along with high statistical significance, supports the conclusion that students learned the material more effectively after using the SIM.

**CONCLUSION**

The findings from the pretest indicate a significant concern about students' lack of understanding prior to implementing the Strategic Intervention Material (SIM). The initial assessment highlighted significant gaps in knowledge, indicating that many students struggled to grasp the lesson effectively. This study demonstrates a critical need for targeted teaching strategies to improve learning outcomes. The variability in performance suggests that while some students exhibited slightly better comprehension, many require additional support to enhance their academic skills. On the contrary, the results of the posttest demonstrate remarkable improvement in the students' performance following the introduction of SIM. The significant increase in scores confirms that students achieved a higher level of understanding and retention of the material. This positive change indicates that SIM effectively addressed the gaps identified in the pretest, allowing students to engage more deeply with the content. The overall trend shows that most students not only improved but continued to show progress, highlighting the success of the intervention.

The statistical analysis confirmed that the difference between pretest and posttest scores is significant, reinforcing the conclusion that SIM has a significant impact on student learning. The results indicate that the intervention led to substantial improvements in knowledge and understanding, emphasizing the effectiveness of integrating strategic materials into teaching methods. This evidence strongly supports the idea that targeted interventions like SIM can play a crucial role in enhancing student success and developing a more effective learning environment.

**RECOMMENDATION**

It is recommended that schools incorporate these materials into their regular curriculum. This integration will provide students with continuous access to teaching resources that address their specific learning needs. The integration of SIM into daily lessons will enable teachers to ensure that all students receive the necessary support to improve their understanding of complex subjects, thereby filling the knowledge gaps that were previously seen in pretest results. Moreover, training sessions may focus on how to effectively implement and adapt the SIM in their teaching methods. By providing teachers with the necessary skills and knowledge, they will be able to better facilitate student engagement with the materials and foster a more profound understanding of the content. Group activities and interactions with fellow students enable students to share knowledge and learn from each other, creating a supportive community that promotes more profound understanding. Hence, teachers customize SIM to fit different learning styles and abilities. By providing various learning materials and activities, teachers can ensure that all students, regardless of their initial performance level, receive appropriate challenges and support. Feedback from students and teachers on the materials and teaching methods can help determine what works and what doesn't.

**CONSENT**

As per international standards or universities standard, respondents' signed consent was the author(s) collected and preserved the materials.

**ETHICAL APPROVAL**

The researcher followed all the rules for doing the study, such as the technique of assessment and the use of standardized criteria. Participation is voluntary, and privacy, secrecy, and permission are all important. The rules of the Assumption College of Nabunturan Ethics Review Committee regarding technology and organizational/location issues were strictly followed. The researchers got permission to do the study.

**Disclaimer (Artificial intelligence)**

Option 1:

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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