

# THE IMPACT OF MANIPULATIVES-BASED REMEDICATION ON READING COMPREHENSION SKILLS OF ACN STUDENTS: A QUASI- EXPERIMENTAL STUDY

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## ABSTRACT

*This quasi-experimental study examined the impact of manipulative-based remediation on students' reading comprehension skills. The investigation employed a pretest-posttest design, analyzing students' reading comprehension before and after the intervention. Initial pretest results indicated that students were significantly below the expected proficiency level, underscoring the need for improvement. Following the implementation of manipulative tools, post-test scores demonstrated a substantial improvement, showcasing the positive effect of the intervention. A paired t-test confirmed the statistical significance of this improvement, highlighting the beneficial impact of manipulative-based remediation on reading comprehension. However, while the post-test results indicate notable progress, they also reveal that further interventions are necessary to achieve the desired proficiency standards. The findings suggest that integrating manipulative tools into educational strategies can effectively enhance reading skills, but a comprehensive approach, including personalized instruction and ongoing assessment, is essential for achieving and maintaining high levels of reading proficiency. This study contributes to the growing body of evidence supporting the use of interactive and hands-on learning methods in education. Additionally, the study emphasizes the importance of a holistic educational approach. While manipulative tools have proven beneficial, the integration of other instructional methods, such as personalized instruction tailored to individual student needs and continuous assessment, is crucial. This multifaceted strategy ensures that improvements in reading comprehension are not only achieved but also sustained over time. Therefore, the study concludes that manipulative-based remediation, when combined with other effective teaching strategies, offers a robust framework for improving reading comprehension skills. This comprehensive approach is recommended for educators aiming to enhance student proficiency in reading comprehension, thereby fostering overall academic success.*

**Keywords:** *manipulative-based remediation, reading comprehension, quasi- experimental study, hands-on learning*

## 1. INTRODUCTION

Reading comprehension is a fundamental skill that plays a crucial role in academic success. However, many students struggle with this skill, leading to a need for effective remediation strategies. One promising approach is the use of manipulatives, which are physical objects or materials that students can manipulate to enhance their understanding of abstract concepts. Reading comprehension difficulties can hinder students' academic performance across various subjects. Snowling (2020) found that students with poor reading comprehension skills were more likely to struggle in science, social studies, and mathematics. Effective remediation programs can help students improve their reading comprehension abilities, enabling them to better understand and analyze complex texts.

According to Smith and Brown (2018) in Canada, manipulative-based remediation effectively improved reading comprehension among students with learning disabilities. Using manipulatives, such as story maps and graphic organizers, facilitated their understanding of complex texts due to several factors, including difficulty in decoding text, poor vocabulary, and difficulties in making connections.

The Philippines received the lowest reading comprehension score in the 2018 Programme for International Students Assessment 2 (PISA) among the 79 participating nations and economies (Ílhan et al., 2021). The research tested around 600,000 students aged 15 years old in 79 participating countries. The PISA results show that there is a need to improve the reading comprehension skills of Filipino students.

In Davao City, Andaya (2019) investigated the use of manipulatives to improve reading comprehension among Grade 5 pupils with learning disabilities in a public elementary school. The study found that the use of manipulatives was effective in improving the reading comprehension of the pupils. The study also found that the pupils were more motivated to read when they were using manipulatives.

This inspired the researcher as an English teacher of Grade 9 students at Assumption College of Nabunturan, to commit to the challenge of addressing and devising comprehensive remediation strategies to address the struggle of students in reading comprehension. This commitment is also driven by the desire to contribute to the school's mission and vision.

### 1.1 Review of Related Literature

This section provides a selection of readings and discusses pertinent research and literature that could offer important insights that could help with the development of the current study. This contains the associated ideas, concerns, and issues as well as the findings from earlier studies that seem relevant and fall within the purview of the investigation.

**Reading Comprehension.** According to Sanchez (2010), students need to engage in reading to have the opportunity to learn, develop as individuals, and gain access to academic content. The act of reading involves a dynamic process of meaning-making influenced by the reader's prior knowledge, the information in the text, and the contextual factors of the reading experience. McCarthy (2021) highlights that readers interact dynamically with texts, actively creating meaning through a reciprocal process. This reflects the modern view of reading as an active, interactive experience rather than a passive one. Gilakjani (2016) asserts that the primary goal of reading is to comprehend the message that the author intends for the reader to extract from the text.

**Complexity of Reading Comprehension.** Understanding reading comprehension stands out as one of the most complex human behaviors. Over the past few decades, numerous theoretical models have been proposed by reading theorists in an attempt to accurately and meaningfully capture the intricacies of reading comprehension (McNamara & Magliano, 2009; Perfetti & Stafura, 2014). These models vary from comprehensive theoretical frameworks illustrating the connections and interactions among the components of comprehension to those specifically representing the processes involved. The exploration encompasses a wide array of frameworks and models that have significantly influenced the development of theories, research in reading comprehension, and educational practices (Elleman and Oslund, 2018).

**Manipulatives-Based Remediation: A Global Perspective on Enhancing Comprehension Skills.** In the United States, a study by Smith & Brown (2018) the effectiveness of manipulative-based remediation for improving comprehension skills among students with learning disabilities in Canada investigated the effectiveness of MBR on comprehension skills among elementary school students. The findings revealed significant gains in comprehension measures for students who engaged in MBR activities compared to those who did not. Similarly, a study conducted in Canada by Cantu & Sawyer (2019) [11]. The effectiveness of manipulative-based remediation for improving reading comprehension among primary school students found that MBR was particularly beneficial for students with learning disabilities, helping them to better grasp complex concepts and retain information.

**Effectiveness of Manipulative-Based Remediation.** Several studies have investigated the effectiveness of manipulative-based remediation in improving comprehension skills among ESL students. Smith et al. (2017) conducted a study with a group of ESL students using manipulative-based activities to teach vocabulary and reading comprehension. The results showed a significant improvement in both vocabulary acquisition and comprehension skills compared to traditional instruction methods.

**Physical Objects.** Johnson and Nguyen (2021) examined the effects of using physical manipulatives, such as letter tiles and word cards, on vocabulary learning and reading comprehension among elementary students. The results showed that students who used manipulatives demonstrated significantly higher gains in vocabulary knowledge and reading comprehension compared to those who learned through traditional methods. Solis (2019) investigated the use of various physical manipulatives, including letter blocks, word puzzles, and sentence strips, to support the development of literacy skills, such as phonemic awareness, decoding, and fluency, in early childhood classrooms. The findings indicate that the incorporation of multisensory manipulatives led to improved literacy outcomes for students, particularly those with learning difficulties.

**Puzzles.** Stone and Carter (2020) conducted a study to explore the effectiveness of using puzzles as a manipulative tool for enhancing vocabulary acquisition and language skills among elementary school students. The study involved a mixed-methods approach, combining quantitative assessments of vocabulary knowledge and qualitative observations of student engagement and interaction. Puzzles are an effective manipulative tool for language classrooms, promoting better vocabulary acquisition, increased student engagement, and the development of collaborative learning skills. Stone and Carter's research supports the integration of puzzles into teaching practices to improve language learning outcomes.

**Word Cards.** Thompson and Garcia (2021) conducted a study to evaluate the effectiveness of word cards in vocabulary acquisition among English Language Learners (ELLs) in a classroom setting. The research focused on elementary school students and assessed how the use of word cards influenced their ability to learn and retain new vocabulary. Johnson (2019) highlights the effectiveness of word cards in enhancing vocabulary acquisition, motivation, and engagement in reading activities among early childhood pupils. The use of word cards is found to have a positive impact on pupils' vocabulary acquisition, motivation, engagement in reading activities, and reading comprehension skills. The study suggests that educators should incorporate word cards into their vocabulary instruction to enhance language acquisition for ELLs. Word cards provide a flexible and effective tool for reinforcing vocabulary and can be integrated into various classroom activities and homework assignments.

The utilization of instructional materials facilitates a more accessible understanding of lessons for learners. Their application supports the acquisition of knowledge, aids in the retention of discovered facts, and contributes to improved performance. The employment of manipulatives not only sparks learners' interest but also encourages active engagement in the lesson, as noted by Munger (2007). Fundamental to the learning process is the interaction between learners and their environment, wherein experiences lead to the discovery of relationships among concepts. Placing learners at the focal point of instruction allows them to unearth new connections between the materials learned, fostering an internal growth of understanding. Linder and Marshall (2020) suggest that teaching methods should engage learners in creative processes similar to those experienced by mathematicians, facilitating the discovery of generalizations and principles.

One good reason for using manipulatives is that they have a positive effect on learners' achievement when learners are allowed to use concrete objects to model and internalize abstract concepts. Manipulatives not only allow students to construct their own cognitive models for abstract mathematical ideas and processes, but they also provide a common language with which to communicate these models to the teacher and other students (Ruzic & O'Connell, 2001). When manipulatives are used and children placed at the center of the learning process, the role of the teacher changes from transmitter of knowledge to being a facilitator of learners' discovery (Fletcher, 2009).

**Related Studies** .One of the arguments for the use of manipulatives in the classroom is that manipulatives provide an additional channel for conveying information. Nicole McNeil (2007) presents both sides of the manipulatives debate. According to McNeil, those who support the use of manipulatives suggest that manipulatives facilitate learning by not only providing an additional channel for conveying information, but also by activating real-world knowledge and improving memory through physical actions. On the opposite side of the argument are those that suggest that manipulatives might lead students to focus on having fun at the expense of learning or might even make learning more difficult because they require dual representation. In response to these arguments, McNeil looked at the theories of past child psychologists and theorists, such as Jean Piaget and Maria Montessori, and expanded on their findings. From her research, McNeil found that "children do not come into the world with the capacity for abstract thought. Instead, children must construct abstract concepts through their interactions with concrete objects in the environment." (McNeil & Jarvin, 2007) In order for children to gain complex understandings of the world around them, they must first be given opportunities to explore the physical objects in their environment.

## 1.2 Statement of the Problem

This study will aim to explore the impact of manipulatives-based remediation as a teaching approach to enhance the reading comprehension skills of Grade 9 students in Assumption College of Nabunturan.

Specifically, it will seek to answer the following questions:

1. What is the reading comprehension skill level of the students in their pretest?
2. What is the reading comprehension skill level of the students in their posttest?
3. Is there a significant difference between the pretest and post-test?

## 2. METHODS

This study employed a quantitative research approach, specifically utilizing a one-group pretest-posttest design, to examine the impact of manipulative-based remediation on reading comprehension. The research involved a single section of twenty-seven students as subjects. One-group pretest-posttest designs are highly useful in educational research where random assignment is not feasible (Shadish, Cook, & Campbell, 2002) [15]. Such designs allow researchers to evaluate causal relationships by measuring changes within the same group before and after an intervention, thus controlling for potential confounding variables.

The students engaged in manipulative-based remediation, working with physical objects and materials intended to enhance their understanding of reading comprehension concepts. Pre-tests were administered to establish a baseline of their initial reading comprehension skills, while post-tests were conducted to assess their progress following the intervention. The significant improvements observed in the post-test results indicate the effectiveness of the manipulative-based remediation in boosting reading comprehension. This methodology is supported by the study of Dimitrov and Rumrill (2003) [16], which highlights the efficacy of pretest-posttest designs in educational research for providing clear evidence of the impact of interventions on the same group of participants.

### 2.1 RESEARCH PROCEDURE

The research procedure was carefully planned and implemented to ensure both ethical standards and academic quality. The students who participated in the remediation class were identified by their English teacher, who also served as the researcher. These students were selected based on their first-quarter English examination results, which indicated a need for additional support.

Before implementing the study, several essential steps were followed:

Firstly, the pretest and posttest tools intended for use in the remediation were checked to ensure their reliability and effectiveness.

Subsequently, the researcher sought formal permission from the School Administrators of Assumption College of Nabunturan through a letter. This letter requested approval for the identified students to undergo manipulatives-based remediation. Upon receiving approval, the purpose, procedures, and potential risks of the research were clearly communicated to both the students and their parents or guardians. To encourage participation, students were granted appropriate credits, recognizing their important role in the study. The confidentiality and anonymity of the participants were strictly maintained. Personal information, such as names and identifying details, were omitted from all published materials and data analysis. Each student was assigned a unique code to maintain anonymity, ensuring that individual responses could not be traced back to specific participants. Informed consent was obtained from both the students and their parents or guardians. All data was securely stored and accessible only to the primary researchers, reinforcing the commitment to privacy and confidentiality. These steps ensured that participants felt secure and valued, fostering a trustworthy environment conducive to honest and accurate responses. The remedial sessions took place every Tuesday afternoon, adhering to the remediation schedule established by the school. Each session lasted for one hour.

## 3. RESULTS

This chapter presents the results obtained from the collected data and subsequent analyses, organized according to the research questions posed.

Level of Reading Comprehension Skills Competency without the Use of Manipulative Tools (Pretest).

This section presents the results of the first statement of the problem that examines the competency level of students' reading comprehension skills according to their pretest scores.

**Table 1**

**Competency Level of Pretest Score**

No. of Students	Mean	Class Proficiency	Mastery Level Descriptions
27	10.78	26.95 %	Low Mastery

The data in the table provides insight into the initial reading comprehension skills of the students, measured before using any manipulative tools. The table indicates that there are 27 students whose pretest scores have been analyzed. The mean score of these students is 10.78, which corresponds to a class proficiency level of 26.95%. This mastery-level falls under the category of Low Mastery according to the interpretation of the assessment learning criteria. This suggests that students were significantly below the expected competency level in reading comprehension prior to any interventions. The results highlight a critical need for effective educational strategies and tools to enhance student's reading comprehension skills.

Level of Reading Comprehension Skills Competency with the Use of Manipulative Tools (Posttest).

This section presents the results of the second statement of the problem that examines the competency level of students' reading comprehension skills according to their posttest scores.

**Table 2**  
**Competency Level of Posttest Score**

No. of Students	Mean	Class Proficiency	Mastery Level Descriptions
27	25.22	63.05%	Near Mastery

The data presented in the table provides insight into the student's reading comprehension skills after the intervention with manipulative tools. The table shows that 27 students were assessed, and their mean post-test score is 25.22. This corresponds to a class proficiency level of 63.05%, which falls under the category of Near Mastery according to the assessment learning criteria. This indicates a notable enhancement from pretest scores, strongly implying a positive impact of the intervention.

Significant difference between the pretest and posttest scores. Table 3 shows the results of paired t-test of the students' pre-test and posttest.

**Table 3**  
**Comparison of Pretest and Posttest Data**

	MEAN	t-value	p-value	Remarks
PRETEST	10.78	-12.393	0.000	Significant
POSTTEST	25.22			

The data table compares the pretest and post-test mean scores using a paired t-test to evaluate the effectiveness of an intervention. The mean score on the pretest was 10.78, while the mean score on the post-test increased significantly to 25.22. The t-value of -12.393 and a p-value of 0.000 indicate a statistically significant difference between the pretest and post-test scores. Therefore, the null hypothesis was rejected, indicating a significant result suggesting that the intervention had a substantial positive impact on the research subjects' performance as evidenced by the considerable improvement in their test scores.

#### 4. CONCLUSION

The Manipulative-based remediation has demonstrated a noticeable enhancement in students' reading comprehension skills. The transition from pretest to posttest scores indicates a meaningful improvement, illustrating the effectiveness of hands-on learning tools in facilitating better understanding and bridging educational gaps. Despite this progress, the fact that students still fall short of meeting expectations in the posttest suggests that while manipulative-based strategies are beneficial, additional efforts are required to achieve desired proficiency levels. This highlights the ongoing need for continuous refinement and adaptation of educational approaches, ensuring they address individual learning needs effectively and support sustained academic growth.

Integrating more personalized instructional methods alongside manipulative tools may further enhance outcomes, aiming towards achieving higher proficiency standards in reading comprehension among students.

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