



Effectiveness of differentiated learning in improving 4th-grade reading skills MIS Masino

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ABSTRACT

The main issue addressed in this study is the low reading comprehension skills of students, which are attributed to the use of monotonous teaching approaches and methods, as well as learning media that are unengaging and irrelevant to the current context. This study aims to determine the effectiveness of differentiated instruction in improving the reading comprehension skills of fourth-grade students. The research employed an experimental method using a one-group pretest-posttest Design. The subjects of this study were all fourth-grade students at MIS Masino, totaling seventeen individuals. The data collection techniques included pretest and posttest assessments, observation, and documentation. The results showed a significant improvement in students' reading comprehension skills after the implementation of differentiated instruction. Students' average scores during the pretest were categorized as fair and increased to a good category in the posttest. The statistical analysis using the t-test indicates that differentiated instruction had a positive effect on enhancing students' reading comprehension skills. It can be concluded that differentiated instruction is effective in improving students' reading comprehension skills and can serve as a relevant strategy for teaching the Indonesian language at the elementary school level.

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ABSTRAK

Permasalahan utama dalam penelitian ini adalah rendahnya keterampilan membaca pemahaman peserta didik, yang disebabkan oleh penggunaan pendekatan dan metode pengajaran yang monoton serta media pembelajaran yang kurang menarik dan tidak relevan. Penelitian ini bertujuan untuk mengetahui efektivitas pembelajaran berdiferensiasi dalam meningkatkan keterampilan membaca pemahaman peserta didik. Penelitian ini menggunakan metode eksperimen dengan desain One Group Pretest-Posttest. Subjek penelitian ini adalah seluruh peserta didik kelas IV MIS Masino yang berjumlah tujuh belas orang. Teknik pengumpulan data yang digunakan mencakup pemberian pretest dan posttest, observasi, serta dokumentasi. Hasil penelitian menunjukkan adanya peningkatan yang signifikan dalam keterampilan membaca pemahaman peserta didik setelah diterapkannya pembelajaran berdiferensiasi. Skor rata-rata peserta didik pada saat pretest berada pada kategori cukup dan mengalami peningkatan hingga masuk ke dalam kategori baik setelah posttest. Uji statistik menggunakan uji-t mengindikasikan bahwa pembelajaran berdiferensiasi memberikan pengaruh positif terhadap peningkatan keterampilan membaca pemahaman peserta didik. Dapat disimpulkan bahwa pembelajaran berdiferensiasi efektif meningkatkan keterampilan membaca pemahaman peserta didik dan dapat menjadi strategi yang relevan dalam pembelajaran Bahasa Indonesia di sekolah dasar.

Kata Kunci: keterampilan membaca; pemahaman membaca; pembelajaran berdiferensiasi

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INTRODUCTION

The literacy level of the Indonesian population remains a serious concern. According to the 2022 Programme for International Student Assessment (PISA), Indonesia ranked 73rd out of 80 countries in reading proficiency, with an average score of 370. Only around 25% of Indonesian students reached Level 2 or higher in reading literacy, far below the OECD average of 74% (can be accessed through https://www.oecd.org/en/publications/pisa-2022-results-volume-i-and-ii-country-notes_ed6fbcc5-en/indonesia_c2e1ae0e-en.html). This situation indicates that basic literacy, particularly reading comprehension skills, continues to be a significant challenge in Indonesia's education system. Based on preliminary observations conducted at MIS Masino, it was found that the reading comprehension skills of fourth-grade students were still very low. This was evidenced by the fact that three students had not yet achieved reading fluency, and most students were only able to read the text without comprehending its content.

In addition, students' interest in reading was also found to be low. These conditions highlight the urgent need for more targeted instructional interventions. Based on the observations conducted on fourth-grade students at MIS Masino, it was found that low reading skills had a direct impact on students' reading interest. Reading is one of the four essential language skills taught in the Indonesian language curriculum, alongside writing, listening, and speaking (Linggasari & Rochaendi, 2022). In the Islamic context, the importance of reading is emphasized in the first revelation to the Prophet Muhammad SAW in QS. Al-'Alaq verses 1-5. These verses command "read" as the first step in seeking knowledge. Reading activities not only involve recognizing letters but also reflect a deep understanding of the text. The act of reading in Islam has both spiritual and intellectual dimensions, encouraging followers to think critically, understand content contextually, and draw lessons from the information they read. This aligns with modern educational goals, which place comprehension at the core of reading activities.

Furthermore, the Prophet Muhammad SAW also emphasized the importance of seeking knowledge, as narrated in a hadith reported by Muslim (no. 2699), where Allah will ease the path to paradise for those who seek knowledge. In this regard, reading is the primary means of acquiring knowledge. Without the ability to read, one would struggle to understand the information available in one's surroundings. Therefore, reading skills are the fundamental foundation that every individual must possess, especially in the context of education. Reading comprehension skills are crucial to students' academic success. Most knowledge is acquired through reading activities, including reading in daily life (Sharif et al., 2023). Therefore, the ability to understand reading material is essential for building students' knowledge and insights (Sarika et al., 2021). Unfortunately, students with low reading skills face obstacles in critical thinking and logical reasoning. Aware of this, the government has launched various literacy programs to improve reading interest and text comprehension skills (Sukma & Sekarwidi, 2021).

However, the 2022 PISA survey results show that Indonesia still ranks 72nd, with a literacy index of 0.09, indicating low national literacy achievements. Previous research shows that the application of a multiliteracy learning model can improve students' reading abilities (Nurnugroho & Rochmiyati, 2024). The study showed positive results in enhancing students'

ability to understand reading materials. However, this method is not suitable for rural areas due to limited access to technology. This is an important consideration, given that not all schools have the same conditions and facilities. Therefore, a more contextual and flexible approach is needed to improve students' reading skills in areas with limited resources. Previous research has shown that differentiated learning is effective in improving students' reading comprehension skills. A study indicates that this approach can create an inclusive classroom atmosphere and improve overall learning outcomes (Sofiah & Hikmawati, 2023). Differentiated instruction has been shown to enhance student participation and engagement, while its effectiveness across various subjects further supports its broad applicability in primary education settings (Alamsari, 2024; Subandiyah et al., 2025).

One school facing similar challenges is MIS Masino in Takalar Regency. Initial observations revealed that some fourth-grade students were unable to recognize letters, which affected their reading comprehension skills. This was due to the learning approach not being aligned with students' learning needs. The teacher had not yet identified an appropriate method to accommodate diverse learning styles, such as visual, auditory, and kinesthetic. Therefore, the researcher sees the importance of using a differentiated learning approach that can tailor learning strategies to students' characteristics (Furqanisah & Arifin, 2024; Sisworo & Dinn, 2024). In the research location, MIS Masino, the differentiated learning approach is particularly relevant given the diversity of students' learning styles, including visual, auditory, and kinesthetic, and the low reading skills of students, as evidenced by the fact that some fourth-grade students are still unable to recognize letters. This is due to the teachers' lack of understanding regarding approaches, models, and teaching methods that are relevant to students' needs. This condition requires teachers to use flexible and adaptive strategies. This study aims to measure the effectiveness of implementing differentiated learning in improving the reading comprehension skills of fourth-grade students.

LITERATURE REVIEW

Differentiated learning is an instructional approach designed to accommodate students' individual learning needs based on their readiness levels, interests, and learning profiles (Gheysens et al., 2022). This strategy enables teachers to modify content, processes, products, and the learning environment to align with the characteristics of their students (Nahdhiah & Suciptanigsih, 2024). Such an approach is consistent with the humanistic theories of Carl Rogers and Abraham Maslow, which emphasize the importance of self-actualization and respect for the uniqueness of each learner in the educational process (Nugroho & Darmawan, 2024). In practical terms, differentiated learning begins with diagnostic assessments that help teachers identify students' diverse needs, enabling them to design appropriate and effective instructional activities (Hazyimara et al., 2024).

The four core components of differentiated learning content, process, product, and learning environment each play a critical role (Ramadhan et al., 2024). Content refers to what students learn and must be tailored to their developmental levels. The process involves how students engage with and make sense of the content (Nahdhiah & Suciptanigsih, 2024). Products represent the ways students demonstrate their learning, which can vary based on learning preferences. The learning environment, meanwhile, should be safe, supportive, and conducive to exploration (Herwina, 2021). The primary objective of this approach is to ensure

that all students achieve competency in ways that best match their learning pathways. Several recent studies reinforce the effectiveness of differentiated instruction in diverse educational contexts. The use of QRTet learning cards in science topics has been shown to significantly optimize differentiated instruction for elementary school students (Alfina et al., 2024).

Likewise, the successful implementation of differentiated learning in IPAS subjects has led to notable improvements in student engagement and learning outcomes. Differentiated instruction has also been found to foster creative thinking skills and remains relevant in mathematics instruction for gifted junior high school students (Pane et al., 2022; Lupita & Hidajat, 2022). In inclusive classroom settings, where students exhibit a wide range of needs, differentiated learning strategies are considered particularly critical. Tailored instruction based on students' profiles has contributed to increased reading literacy, especially in reading comprehension (Pratama, 2022). Moreover, the application of differentiated approaches has been shown to positively influence early reading skills among first-grade students (Puspita, 2021).

Reading comprehension, a crucial component of literacy development, involves the ability to understand, interpret, and critically evaluate written texts. As a complex cognitive activity, it necessitates the use of purposeful teaching strategies. The integration of interactive reading strategies has been found to enhance students' critical thinking abilities and deepen comprehension (Awaliyah et al., 2025). In this regard, the Dual Route Cascaded (DRC) model remains a relevant theoretical framework, explaining that reading involves both phonological and lexical processing, emphasizing that comprehension extends beyond word recognition to include contextual understanding and interpretation (Coltheart et al., 2001).

Technological advancements have further supported literacy development (Alakrash & Abdul Razak, 2021). The use of digital storytelling techniques has been shown to significantly improve reading comprehension, while the development of multiliteracy-based digital teaching materials has proven effective in fostering reading comprehension among elementary students (Bakar, 2019; Multifah et al., 2018; Mekalungi et al., 2025). Taken together, these findings affirm the significance and effectiveness of differentiated instruction in enhancing both general learning outcomes and specific skills such as reading comprehension. The collective evidence supports the conclusion that differentiated instruction is adaptable across subjects and educational levels and is particularly beneficial in addressing diverse student needs within the primary education context.

METHODS

This study employed a quantitative approach with an experimental research design. The purpose of experimental research is to determine the effect of a treatment on a particular variable. In this case, the experimental approach was used to examine the causal relationship between the implementation of differentiated learning and students' reading comprehension skills. The study was conducted at MIS Masino, specifically in the fourth-grade class located in Parambambe Village, Galesong District, Takalar Regency. The school applies both the Kurikulum Merdeka and the 2013 Curriculum simultaneously. The population consisted of all fourth-grade students in the 2024-2025 academic year, totaling 17 students (10 boys and 7

girls). Since the research involved only one class, the entire population was used as the sample.

The research design used was a one-group pretest-posttest Design, where measurements were taken before and after the treatment. At the beginning, participants were given a pretest, followed by the implementation of differentiated learning, and concluded with a posttest using the same measurement instrument. The independent variable (X) was the differentiated learning approach, adapted to students' learning styles, readiness levels, and interests. The dependent variable (Y) was students' reading comprehension skills, referring to their ability to understand, interpret, and evaluate text content. This includes both explicit and implicit comprehension, as well as literal, interpretive, critical, and creative understanding of text structure and meaning. Differentiated learning is designed to address learning gaps through the use of media suited to each student's needs, and to increase their motivation and interest in learning.

The research procedure consisted of three stages: preparation, implementation, and completion. The preparation stage included developing the proposal, identifying the problem, and creating the pretest and posttest instruments. The implementation stage involved piloting the instruments, carrying out the learning process using differentiated instruction, and collecting data through observation and documentation. Documentation included photographs of learning activities. Data were collected through tests (pretest and posttest), observation of student activities, and documentation of learning outcomes. The data were analyzed using both descriptive and inferential statistics. Descriptive statistics included the maximum, minimum, mean scores ($Me = \sum FX / N$), and percentages ($P = f / N \times 100\%$). Students' scores were categorized based on the KKTP standards by the Ministry of Education and Culture (2022): "Needs Guidance" (0-60), "Satisfactory" (61-70), "Good" (71-80), and "Excellent" (81-100). Inferential analysis was conducted using a t-test. If the calculated t-value was greater than the t-table value, H_0 was rejected and H_1 was accepted, indicating that differentiated learning was effective in improving students' reading comprehension skills. Conversely, if the calculated t-value was less than the t-table value, H_0 was accepted and H_1 was rejected.

RESULTS AND DISCUSSION

This study aims to determine the effectiveness of differentiated learning in improving the reading comprehension skills of 4th-grade students at MIS Masino, Takalar Regency. Data for the study were obtained through two stages: pretest and posttest, as well as observation of students' learning activities. Statistical tests were used to measure the differences between the pretest and posttest results.

Pretest Result

Based on the pretest conducted before the implementation of differentiated instruction, the average score of fourth-grade students at MIS Masino was 65. The pretest aimed to measure students' initial reading comprehension abilities, including identifying main ideas, understanding contextual vocabulary, answering literal and inferential questions, and drawing conclusions from short reading passages appropriate to their grade level.

Table 1. Calculation of Pretest Average

Score	Frequency (F)	F.X
40	2	80
50	1	50
60	2	120
65	4	260
70	4	280
75	2	150
80	1	80
85	1	85
Total	17	1.105

Source: Secondary Data of MIS Masino Students

Table 1 presents the distribution of pretest scores, the number of students (frequency) for each score, and the product of each score and its frequency (F.X), which was used to calculate the overall average score. The pretest mean is calculated as follows.

$$\text{Mean} = \Sigma FX / N = 1.105 / 17 = 65$$

To evaluate the quality of learning outcomes, Table 2 categorizes student performance based on score intervals into four levels: "Needs Guidance," "Fair," "Good," and "Excellent." These categories were developed in accordance with elementary education standards.

Table 2. Distribution of Pretest Result Categories

Interval	Frequency	Percentage (%)	Category
0-60	5	29,41%	Needs Guidance
61-70	8	47,06%	Fair
71-80	3	17,65%	Good
81-100	1	5,88%	Excellent

Source: Secondary Data of MIS Masino Students

Table 2 shows that the majority of students (76.47%) were classified as either "Needs Guidance" or "Fair," indicating a low level of reading comprehension skills. This finding is further supported by the mastery data presented in **Table 3**, which highlights the proportion of students who had or had not achieved the minimum learning mastery criteria.

Table 3. Mastery of Learning Outcomes in the Pretest

Score	Category	Frequency	Percentage (%)
≤ 70	Not Completed	13	76,47%
≥ 71	Completed	4	23,53%

Source: Secondary Data of MIS Masino Students

The results indicate that before the intervention, the majority of students had not yet mastered basic reading comprehension competencies. These findings became the basis for implementing differentiated instruction as a relevant and targeted learning intervention.

Posttest results

After the implementation of differentiated instruction, a posttest was conducted to evaluate students' progress. The results showed a significant improvement, with the average score increasing to 79.12.

Table 4. Calculation of Posttest Mean Score

Score	Frequency (F)	F.X
65	3	195
70	1	70
75	4	300
80	3	240
85	2	170
90	2	180
95	2	190
Total	17	1.345

Source: Secondary Data of MIS Masino Students

Table 4 presents the distribution of posttest scores, frequency for each score, and the product of score and frequency (F.X) used to calculate the mean.

$$\text{Mean} = \Sigma FX / N = 1,345 / 17 = 79.12$$

To examine the improvement in student performance, **Table 5** presents the distribution of posttest results across the same performance categories. A notable shift occurred, with a large number of students moving into the "Good" and "Excellent" categories.

Table 5. Distribution of Posttest Result Categories

Interval	Frequency	Percentage (%)	Category
0-60	0	0%	Needs Guidance
61-70	4	23,53%	Fair
71-80	7	41,18%	Good
81-100	6	35,29%	Excellent

Source: Secondary Data of MIS Masino Students

From **Table 5**, it is evident that no students remained in the "Needs Guidance" category, and over 75% were now categorized as "Good" or "Excellent." This demonstrates the effectiveness of differentiated instruction in improving reading comprehension by tailoring strategies to meet students' learning profiles. Further evidence of learning improvement is presented in **Table 6**, which shows the mastery levels after the intervention. A significant shift was observed in the proportion of students achieving mastery.

Table 6. Learning Mastery of Posttest Results

Score	Category	Frequency	Percentage (%)
≤ 70	Not Completed	4	23,53%
≥ 71	Completed	13	76,47%

Source: Secondary Data of MIS Masino Students

These findings confirm that differentiated instruction not only improved academic achievement but also helped a greater number of students reach the minimum mastery level.

The overall shift in score distribution and performance categories highlights the success of this learning approach in addressing diverse student needs.

Student Learning Activities

Observation of student activities during six meetings showed that differentiated learning encourages student engagement.



a) Delivering the Lesson (Student with an Audiovisual Learning Style)



b) Delivering the Lesson (Student with an Auditory Learning Style)



c) Student with a Kinesthetic Learning Style Acting Out a Character in the Story



d) Learning Process

Figure 1. Student Learning Activities
Source: Documentation, 2025

The majority of students were active in answering, asking questions, reading, and working in groups (see **Figure 1**). The average percentage of student activity exceeded 90%, indicating positive involvement throughout the learning process.

Inferential Statistical Test (t-test)

The t-test analysis is used to determine the significance of the difference between the pretest and posttest. The average score difference (M_d) is 14.12, and the sum of squared deviations ($\sum X^2d$) is 3,800. Based on the calculations, the obtained t-value (t_{hitung}) is 11.47. This value is compared with the t-table value at a significance level of 0.05 and $df = 16$, which is 2.120. Since $t_{hitung} > t_{table}$ ($11.47 > 2.120$), H_0 is rejected and H_1 is accepted. This

indicates that differentiated learning is significantly effective in improving the reading comprehension skills of the fourth-grade students at MIS Masino.

Data Analysis

The data analysis in this study involved a comprehensive evaluation of students' reading comprehension skills before and after the implementation of differentiated instruction, supported by classroom observations and statistical testing. Initially, a pretest was conducted to assess the baseline reading comprehension levels of fourth-grade students at MIS Masino. The assessment included indicators such as identifying main ideas, understanding contextual vocabulary, answering factual questions, and making inferences based on short reading passages appropriate to their developmental stage. The pretest revealed a low average score of 65, with 76.47% of students scoring below the minimum mastery threshold of 70. Specifically, 29.41% of the students were categorized as "Needs Guidance," while 47.06% fell into the "Fair" category. These findings suggest that most students exhibited limited comprehension skills, likely influenced by the lack of instructional methods tailored to their varied needs.

Following the application of differentiated instruction, the posttest results showed a notable improvement in students' performance. The average score increased to 79.12, indicating a significant academic gain. Furthermore, there was a visible shift in performance levels, where 35.29% of students reached the "Excellent" category and none remained in the "Needs Guidance" category. This improvement can be attributed to the use of customized materials, flexible teaching methods, and adaptive learning strategies that were more closely aligned with students' learning preferences and abilities. These adjustments enabled students to better engage with the texts and grasp the content more deeply. In parallel, observational data collected over six learning sessions demonstrated a high level of student engagement. On average, over 90% of students actively participated in classroom activities such as reading texts, answering questions, discussing in groups, and expressing opinions. This indicates that differentiated instruction not only improved academic performance but also enhanced students' motivation and active involvement in learning processes.

To complement the descriptive findings, an inferential analysis using a paired sample t-test was conducted to determine the significance of the observed improvement statistically. The result yielded a t-value of 11.47, which exceeded the critical value of 2.120 at a 0.05 significance level. This led to the rejection of the null hypothesis (H_0) and acceptance of the alternative hypothesis (H_1), confirming that the increase in posttest scores was statistically significant. In other words, the implementation of differentiated instruction had a meaningful effect on improving students' reading comprehension skills. Collectively, these findings reinforce the effectiveness of differentiated instruction in addressing low reading comprehension, particularly in classrooms with diverse learners and limited resources. The integration of student-centered approaches not only increased achievement but also fostered intrinsic motivation, as students responded positively to instruction that was aligned with their capabilities and interests.

Discussion

The findings of this study reinforce the theoretical foundations of differentiated instruction. A meta-analysis conducted by previous studies showed that differentiated instructional strategies significantly improve students' academic achievement (Cohen's $d \approx 0.79$) and yield moderately positive effects on student attitudes ($g \approx 0.36$), especially in interventions implemented over several weeks (Safawi & Akay, 2022). In addition, a study showed a significant increase in student learning outcomes when differentiated instruction through adjustments in content, process, and product was applied across various educational levels (Sembiring et al., 2024; Ramadhan et al., 2024).

Collectively, these studies provide strong empirical support for the notion that adapting instruction based on students' readiness, interests, and learning profiles can meaningfully enhance both academic performance and learner engagement. The pretest results indicated that the majority of students had not yet achieved mastery, with an average score of 65 and 76.47% of students scoring below the minimum completeness criteria (KKM). However, after the implementation of differentiated instruction, a significant improvement was observed in the posttest results, with an average score of 79.12 and 76.47% of students achieving mastery. These findings suggest that differentiated instructional strategies are effective in addressing students' diverse characteristics and in enhancing their reading comprehension skills.

This is in line with previous findings, which emphasize that differentiated teaching is an approach that adapts teaching strategies, materials, and learning activities based on students' individual needs such as interests, learning styles, readiness levels, and learning pace (Nahdhiah & Suciptanigsih, 2024; Purnawanto, 2023). By aligning instruction with students' cognitive readiness and engagement, teachers are able to foster more effective learning environments. Differentiated instruction, therefore, plays a critical role in improving student learning outcomes comprehensively (Awaliyah et al., 2025). Other studies have also added that this approach provides flexibility for teachers to design more focused learning strategies. The observation results showed an increase in student involvement, both in discussing, answering questions, and listening to teacher explanations (Himmah & Nugraheni, 2023).

Overall, the implementation of differentiated learning at MIS Masino has had a positive impact on improving reading comprehension skills. From a quantitative perspective, the improvement in scores indicates the success of the treatment; from a qualitative perspective, student involvement during the learning process significantly increased. Based on descriptive and inferential analyses, as well as field observations, it can be concluded that differentiated learning is effective in improving the reading comprehension skills of fourth-grade students at MIS Masino, Takalar Regency.

CONCLUSION

The implementation of differentiated instruction has been proven effective in enhancing the reading comprehension skills of fourth-grade students at MIS Masino. This approach provides each student with learning strategies tailored to their individual needs and abilities, resulting in a more optimal learning process. In addition to improving reading skills, differentiated

instruction also encourages students to be more active and participate more intensively in learning activities, including asking questions and interacting during the lessons. Therefore, differentiated instruction can be considered an effective alternative teaching strategy to improve reading comprehension skills among elementary school students, particularly in the fourth grade.

AUTHOR'S NOTE

The author affirms that this article is prepared without any conflict of interest and declares that all data and content presented in this article are free from plagiarism.

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