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Interactive Multimedia in Differentiated Learning to Improve identifying of Simple Past Tense sentences in Vocational High School Students

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Abstract

This study aims to improve students' ability to identify simple past tense sentences through the use of interactive multimedia and differentiated instruction in the classroom. The context of English language learning, many students struggle to understand grammar material, particularly in recognizing the correct tense structure in sentences. Therefore, this study focuses on implementing methods that can help students better understand the use of the simple past tense effectively. The study uses a classroom action research method carried out in two cycles. The first cycle began with the use of an interactive video, followed by group discussions and individual assessments. The results showed that despite the implementation of content and process differentiation, most students did not meet the desired target. The second cycle, improvements were made through homogeneous grouping, more frequent pauses in the video, and increased support for students with lower competencies. The results of the second cycle showed a clear improvement in students' abilities, with 53% of students achieving the "Excellent" category and 42% in the "Good" category. These findings indicate that the application of appropriate differentiation strategies, structured multimedia use, and additional support for students with lower competencies can enhance students' learning outcomes in identifying simple past tense sentences. This study also emphasizes the importance of continuous reflection in teaching to improve English learning outcomes.

Keywords: *Classroom Action Research, Simple Past Tense, Multimedia Learning, Differentiated Instruction.*

Introduction

Learning English at the vocational high school level faces various challenges, one of which is mastering grammar materials such as the Simple Past Tense. The Simple Past Tense is one of the foundational topics in English language learning and serves as an introduction to understanding narrative texts, which can often be confusing for some students. Many students struggle to understand the use of this tense due to differences in time concepts, as well as the application of rules regarding verb changes. This causes difficulties in constructing correct sentences, whether in positive, negative, or question forms, which in turn affects students' communication skills in English (Setyaningrum, 2018).

The context of teaching, many teachers find it challenging to present grammar materials in an engaging and easily understandable way. Teaching methods that rely solely on conventional techniques, such as lectures or oral explanations, are considered less effective,

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especially for students with different learning styles (Abdulhay, 2024). The diverse abilities of students in the classroom often add to the challenges of teaching materials that are considered difficult, such as the use of tenses in English. Therefore, there is a need for a more flexible approach to teaching that accommodates the varying needs and interests of students.

The solution that can be applied to address this issue is the use of interactive multimedia in learning. The multimedia learning, which integrates text, images, sounds, and videos, helps to engage learners by presenting information through multiple channels, making abstract concepts more tangible (Seruni, 2023). The use of multimedia in teaching English at vocational schools, and their findings indicated that multimedia significantly boosted students' engagement and comprehension (Styliaras, 2015). Moreover, found that using video-based multimedia to teach English grammar increased students' retention and understanding of complex grammatical structures (Triyasmina et al., 2022). Similar study also conducted emphasizes that multimedia learning supports different learning styles and cognitive processes, which is especially beneficial in language learning environments. The combination of text, images, and audio in multimedia tools can cater to various learning preferences, enhancing both comprehension and motivation, particularly in learning grammar (Caballero et al., 2022).

Differentiated instruction is a relevant approach to apply in teaching English at vocational high schools (Ariani & Marti, 2024). Asserts that differentiated instruction is essential in meeting the varying needs of learners, and when implemented effectively, it can lead to significant improvements in academic performance (Bulan & Imansyah, 2023). While, found that differentiated instruction in English classrooms, supported by multimedia tools, helped students with lower proficiency levels grasp grammatical concepts more effectively (Wahyudi, 2019). The concluded that this approach resulted in improved language skills, especially when combined with technology (Putra et al., 2024). Similarly, highlight that when teachers adapt instruction to meet the individual needs of students, learners demonstrate better outcomes in language acquisition (Redmond et al., 2019).

Integration of multimedia and differentiated instruction in English grammar teaching at vocational schools is hope to be a solution (Sholehah & Supeno, 2022). The explored who found that when students were grouped according to their ability levels Basic, Intermediate, and Advanced and were provided with appropriate multimedia tools, their understanding of English grammar improved significantly (Astri et al., 2023). The effectiveness of combining multimedia and differentiated instruction in language classrooms. They argue that this approach not only addresses diverse learner needs but also increases student motivation and participation. The combined use of multimedia and differentiated instruction in English classrooms and found that this approach significantly enhanced student motivation and grammar comprehension (Sandra & Werina, 2024). The similarly demonstrated that this integration allowed students to progress at their own pace, leading to more effective grammar learning outcomes. The combination of multimedia and differentiated instruction significantly improved students' ability to understand and use English grammar, especially in blended learning environments (Mammadova, 2024).

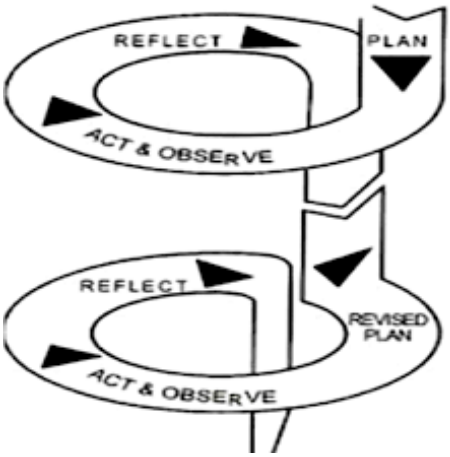
Recent studies about the positive impact of multimedia on grammar learning found that multimedia significantly improved students' understanding of grammar rules and their ability to apply them in different contexts (Bunyamin, 2023). Similarly, demonstrated that using interactive multimedia tools, such as online quizzes and grammar exercises, increased student participation and led to better grammar retention. Studies by support this by showing that

multimedia learning platforms lead to higher student engagement and improved language skills (Saputri & Indriayu, 2024).

This study aims to assess the effectiveness of interactive multimedia in differentiated instruction to improve students' ability in identifying the Simple Past Tense in vocational high schools, it is hoped that by using interactive multimedia tailored to differentiated instruction, students will find it easier to understand and master the material. This study offers novelty by integrating differentiated instruction and interactive multimedia to teach the Simple Past Tense in vocational high schools, distinguishing it from previous studies that typically discuss these approaches separately. This study uses interactive videos that combine text, images, and audio, allowing students to actively participate through quizzes and simulations, thereby deepening their understanding. The study also examines the effectiveness of video-based multimedia for groups of students with varying abilities—beginner, intermediate, and advanced—which has not been widely explored before. This study explores how increased student motivation can influence their understanding of grammar and improve communication skills in using the Simple Past Tense.

Method

This study uses a Classroom Action Research (CAR) design, consisting of repeated cycles involving four main stages: planning, action, observation, and reflection. The purpose of this CAR is to improve students' understanding of the use of the Simple Past Tense through the integration of interactive multimedia and differentiated instruction. The subjects of this study are 19 vocational high school students enrolled in an English class, with varying levels of ability. They were chosen as the sample because they are a group of students who face challenges in understanding grammar, specifically the use of the Simple Past Tense. The teacher acts as a facilitator, guiding students through the application of interactive multimedia and differentiated instruction.



Gambar 1. *Research Flow*

The planning stage, the teacher designs the lesson plan tailored to the learning objectives, with an emphasis on using interactive multimedia tools to help students understand the concept of the Simple Past Tense. The lesson plan also takes into account the diverse abilities of the students, so the teaching strategies are adjusted to meet the individual needs of each student. The interactive multimedia tools used are selected based on their relevance and potential to enhance students' understanding of the material being taught. The evaluation tool, in the form of a test to be given at the end of the cycle, is also determined.

The action stage, the teacher implements the lesson according to the plan developed in the planning stage. During this stage, the teacher uses interactive multimedia and differentiated instruction to adapt the material to the varying ability levels of the students. Classroom activities are designed to allow students to interact directly with multimedia tools, such as videos, quizzes, or simulations that are relevant to the Simple Past Tense. Students are expected to actively participate in the learning process, reinforcing their understanding of the material being taught.

The observation stage, data is collected to monitor students' progress throughout the learning process. The instruments used for observation include notes taken by the teacher as well as direct feedback from students regarding their experiences with the interactive multimedia and differentiated instruction. The evaluation instruments in the form of tests given at the end of each cycle are used to measure students' understanding of the use of the Simple Past Tense. The tests consist of various question types, such as multiple-choice, fill-in-the-blank, and short-answer questions, aiming to assess the students' ability to correctly identify Simple Past Tense sentences.

The reflection stage, the teacher analyzes the data collected to evaluate the effectiveness of the teaching. The data from the tests and observations are analyzed to identify the strengths and weaknesses of the approach applied in the cycle. Based on the analysis, the teacher reflects on the aspects that need improvement and reinforcement in the next cycle. For example, if students are still struggling to understand certain parts of the material, the teacher may adjust the material or teaching strategies to enhance their understanding in the following cycle. This cycle repeats until an optimal approach is found to improve students' understanding of the Simple Past Tense. The study aims to continuously refine the teaching process and create a more effective learning experience for vocational high school students. The success of the learning process is measured by the achievement of at least 75% of students obtaining a score of ≥ 75 on the evaluation test at the end of each cycle.

Results

This study employed a classroom action research (CAR) design, which was carried out over two cycles. Each cycle included four main stages: planning, action, observation, and reflection. The primary focus of this research was to enhance students' understanding and mastery of the Simple Past tense, a fundamental aspect of English grammar. The intervention aimed to address common challenges faced by students, such as difficulties in forming past tense verbs, understanding irregular verb patterns, and using the tense accurately in context. This study sought to create an engaging environment where students could actively participate, practice, and internalize the rules and usage of the Simple Past tense by employing innovative teaching strategies and interactive learning activities. The findings from each cycle were analyzed to assess progress and inform subsequent improvements in the teaching approach.

First Cycle

The first cycle, the learning objective designed was for students to be able to identify past sentences. The initial activity was conducted by listening to an explanation of the material through an interactive video created by the researcher and teacher. Then, students were given the opportunity to discuss the key points found in the video. Next, students identified simple past sentences in texts, videos, or audios (content differentiation) shared through the

students' smartphones, then filled out worksheets and presented their findings. The next activity was for students to complete a quiz individually using the Quizzes application. The process differentiation was also implemented, where in this case, students with basic competencies received more guidance from the teacher.

Based on the observation results, it was found that the multimedia used was engaging for the students; however, it needed to be paused at certain minutes and supplemented with additional instructions from the teacher, it was also found that students with basic competencies were not active in the group, so the suggestion given was to divide the groups homogeneously. Based on the data obtained in cycle I through the test on identifying past tense sentences, the researcher found that the students' abilities did not meet the target, as the students only achieved 65%, with 22 (100%) students got Fair category (55-69).

Based on the data obtained in the first cycle, the reflection shows several aspects that need attention for improvement in the next cycle. Although the multimedia used captured the students' attention, there are some areas that need improvement, such as pausing the video at certain points to allow students to better understand the material being presented and providing additional instructions from the teacher to clarify concepts that were not fully understood. The students with basic competencies were less active in the groups, indicating the need for more balanced group division so that all students, including those with lower abilities, can be more involved in discussions and learning activities.

Regarding the results of the past tense sentence identification test, most students still had difficulty achieving the set target. The majority of students were in the "Fair" category, indicating that they had not fully mastered the material. This suggests the need for a more effective approach in helping students with basic competencies better understand the material, such as providing more time and guidance. The adjusting teaching strategies, such as increasing classroom interaction and providing more practice, can help students better grasp the use of the Simple Past Tense. With this reflection, it is hoped that the next cycle will be more effective in achieving the established learning objectives.

Second Cycle

The implementation of cycle II was carried out because the results obtained in cycle I did not meet the specified achievement criteria, and there were still aspects of the learning process that were not well implemented. The actions in cycle II aimed to address the issues identified in cycle I and to improve students' understanding of the simple past tense through the use of interactive multimedia and differentiated learning, with the goal of meeting the established criteria. This second cycle, it was focused on the shortcomings identified in the first cycle. The learning objective in this second cycle was still the same as those in the first cycle, which is for students to be able to identify simple past tense sentences in a narrative text. The students were grouped homogeneously into six groups: two basic groups, two intermediate groups, and two advanced groups. The initial activity begun with watching an interactive video related to the simple past tense. Afterward, students discussed the key points they found from the video and wrote them down on the worksheet provided by the teacher. After that, students identified the simple past tense sentences in the given text.

The texts provided to students with basic, intermediate, and advanced abilities had different levels of difficulty (content differentiation). The students with lower abilities received more support from the teacher compared to other students. Then, the students were asked to present their work. This was followed by taking a quiz, which was discussed one by one. After

the teaching process then it continued to reflection. The reflection process, the observer stated that the students seemed to understand better and were more enthusiastic while watching the video. The group work results, it was found that the students were able to identify simple past tense sentences. In addition, students with basic abilities, who were identified as inactive in cycle I, were more active in this second cycle. The result can be seen in the following table 1.

Table 1. *Students Score In Cycle I And II*

No	Students' Initial	Score			
		Cycle I	Category	Cycle II	Category
1	S1	75	Good	85	Very Good
2	S2	50	Poor	75	Good
3	S3	75	Good	80	Very Good
4	S4	55	Poor	75	Good
5	S5	85	Very Good	95	Very Good
6	S6	60	Poor kup	75	Good
7	S7	85	Very Good	90	Very Good
8	S8	50	Poor	75	Good
9	S9	65	Poor	90	Very Good
10	S10	85	Very Good	90	Very Good
11	S11	60	Poor	70	Good
12	S12	80	Very Good	85	Very Good
13	S13	50	Poor	75	Good
14	S14	50	Poor	75	Good
15	S15	55	Poor	65	Poor
16	S16	75	Good	80	Very Good
17	S17	60	Poor	70	Good
18	S18	95	Very Good	100	Very Good
19	S19	75	Good	85	Very Good
	Total Score	1.285		1540	
	Average Score	68	Good	81	Very Good

Based on the table 1, it can be seen that after conducting the research, it was found that the overall average score in cycle I 68 which is categorized into good and improved in the II cycle to be81 which is categorized into very good. Based on the data obtained in cycle II through the test on identifying past tense sentences, the researcher found that the students' abilities met the target, as in this second cycle, 10 students achieved a percentage (53%) with a score range of 80-100, categorized as excellent; 8 students achieved a percentage (42%) with a score range of 66-79, categorized as good; and 1 student achieved a percentage (5%) with a score range of 56-65, categorized as fair. This means that in the second cycle, students' ability to identify simple past tense sentences showed improvement over the two cycles.

Discussion

The research aimed to improve students' ability to identify simple past tense sentences through the use of interactive multimedia and differentiated instruction. The findings from both the first and second cycles offer valuable insights into the effectiveness of these teaching strategies and suggest areas for improvement.

First Cycle Findings and Theoretical Support

The first cycle, the learning objective was to help students identify simple past tense sentences. The cycle began with an interactive video explaining the material, followed by

group discussions where students identified key points from the video. The learning activities included analyzing simple past tense sentences in various texts, videos, and audios, using smartphones. Students were also asked to fill out worksheets and present their findings, and finally complete a quiz through the Quizzes application. Process differentiation was applied, where students with lower competencies received more guidance.

Although the strategies implemented were well-intentioned, the results of the first cycle did not meet expectations. The multimedia used was engaging, but it was noted that the video should have been paused at certain points to provide a more in-depth explanation. This highlights the importance of timing in multimedia learning. Previous research on Mayer's Cognitive Theory of Multimedia Learning emphasizes the importance of segmentation, appropriate timing, and adequate guidance in the multimedia learning process to maximize its effectiveness (Ferdiyanto, 2023). This research also supports the finding that students with lower competencies require more structured support to actively participate in group-based learning. This aligns with Vygotsky's Zone of Proximal Development (ZPD) theory, which suggests that students below a certain skill level need additional scaffolding to grow and participate optimally.

The finding regarding the lack of active participation from students with basic competencies in the first cycle also aligns with previous studies that indicate the importance of differentiated instruction to create more inclusive learning and ensure the involvement of all students, regardless of their skill level (Rahma et al., 2024). These studies highlight the need for a more flexible and targeted approach in addressing the diverse abilities of students, particularly in the context of teaching grammar, which is often considered difficult.

The first cycle, it was observed that these students did not receive enough support to fully participate in group activities. The absence of appropriate scaffolding likely contributed to their passive behavior, as they lacked the confidence and understanding needed to engage meaningfully. This situation emphasizes the importance of adjusting teaching strategies to address the diverse needs of students, ensuring that all students, regardless of their starting level, can actively participate and benefit from the learning experience.

The results from the first cycle further demonstrated this gap in engagement and learning outcomes. Data showed that 100% of the students were categorized as "Fair," with scores ranging from 55 to 69. This outcome clearly indicated that the students had not met the desired learning objectives. The uniformity of these results pointed to a systemic issue in the teaching approach, particularly in terms of addressing the needs of students with varying levels of prior knowledge and skills.

These findings highlight the need for adjustments in the teaching process to foster greater student engagement and understanding. The incorporating strategies such as differentiated instruction, targeted scaffolding, and continuous feedback, educators can better support students in achieving their full potential. Tailoring teaching methods to align with the ZPD of each learner can create a more inclusive environment that promotes active participation and improves overall learning outcomes.

Second Cycle Findings and Theoretical Support

The second cycle, the researcher focused on addressing the weaknesses identified in the first cycle. One major change was the homogeneous grouping of students, which aimed to create balanced groups to ensure that every student could be more actively involved. This adjustment is based on previous differentiation theories, which emphasize the importance of

tailoring instruction to meet the diverse needs of students in order to improve learning outcomes (Mustadi et al., 2024). The second cycle began with the use of an interactive video on the simple past tense, but this time, the video was paused more frequently to allow students to process information, ask questions, and engage in deeper discussions. This aligns with previous findings in Cognitive Multimedia Learning Theory, which states that multimedia presentations should have appropriate timing and clear segmentation to enhance students' understanding (Khasawneh, 2023).

The second cycle placed more emphasis on content differentiation, where the texts provided were adjusted according to the students' skill levels, including those with basic, intermediate, and advanced abilities. With this strategy, students could more easily understand the material according to their readiness, which supports inclusivity in learning. This also aligns with differentiated instruction theory, which recommends adjusting content, process, and product to help every student learn effectively (Pradita et al., 2024). This approach was further enhanced by providing greater support for students with basic abilities, who had been less active in the first cycle. Previous research has shown that differentiated instruction can increase student engagement by accommodating their diverse needs, which contributes to improved learning outcomes (Setyaningrum, 2018).

The implementation of a more structured differentiation strategy in the second cycle, such as more intensive guidance for students with basic abilities and providing appropriate challenges for higher-ability students, allowed students to work more effectively in groups. Student interaction increased, and the groups were able to work more productively. This reflects research findings that emphasize how homogeneous grouping and collaborative learning can improve student engagement and learning outcomes by creating a more balanced and inclusive environment (Astri et al.., 2023). As a result, in the second cycle, 53% of students achieved an "Excellent" category with scores between 80-100, while 42% were in the "Good" category (66-79), and only 5% were in the "Fair" category. This improvement reflects the success of the more targeted differentiation strategies and enhanced group dynamics.

The second cycle demonstrated that by adjusting teaching strategies to be more flexible and focusing on individual students' needs, particularly by providing more support to students with basic abilities, students became more engaged in the learning process, and their learning outcomes improved. These findings align with the principles of Vygotsky's Zone of Proximal Development (ZPD), which emphasizes that with appropriate scaffolding, students can develop optimally in a supportive learning environment (Wahyudi, 2019). The adjustments made in the second cycle underline the importance of continually developing and adjusting instruction to ensure that all students achieve the learning goals.

Conclusion

Based on the research findings, it can be concluded that the implementation of interactive multimedia learning and differentiated instruction successfully improved students' understanding of identifying simple past tense sentences. The strategies used were engaging, there were some shortcomings, such as a lack of timing adjustments in video delivery and limited involvement from students with basic competencies. However, in the second cycle, with the adjustment of grouping students homogeneously, more frequent pauses in the video, and additional support for students with basic abilities, a clear improvement in student engagement and understanding was observed.

The limitations of this study lie in the limited time available to observe further student development after the second cycle, as well as the influence of external factors such as student motivation that could not be fully controlled. Additionally, despite the improvements, some students with basic competencies still require further support to achieve optimal results. The future research, it is recommended to extend the observation period to see the long-term development of students and explore more diverse differentiation methods, such as project-based learning or the use of additional technology. Furthermore, a more in-depth evaluation of external factors influencing learning outcomes, including aspects of student motivation and engagement, should be conducted. Further research can provide deeper insights into the best ways to address challenges in teaching grammar, which is often considered difficult for students.

Acknowledgment

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