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The Impact of MAMO Mobile Application-Based Microlearning on Students' Comprehension in Creating Procedural Text in Junior High School

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Abstract

This research examines the impact of the MAMO mobile application-based microlearning on students' comprehension in creating procedural texts in junior high school. This research is experimental, employing a one-group pre-test post-test design. The sample in this study comprised 35 ninth-grade pupils. The instruments employed were a pre-test and a post-test. The calculation of students' comprehension in creating procedural texts yielded an Asymp. Sig (2-tailed) value of 0.001, which is less than 0.05. An N-gain score of 0.7607, which exceeds 0.76, was observed. Based on the Asymp. Sig (2-tailed) value obtained, it can be inferred that the Microlearning model via the MAMO mobile application significantly influences the comprehension abilities of 9th-grade students at SMP Benteng Gading. The N-gain value indicates that the Microlearning model is more effective in enhancing students' comprehension. This indicates that brief, concentrated learning sessions provided through mobile technology enhance information retention and cater to varying learning speeds. The results may prove beneficial for educators and institutions seeking to implement digital learning methodologies, particularly for students who favour flexible, self-directed education.

Keywords: Microlearning, Comprehension, Procedure Text

INTRODUCTION

In the current era of digital development, students need a deep understanding in comprehension of learning material. One of the learning materials that requires in-depth understanding is procedural texts. Procedural text is a text that describes how something is achieved by a series of steps or acts, using vocabulary, general structure, and text organization (Javorcik et al., 2023). In Line with Widuri (2019) it is asserted that procedure text is a piece of writing that offers us information on making/doing something in numerous steps/directions. In addition, procedural text is an essential component in giving instructions, directions, or procedures for carrying out a certain action or process (Knapp & Watkins, 2005).

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Understanding procedural texts becomes a crucial ability because of the variety of situations and disciplines they might cover, particularly for digital natives who want to fully engage in a global society driven by technological and information breakthroughs (Rachmaida & Mutiarani, 2022). Even though procedural texts are implemented in the educational curriculum for junior high school, many students still find it difficult to understand procedural texts (Dewi et al., 2024) .

The lack of understanding of the procedural text has a tremendous influence, particularly for the digital native generation who lives and grows up in the age of technology and information. The characteristics of digital natives which are familiarity with everyday technology use, low concentration on long learning, and desire for flexible accessibility (Buhu & Buhu, 2019 ;Kirschner & De Bruyckere, 2017; Prensky, 2012), make understanding procedural text important. Challenges arise when digital natives are faced with step-by-step instructions that usually include detailed instructions and action steps that must be followed carefully. A lack of understanding of procedures can prevent students from following instructions that are complex and require analytical and interpretive skills (Dean, 2009). As a result, the digital native generation may have difficulty applying the necessary procedures in various situations, both in everyday life and in the world of education so microlearning can be one of the solutions to facing the problem (Drakidou, 2018).

The term microlearning became popular in 2006 at the microlearning conference which was popularized by Bruck (2006) and (Hug, 2006). Referring to the definition of microlearning, three things that characterize microlearning are small modules, learning process scenarios, and short time periods. Small modules can be associated with the term microcontent. Microcontent is small content that is structured and cannot be broken down into smaller parts and also has a certain focus (Leene, 2006). In more detail, this definition is the main characteristic of microcontent, namely structured, focused, indivisible, trackable, and able to stand alone. The existence of microcontent in microlearning can reduce the effort in compiling material. In addition, this shifts the effort to organize material into different pieces of information, to organize it into one coherent piece of information (Langreiter & Bolka, 2005).

Microlearning has become important in the field of education. This is because microlearning provides many benefits in the world of education. In health education improves students' knowledge and confidence in completing procedures, remembering information, studying, and participating in collaborative learning (De Gagne et al., 2019). It also helps the learner to improve their efficiency, effectiveness, and retention of knowledge (SİRWAN MOHAMMED et al., 2018)

The application of microlearning itself can be presented in the form of computers, other internet-connected devices, or mobile applications. In this era of the development mobile technology, microlearning content design can also be found in mobile applications. Mobile technology design with microlearning is a learning design

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that uses mobile technology such as smartphones or tablets which is useful for presenting microlearning content to students (Hug, 2010). Mobile technology is becoming a technology that is easy to use throughout the world. Nowadays, everyone can operate technology in the form of smartphones, tablets or other technological devices that have internet access. Apart from being used in everyday life such as calling, sending messages, and even interacting on social media, mobile technology can be applied effectively in the learning process. The learner can access the learning material everything and everywhere in order to gain flexible learning (Hug, 2010; Jahnke et al., 2020).

In addition, to address students' difficulties in writing procedural texts, teachers require microlearning-based learning that is simple to implement and consistent with the characteristics of today's digital-era students.Therefore, to deal with the problems that occur among students in creating and understanding procedural texts, a microlearning-based mobile application is needed. One of the microlearning-based mobile applications that could answer that challenge was MAMO. MAMO is a microlearning-based mobile application that is easy to access and provides various short and segmented learning features. In other words, MAMO is a new prototype Android mobile application designed to make it easier for teachers and students to facilitate the learning process. Therefore, this research aims to see the impact of microlearning-based mobile applications on students in creating procedural text.

Previous Related Study

The study of Microlearning has been an interesting thing in recent years, especially in education. In a notable study, Mohammed (2018) conducted a study on Microlearning, specifically focusing on the effectiveness of microlearning. The studies Gaining knowledge through microlearning can enhance understanding and memory retention. In the study, the researcher evaluated the effectiveness of microlearning techniques for teaching ICT in elementary schools. Two groups were chosen from an elementary school in Sulaimani city. One group was taught using a microlearning technique and the other with a standard approach over six weeks. The results showed that the microlearning group experienced an approximately 18% increase in learning compared to the control group. This study demonstrates that microlearning can improve the effectiveness and efficiency of learning.

In a related research Elpina & Haris (2023) discuss about microlearning using flibbook. This study involved 35 students of grade X at SMAN 1 Sorkam as research subjects, while the object of the study was a microlearning-based mobile learning module. This study found that the use of microlearning-based modules integrated into flipbooks can facilitate a more efficient and organized learning process.

In other research Nicomse & Sinaga (2022) in that study assesses the Effectiveness of the Video-Assisted Microlearning Learning Model on the Ability to Understand Mathematical Concepts of Grade VII Junior High School Students. In this study, researchers used a quasi-experimental method by implementing microlearning using

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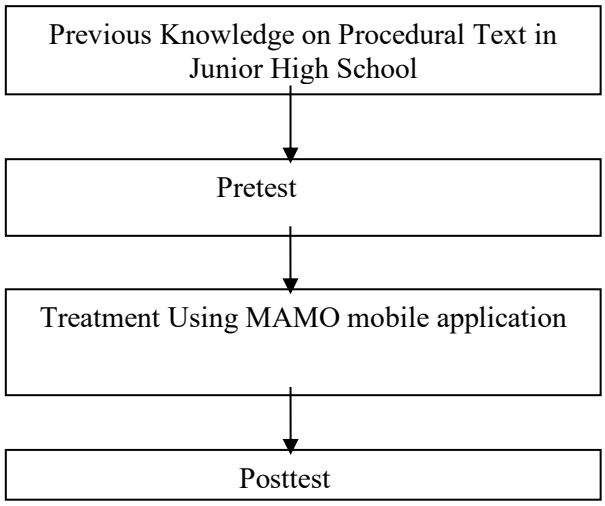
videos. The results of this study are an increase in students' abilities in learning mathematics compared to before using microlearning.

In addition, De Gagne et al. (2019) used a scoping review performed using the bibliographic databases. In the study, the researcher found that microlearning has enhanced students' comprehension and confidence in executing processes, recalling information, conducting research, and engaging in collaborative learning. However, there are still very few studies regarding microlearning using mobile applications in learning procedure text. Therefore, in this study, the researcher wants to know the effectiveness of using mobile-based microlearning towards comprehension and retention in students.

Conceptual Framework

The conceptual framework of this study is intended to determine the impact of the use of the microlearning-based mobile application mamo on the level of understanding of students in junior high schools.



Picture 1. Conceptual Framework

RESEARCH METHOD

The researcher utilised a quantitative methodology in this study to evaluate the efficacy of the MAMO mobile application in improving students' comprehension of procedural text composition. A quantitative method was used due to its capacity for objective measurement and statistical analysis, enabling the assessment of the application's effect on student learning. The study utilised numerical data to furnish clear and quantifiable evidence about the extent to which the MAMO application enhanced students' proficiency in composing procedural papers. This methodology guarantees the reliability of the findings, which can subsequently inform future educational practices related to mobile learning technologies.

The study was done with 35 ninth-grade students from a junior high school to accomplish this objective. A pretest and posttest

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design was employed to assess students' learning advancement. Prior to utilising the MAMO program, students completed a pretest to evaluate their foundational comprehension of procedural literature. Subsequent to the intervention involving MAMO microlearning activities, a posttest was conducted to assess enhancements in their performance. The gathered data were subsequently analysed employing statistical techniques to ascertain if the MAMO program significantly influenced students' comprehension and writing abilities. The researcher utilised this analysis to address the research objectives and derive results regarding the efficacy of mobile-based microlearning in enhancing students' procedural text writing skills.

The Normality Test seeks to ascertain whether the acquired data follows a normal distribution. This study employed the Kolmogorov-Smirnov normalcy test. The assessment criteria indicate that if Sig (2-tailed) > 0.05, the data is normally distributed; conversely, if Sig (2-tailed) < 0.05, the data is not normally distributed.

Table 1 Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	.143	35	.068	.957	35	.184
Postest	.122	35	.200*	.945	35	.081

Based on calculations using SPSS 27.00, it was found that the pretest significance value was 0.068> 0.05, so H0 was accepted so that the pretest data obtained was normally distributed. Likewise with the posttest significance value, namely sig (0.200)> 0.05. From the results of the significance, it can be concluded that the results of the normality test on the pretest and posttest data were both normally distributed.

Test of Homogeneity of Variances

After the level of data normality is known, then the homogeneity test is carried out. The homogeneity test is used to determine the level of similarity between variances. In this study, the researcher used Levene's Test to find out the homogeneity of the data. Levene's Test is used to test the assumption of homogeneity of variance, which states that the variance between groups should be the same. If the Sig. (p-value) is greater than 0.05, then the variance between groups is considered homogeneous (not significantly different).

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Table 2 Levene Homogeneity Test

		Levene Statistic	df1	df2	Sig.
Score Procedure text	Based on Mean	2.888	1	68	.094
	Based on Median	2.902	1	68	.093
	Based on Median and with adjusted df	2.902	1	62.840	.093
	Based on trimmed mean	2.928	1	68	.092

Levene's Test results (Table 4.2) indicated no significant variance variation among the tested groups. This test was performed utilising several methodologies, specifically the mean, median, modified median with degrees of freedom, and trimmed mean. The Levene statistical values were 2.888, 2.902, 2.902, and 2.928, respectively, with significance values (p-values) of 0.094, 0.093, 0.093, and 0.092, respectively. The achieved significance value was more than 0.05, specifically 0.93, indicating that the data between groups, both pretest and posttest, were homogeneous.

Descriptive Analysis

Descriptive analysis is a statistical tool employed to summarise, elucidate, and comprehend existing data without drawing further conclusions or making predictions. The goal is to describe a general picture of the basic characteristics of the data collected

Table 3 Descriptive Data Analysis

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Pretest	35	40.00	80.00	58.9429	11.32395	128.232
postest	35	60.00	100.00	84.8857	9.41454	88.634
Valid N (listwise)	35					

The table indicates that the pre-test results ranged from a minimum score of 40 to a maximum score of 80. In the post-test findings, the minimum score was 72 and the maximum score was 100. The descriptive analysis revealed that the mean score on the pre-test was 58.94, whereas the mean score on the post-test was 85.40.

Hypothesis Testing
Paired t-test

This study seeks to assess the disparity in the efficacy of MAMO mobile applications utilising microlearning for procedural text instruction among ninth-grade students at SMP Benteng Gading. In this study, the researcher employed a paired t-test to address the research questions and validate the hypothesis. The choice of this paired t-test is predicated on the fulfilment of the essential test conditions. This test

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evaluates the mean value prior to and following treatment to determine if a significant effect exists.

- H0: MAMO does not influence pupils' capacity to produce procedural text.
- H1: MAMO influences pupils' capacity to produce procedural text.

SPSS for Windows version 27.00 can be elucidated in depth as follows.

Table 4 Paired T-test

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pretest - Postest	-26.45714	7.58614	1.28229	-29.06307	-23.85121	-20.633	34	<,001

The Paired T-test revealed an average difference of -26.45714 between pretest and post-test values, signifying that the average post-test result exceeded the pretest. A p-value of <0.001 was observed, signifying a significant shift. The significance value of <0.001, which is less than 0.005, leads to the rejection of H0 and the acceptance of H1.

Table 5 N-Gain Test

N-Gain score can be used to determine the increase in competence that occurs before and after learning. The following is the result of the N-Gain score table between the pre-test and post-test.

	N	Minimum	Maximum	Mean	Std. Deviation
NGain_score	35	.50	1.00	.7607	.14320
NGain_percent	35	50.00	100.00	76.0671	14.32046
Valid N (listwise)	35				

The value obtained after the test. Figure 4.3 presents the categorisation of the N-gain score into three distinct categories:

1. High if N-gain exceeds 0.7
2. Medium if 0.3 < N-gain ≤ 0.7
3. Minimal if N-gain ≤ 0.3

Furthermore, Hake (1998) categorises the effectiveness of N-Gain into three distinct classifications. There exist:

1. Ineffective if N-Gain score is below 40%.
2. Less effective if the N-Gain score is between 40-55%.
3. Highly effective if the N-Gain score is between 56-75%.

Effective if the N-Gain score exceeds 76%.

The table displays an average

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score gain of 0.7607, signifying that the score exceeds 0.7; thus, it can be stated that the average falls inside the high category. The N-Gain is 76.0671%, indicating a result greater than 76%.

Dialogue

The analysed research data revealed that the average initial test score was 58.94, indicating the students' baseline abilities before to the intervention via the MAMO program. This indicates that pupils' comprehension of the content remains inadequate. This may result from an excessively lengthy and overwhelming learning process, hindering pupils' comprehension of the content.

According to the normality test results, the pretest significance value was sig (0.200) > 0.05, leading to the acceptance of H0, indicating that the data is normally distributed. The posttest significance value is 0.200, which exceeds 0.05. The findings of the Kolmogorov-Smirnov normality test indicate that the pretest and posttest values exhibit a normal data distribution. The homogeneity test utilising Levene indicated a significance value of 0.93, which exceeds 0.05. This suggests that the data from the pretest and posttest is homogeneous and originates from the same student capabilities.

The outcomes of the Paired t-test were employed to address the hypothesis of this study. Understanding the paired t-test value will elucidate the extent of the intervention's relevance. According to the significant value derived from the SPSS data, sig (0.01) < 0.05 indicated the rejection of H0 and the acceptance of H1, demonstrating a difference before and after the intervention utilising the MAMO application.

During the initial meeting, the researcher administered a pretest in which students were instructed to independently produce procedural texts on freely chosen themes, like recipes or manuals. The objective of the preliminary assessment is to evaluate pupils' baseline competencies prior to receiving intervention. The lowest pretest score among the students was 40, while the highest score was 80. Subsequently, at the second encounter, the researcher administered treatment or instruction utilising the MAMO mobile application. Students are instructed to utilise the program and implement it during their learning process.

During the third meeting, the researcher administered a post-test to assess the students' comprehension following the intervention. The post-test required students to produce a procedural text on a self-chosen theme using Canva. Students had the option to produce the material either in written format on Canva or as a video. During the post-test, the researcher accompanied the pupils. The post-test findings indicated that the minimum score is 40 and the maximum score is 100. Furthermore, the average pre-test and post-test scores demonstrated notable figures. The mean pre-test score is 58.94, whereas the mean post-test score is 84.88. The mean post-test score significantly exceeded the pre-test score. A comparison of the average pretest and posttest reveals an improvement in student test scores. The improvement in exam outcomes arises from students' ability to comprehend the content more effectively when presented in smaller

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pieces, hence mitigating cognitive load.

The efficacy of the microlearning-based MAMO application on student comprehension is evidenced by the study of N-Gain score data. The data analysis yielded an average N gain score of 0.7607, indicating a score greater than 0.76. The utilisation of the Mamo mobile application in the instruction of procedural text significantly enhances student comprehension of the material. Furthermore, analysis of the N Gain score percentage revealed that over 76% said the MAMO mobile application was highly helpful in enhancing students' comprehension of procedural text creation.

The research titled "The Impact of MAMO Mobile Application Based Microlearning on Students' Comprehension in Junior High School" indicates an enhancement in students' comprehension of procedural text following the implementation of the MAMO application.

CONCLUSION

The study and discussion indicate that students' scores following the implementation of the MAMO application are superior to those recorded before to its use. The notable disparity indicates that the implementation of MAMO can enhance students' competencies in comprehending and composing procedural texts. The rise in average learning outcomes is evident, with the pre-test average at 58 and the post-test average at 84.88. To evaluate the hypothesis with a paired t-test. The t-test results yielded a significance level of 0.001, which is less than 0.005, indicating a difference in learning outcomes between the Pretest and Posttest, as posited in the study's hypothesis.

This indicates that students' comprehension of writing procedural texts improves after utilising the microlearning-based MAMO mobile application compared to prior usage of the tool. In this study, the researcher faced challenges in the field, specifically the lack of a comparative analysis with another class that was not implemented. The researcher utilised a single class as a sample. For future research, it would be advantageous to include a comparative group. This study exclusively addresses the content of procedural texts. To advance this research, it would be advantageous to incorporate other resources that pose comprehension challenges for students.

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REFERENCES

Allela, M. (2021). *Introduction to microlearning*.

Allela, M., Ogange, B., Junaid, M., & Prince, B. (2019). *Evaluating the effectiveness of a multi-modal approach to the design and integration of microlearning resources in in-service teacher training*.

Allen, D. W., & Eve, A. W. (1968). Microteaching. *Theory into Practice*, *7*(5), 181–185.

Anderson, M., & Anderson, K. (1997). *Text types in English* (Vol. 2). Macmillan Education AU.

Beard, A. (2004). *How texts work*. Routledge.

Bruck, P. A. (2005). Microlearning as strategic research field: An invitation to collobarate [sic!] (Introductory Note). *Microlearning: Emerging Concepts, Practices and Technologies after e-Learning. Proceedings of Microlearning 2005. Learning & Working in New Media*.

Bruck, P. A. (2006). *What is Microlearning and why care about it?(Introductory Note)*. na.

Buhu, A., & Buhu, L. (2019). The Applications of Microlearning in Higher Education in Textiles. *ELearning & Software for Education*, *3*.

Chia, H., Liao, W.-F., & Liau, C.-H. (2015). *Vocabulary Knowledge and Pedagogy in EFL Reading Curricula*.

De Gagne, J. C., Woodward, A., Park, H. K., Sun, H., & Yamane, S. S. (2019). Microlearning in health professions education: A scoping review protocol. In *JBI Database of Systematic Reviews and Implementation Reports* (Vol. 17, Issue 6). https://doi.org/10.11124/JBISRIR-2017-003884

Dean, D. (2009). Genre Theory-Teaching, Writing, and Being. *Genre Theory: Teaching, Writing, and Being*.

Dewi, F. C., Samhati, S., Sumarti, S., & Rusminto, N. E. (2024). ASABI app: Mobile learning media for learning procedure texts at the seventh grade of junior high school. *Jurnal Inovasi Teknologi Pendidikan*, *11*(2).

Dictionary, M.-W. (2002). Merriam-webster. *On-Line at Http://Www. Mw. Com/Home. Htm*, *8*(2), 23.

Drakidou, C. (2018). Micro-learning as an Alternative in Lifelong eLearning. *The Aristotle University of Thessaloniki*.

Elpina, N., & Haris, D. (2023). Pengembangan Modul Pembelajaran Mobile Berbasis Microlearning dalam Flipbook pada Materi Sistem Persamaan Linear Dua Variabel di Kelas X di SMAN 1 Sorkam. *Journal on Education*, *5*(2), 3261–3267. https://doi.org/10.31004/joe.v5i2.994

Hake, R. R. (1998). Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *American Journal of Physics*, *66*(1), 64–74.

Hansson, S. O. (2016). Experiments: Why and How? *Science and Engineering Ethics*, *22*(3). https://doi.org/10.1007/s11948-015-9635-3

Harmer, J. (2004). How to Teach Writing. In *Overland* (Vols. 2018-Winte, Issue 231).

Hug, T. (2006). Microlearning: A New Pedagogical Challenge (Introductory Note). *Microlearning: Emerging Concepts, Practices and Technologies after E-Learning*.

Hug, T. (2010). Mobile Learning as 'Microlearning': Conceptual Considerations towards Enhancements of Didactic Thinking. *International Journal of Mobile and Blended Learning*, *2*(4). https://doi.org/10.4018/jmbl.2010100104

Hug, T., Lindner, M., & Bruck, P. A. (2006). *Micromedia & e-Learning 2.0: Gaining the big picture: Proceedings of microlearning conference 2006*. innsbruck university press.

Hugh, T. (2005). Microlearning: A new pedagogical challenge. *Microlearning: Emerging Concepts, Practices and Technologies after E-Learning: Proceedings of Micro-Learning Conference*, 7–11.

Hui, B. (2014). Application of micro-learning in physiology teaching for adult nursing specialty students. *Journal of Qiqihar University of Medicine*, *21*(61).

e-ISSN: 2721-642X

Hwang, G., & Tsai, C. (2011). Research trends in mobile and ubiquitous learning: A review of publications in selected journals from 2001 to 2010. *British Journal of Educational Technology*, *42*(4), E65–E70.

Inie, N., & Filip, M. (2021). Aiki -turning online procrastination into microlearning. *Conference on Human Factors in Computing Systems - Proceedings*. https://doi.org/10.1145/3411764.3445202

Jahnke, I., Lee, Y. M., Pham, M., He, H., & Austin, L. (2020). Unpacking the Inherent Design Principles of Mobile Microlearning. *Technology, Knowledge and Learning*, *25*(3). https://doi.org/10.1007/s10758-019-09413-w

Javorcik, T., Kostolanyova, K., & Havlaskova, T. (2023). Microlearning in the Education of Future Teachers: Monitoring and Evaluating Students' Activity in a Microlearning Course. *Electronic Journal of E-Learning*, *21*(1), 13–25. https://doi.org/10.34190/ejel.21.1.2623

Kirschner, P. A., & De Bruyckere, P. (2017). The myths of the digital native and the multitasker. *Teaching and Teacher Education*, *67*, 135–142.

Knapp, P., & Watkins, M. (2005). *Genre, text, grammar: Technologies for teaching and assessing writing*. unsw Press.

Langreiter, C., & Bolka, a. (2005). Snips & spaces: managing microlearning. *Snips & Spaces: Managing Microlearning*.

Lee, Y. M., Jahnke, I., & Austin, L. (2021). Mobile microlearning design and effects on learning efficacy and learner experience. *Educational Technology Research and Development*, *69*(2). https://doi.org/10.1007/s11423-020-09931-w

Leene, A. (2006). *Microcontent is everywhere (on microlearning)*. na.

Leinonen, T. (2007). *Microcontent for microlearning*.

Martin, J. R., Christie, F., & Rothery, J. (1987). Social processes in education: A reply to Sawyer and Watson (and others). *The Place of Genre in Learning: Current Debates*, *3545*.

Mayer, R. E., & Moreno, R. (2003). MAYER AND MORENO WAYS TO REDUCE COGNITIVE LOAD Nine Ways to Reduce Cognitive Load in Multimedia Learning WHAT IS MULTIMEDIA LEARNING AND INSTRUCTION? *EDUCATIONAL PSYCHOLOGIST*, *38*(1).

Mills, G. E., & Gay, L. R. (2016). *Educational research: Competencies for analysis and applications*. pearson.

Mohammed, G. S., Wakil, K., & Nawroly, S. S. (2018). The Effectiveness of Microlearning to Improve Students' Learning Ability AR TI CL E IN FO AB STR A CT. *International Journal of Educational Research Review*, *3*(3).

2022/2023. *Sepren*, *October 2022*, 48–56. https://doi.org/10.36655/sepren.v4i0.817

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