An Experimental Study on The Impact of Digital Multilingual Thematic Dictionary for The Sixth Grade Students' Literacy Skill

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ABSTRACT

This study aimed at presenting justification for whether or not there is any significant impact of using a digital multilingual thematic dictionary on sixth-grade students' literacy skills. This study applied quasi-experimental research with a pre-test and post-test only control group design. The researchers determined the research sample using statistical matching scores proposed by Fraenkel et al. (2012). The statistical matching scores were administered in determining the two intact groups. Two intact groups with similar scores and statistically proven to have insignificant differences in abilities were selected as the research sample, namely; (1) SD N 1 Kubutambahan was the control group, and (2) SD N 3 Banjar Jawa was the experimental one. The instruments used in this research were literacy skill tests which contain pre-test and post-test, and teaching scenarios for the control and experimental group. The pre-test was given before treatment and the post-test after treatment. Both groups received three times of treatments with three materials namely *home activities, animals, and public places*. The obtained data were analyzed quantitatively with descriptive statistical, inferential statistical, and N-Gain score test analysis. Based on the results of the calculation of the N-Gain Score test and the descriptive analysis, the mean score of the N-Gain for the experimental group was 73.3759%, while the mean score of the N-Gain for the control group was 48.0249%. The results of the N-Gain score test showed that the use of the digital multilingual thematic dictionary in the experimental group was categorized as moderately effective, while the use of the printed thematic picture dictionary in the control group was less effective. Thus, it can be concluded that the digital multilingual thematic dictionary performed better than a printed thematic picture dictionary on sixth-grade students' literacy skills.

Keywords: literacy skills, young learners, digital multilingual thematic dictionary.

1. INTRODUCTION

1.1. Research background

The use of the English language is one of the things that is evolving quickly and having a big impact on the world. According to Amandjonovna (2022), between 600 million and 650 million people around the world report to speak English as their native tongue. Additionally, English is regarded as a second language in other nations. Twenty-seven additional nations speak English as a second language, and there are 67 nations in the world where English is the official language (Nishanti, 2018). In Indonesian education, particularly in curriculum 2013 (known as K13) English is categorized as local content. This strategy can be viewed as a measure for Indonesia to keep up with world events and advance science and technology, which are primarily based in English (Sutaryo et al., 2022). Additionally, it is anticipated that teaching English from a young age will boost students' capability to thrive on an international scale and the competitiveness of the country in a global society (Pajarwati et al., 2021). They can enhance their lives if English is exposed to them at a young age (Jazuly & Indrayani, 2018).

Just as important as the early-age English language learning, early education is also necessary to instill a value for literacy. Language learners will be able to comprehend, produce, and inform the information they receive in written, oral, or digital form if they have a strong command of literacy (Wulandari et al., 2021). Literacy abilities have a significant impact on a person's character as well. Additionally, a person's literacy abilities have a serious influence on their psychological and intellectual growth (Thompson et al, 2018). Literacy is crucial for raising the bar for academic performance as well as for creating more qualified human resources (Ratminingsih et al., 2021). Reading and vocabulary are two of the literacy abilities that are most crucial to learn. Moreover, Inadequate reading proficiency will result in low literacy abilities (Ratminingsih et al, 2021). In moreover, vocabulary is a crucial component of language learning since it serves as a basis for understanding information, communicating ideas or concepts, and facilitating the development of other language abilities (Alamri & Hakami, 2022). Because young learners have excellent short-term memories and can preserve knowledge of language if they are regularly educated, it is crucial to develop literacy skills from an early age (Apriliana, 2018).

The development of young learners' literacy proficiency requires the utilization of appropriate learning resources. According to earlier studies, students who use dictionaries as a learning tool can increase their reading comprehension and vocabulary in English. For instance, according to quasi-experimental research by Yanti (2016), electronic dictionaries significantly increased pupils' vocabulary achievement. Similar to the study done by Yanti (2016), Hakim, Abidin, and Bahari

also carried out a quasi-experimental study to examine how well students learned vocabulary using an electronic dictionary as opposed to a paper one. The research's findings indicated that an electronic dictionary had a favorable impact on students' achievement in vocabulary learning based on the disparity in mean scores between the experimental and control groups. Additionally, other researchers also agreed that the digital dictionary gave a positive impact on students' vocabulary and literacy skills. Akramah et al. (2020), Ambarwati and Mandasari (2020), Lamido et al. (2021), and Alamri and Hakami (2022) argued that digital dictionaries provided so many conveniences to users. As a result, it had an impact on students' vocabulary mastery as well as students' literacy skills.

As previously pointed out in the previous study, using dictionaries as an instruction to assist students to increase their vocabulary and reading comprehension, which improves their literacy skills, is highly beneficial. Whatever form of dictionary can help interpret any challenging or obscure words that might cause difficulties for young learners' reading activities. Aside from those issues, more research is still needed to determine which of these types of dictionaries is most helpful at fostering young learners' literacy skills. Language students can learn vocabulary in a foreign language with the help of multilingual, printed, and electronic dictionaries. This most recent study is a continuation of a previous study that develops a digital multilingual thematic dictionary.

1.2. Research questions

The research question of the study was as follows.

"Is there any significant impact of using a digital multilingual thematic dictionary on sixth-grade students' literacy skills in elementary school in Buleleng regency?"

1.3. Significance of the study

The results of this study hopefully are able to show the significant impacts of the implementation of a digital multilingual thematic dictionary on sixth-grade students' literacy skills. Consequently, this study can provide readers, educators, and other educational practitioners with a better understanding of the impact of a digital multilingual thematic dictionary on young learners' literacy skills as justification.

2. METHOD

2.1. Research Design

The researchers chose to use quasi-experimental research after taking the study's objective into account. This study employed pre-test and post-test only control group design. There were two groups, namely the experimental group, which sought treatment using a digital multilingual thematic dictionary, and the control group, which received the conventional media using a printed thematic picture dictionary.

2.2. Population and Samples

The population was students from eight elementary schools representing four areas in Buleleng Regency, namely: SD Negeri 3 Banjar Jawa (North), SD Negeri 1 Seririt (West), SD Negeri 1 Banjar (West), SD Negeri 1 Kubutambahan (East), SD Negeri 1 Celukan Bawang (West), SD Negeri 2 Pacung (East), SD Negeri 1 Sukasada (South), and SD N 1 Busung Biu (East). To determine the research sample, the researcher decided to use the statistical matching scores technique proposed by Fraenkel et al. (2012). The statistical matching scores were administered in determining the two intact groups. The existing intact groups were compared to their abilities by looking at their English final semester examination scores, then tested statistically. Two intact groups with similar scores and statistically proven to have insignificant differences in abilities were selected as the research sample. As a result, the research sample was sixth-grade students from SD N 1 Kubutambahan as the control group, and 6C students from SD N 3 Banjar Jawa as the experimental group.

2.3. Instruments

The instruments used in this research were literacy skill tests which contain pre-test and post-test, and teaching scenarios for the control and experimental group. The pre-test was given before treatment and the post-test was given after treatment. The treatment was given for six meetings; three meetings for the control group and three meetings for the experimental group. Each meeting took 45 minutes in class. The material used during the treatment was adjusted to thematic learning: home activities, animals, and public places. The experimental group used a digital multilingual thematic dictionary, while the control group used a printed thematic picture dictionary.

2.4. Data analysis

The students' pre-test and post-test scores were analyzed descriptively, inferentially, and tested by N-Gain. The descriptive statistical analysis was carried out to know the dispersion and calculation of the central tendency of the pre-test and post-test data. The researcher looked for the mean, median, mode, variance, range, maximum score, minimum score, and standard deviation of the data obtained. After the descriptive statistical analysis was carried out, then the inferential statistical analysis was administered to calculate and draw conclusions about whether the pre-test and post-test data had equivalent results for the research. The inferential statistical analysis used here was an independent sample t-test which aimed to determine whether there was a difference in the mean between two unpaired samples. But before conducting the independent samples t-test analysis, the normality and homogeneity tests must be carried out. The last, the N-Gain score test was carried out to determine the level of effectiveness of using the digital multilingual thematic dictionary on sixth-grade students' literacy skills. In addition, the statistical hypothesis in this current research could be formulated as follows: 1) H0: N-Gain Score of the experimental group < 55% meaning that the Digital Multilingual Thematic Dictionary cannot provide a significant impact on sixth-grade students' literacy skills compared to the printed one; 2) Ha: N-Gain Score of the experimental group > 55% meaning that the Digital Multilingual Thematic Dictionary provides a significant impact on sixth-grade students' literacy skill compared to the printed one.

3. FINDINGS AND DISCUSSION
3.1. Findings

In order to ascertain the effect of a digital multilingual thematic dictionary on sixth-grade students' literacy abilities, the researcher first performed descriptive and inferential statistical analysis on the pre-test and post-test scores. Firstly, due to the fact that descriptive statistical analysis often focuses on showing the dispersion and calculating the main trend of the data acquired (Trochim W, 2020). The pre-test and post-test scores' numerical data were all described and summed in a descriptive manner. The results are displayed as follows:

Table 1. Descriptive Statistical Analysis for the pre-test and post-test

		Statistics	
		Control	Experiment
N	Valid	32	32
	Missing	0	0
Pretest	Mean	61.6406	64.5313
Posttest	Mean	80.8594	90.7813

Table 1 shows the mean of the control and experimental group in the pretest and posttest. In the pretest, the mean score of the control group was 61.64 and the experimental group was 64.53. Besides, the mean in the posttest for the control group was 80.85 and the experimental group was 90.78. It showed different mean scores between the pretest and posttest.

After conducting the descriptive statistical analysis on the pre-test and post-test scores, the inferential statistical analysis which includes the normality test, homogeneity test, and hypothesis testing (t-test) was also administered. The pre-test data were categorized as normal and homogeneous because the significance value for both groups was higher than the predetermined significance value of 0.05. The independent sample t-test analysis on pre-test scores could be seen in Table 2 as follows.

Table 2. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Pre-Test	Equal variances assumed	.261	.611	1.11	62	.271	2.89063	2.60139	-2.30948	8.09073
	Equal variances not assumed			1.11	62	.271	2.89063	2.60139	-2.30948	8.09073

Table 2 shows that there was no significant difference between the pre-test score of the control and experimental group because of the value of the Sig. (2-tailed) was higher than the predetermined Sig. value (0.271 > 0.05).

For the post-test, the data were categorized as normal and homogeneous because the significance value for both groups was higher than the predetermined significance value of 0.05. The independent sample t-test analysis could be seen in Table 3 as follows.

Table 3. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Post-Test	Equal variances assumed	.339	.562	7.968	62	.000	9.92188	1.24519	7.43278	12.41009
	Equal variances not assumed			7.968	60.67	.000	9.92188	1.24519	7.43170	12.41220

Table 3 shows that there was a significant difference between the mean of the post-test score of the control and experimental group because of the value of the Sig. (2-tailed) was lower than the predetermined Sig. value (0.000 < 0.05).

Next, the researcher used the normalized gain score test (N-Gain Score) to determine the level of effectiveness of using the digital multilingual thematic dictionary on sixth-grade students' literacy skills. The N-Gain test is essentially calculated using the difference between pre-and post-test results as presented in Table 4.

Table 4. Descriptive Analysis Table of the N-Gain Score Test

	Group			Statistic	Std. Error
NGain_percent	Experimental	Mean		73.3759	2.12445
		95% Confidence Interval for Mean	Lower Bound	69.0431	
			Upper Bound	77.7087	
		5% Trimmed Mean		73.2344	
		Median		75.0000	
		Variance		144.425	
		Std. Deviation		12.01768	
		Minimum		54.55	

	Maximum		95.00	
	Range		40.45	
	Interquartile Range		18.21	
	Skewness		.188	.414
	Kurtosis		-.889	.809
Control	Mean		48.0249	2.86254
	95% Confidence Interval for Mean	Lower Bound	42.1867	
		Upper Bound	53.8631	
	5% Trimmed Mean		48.6619	
	Median		50.0000	
	Variance		262.212	
	Std. Deviation		16.19297	
	Minimum		11.11	
	Maximum		72.22	
	Range		61.11	
	Interquartile Range		22.73	
	Skewness		-.599	.414
	Kurtosis		-.386	.809

Based on the findings of the N-Gain Score test calculation and the aforementioned descriptive analysis table, the experimental group's mean N-Gain score was 73.3759%, or 73.4%, with a top value of 95.00% and the lowest value of 54.55%. The mean N-Gain score for the control group was 48.0249%, or 48%, with a range of maximum and minimum scores of 72.22% and 11.11%, respectively. The researcher employed the interpretation of the N-Gain Score test suggested by Hake to determine the level of effectiveness, specifically the usage of a digitized multilingual dictionary (1999). The following categories formed the basis for the interpretation as presented in Table 4.

Table 5. N-Gain Score-Category in Percent

Percentage	Interpretation
< 40	Ineffective
40 – 55	Less effective
56 – 75	Moderately effective
>76	Effective

Based on the table above, the use of the digital multilingual thematic dictionary in the experimental group was categorized as moderately effective on sixth-grade students' literacy skills because the experimental group's mean score was 73.4%. On the other hand, the use of the printed thematic picture dictionary in the control group also had an impact but was less effective than the performance of a digital multilingual thematic dictionary. The control group's mean score was

48.0%. From the results, it can be interpreted that the multilingual thematic dictionary is suitable and has an effective impact on students' literacy skills compared to the use of conventional methods during the learning process.

3.2. Discussion

In research using a pre-test and post-test only control group design, there are treatments that must be given to the control and experimental groups. In this current research, each group received a total of three treatments with three materials focusing on *home activities, animals, and public places*. One treatment took 45 minutes in class. During the treatment, the researcher found that students in the experimental group were more active than students in the control group. The number of students who raised their hands in the experimental group was higher than in the control group. On the other hand, only a few students in the control group raised their hands when asked a question. These findings could provide an illustration that students in the experimental group seemed more enthusiastic in learning activities facilitated by the digital multilingual thematic dictionary.

Not only aroused students' enthusiasm but also a digital multilingual thematic dictionary excelled in time efficiency. Students in the experimental group were faster in completing their assignments at each meeting. Students in the control group also used a printed version of the dictionary to complete their assignments, however, the performance shown was not as good as students in the experimental group who used a digital dictionary. Flipping through pages in a printed dictionary was less time efficient. In addition, the accuracy of students' vocabulary pronunciation in the experimental group was better than the students in the control group. The pronunciation feature in the digital dictionary assisted students in correcting errors in pronunciation.

The findings obtained by the researcher during the data collection process were in line with the final results of the data analysis obtained. Based on the results of the calculation of the N-Gain Score test and the descriptive analysis, it was found that the mean score of the N-Gain for the experimental group was 73.3759%, while the control group was 48.0249%. The results of the N-Gain score test showed that the use of the digital multilingual thematic dictionary in the experimental group was categorized as moderately effective, while the use of the printed thematic picture dictionary in the control group was less effective than the performance of a digital multilingual thematic dictionary. It could be concluded that the digital multilingual thematic

dictionary performed better than the printed thematic picture dictionary. Furthermore, the findings and results also proved that the alternative hypothesis (H_a) of this current research was accepted because the value of the N-Gain score of the experimental group was more than 55%.

The result obtained in this current research was relevant to the previous studies. Rezaei and Davoudi (2016) stated that a digital dictionary was a powerful tool for vocabulary learning because it excelled in terms of speed, time efficiency, and ease of access. The digital dictionary was much easier to use, more accessible, faster in translating words, more practical to carry anywhere, and looked trendier in the current era of globalization (Akramah et al., 2020; Alamri & Hakami, 2022. Furthermore, the pronunciation feature in the digital dictionary helped students overcome their pronunciation problems (Alamri & Hakami, 2022). In addition, Amirian and Heshmatifar (2013), and Yanti (2016) argued that the digital dictionary was powerful in enhancing vocabulary mastery. The digital dictionary was rated better than using the lecture method in learning vocabulary (Hakim et al., 2018; Santoso & Andriyadi, 2019). It also indicated that the digital dictionary can be used easily by all language learners, especially when they learned about phonology and vocabulary (Ambarwati & Mandasari, 2020; Lamido et al., 2021). The success of using a digital multilingual dictionary in the experimental group was due to the fact that the digital dictionary presented so many conveniences from various aspects and was classified as an interesting language learning media in attracting students' attention.

Since the alternative hypothesis of this current research was accepted and the research's results met the related theories, then it could be confirmed that the digital multilingual thematic dictionary gave a significant impact on sixth-grade students' literacy skills. The result of this current research accepted the previous studies. The digital multilingual thematic dictionary was considered moderately effective in facilitating language learning and could give a significant impact on sixth-grade students' literacy skills. In this case, the literacy skills in question include the student's ability to read vocabulary with good pronunciation, able to write vocabulary and sentences with correct spelling, and understand the meaning of vocabulary related to the themes being taught. The digital multilingual thematic dictionary performed better than the printed thematic picture dictionary. Even though the use of a digital multilingual thematic dictionary proved to be superior, several things need to be considered so that the impact obtained can be maximized.

4. CONCLUSIONS

4.1. Conclusion

In conclusion, a digital multilingual thematic dictionary was deemed suitable for use in language learning since it had a significant impact on the literacy skills of sixth-grade students. The results demonstrate that the digital multilingual thematic dictionary is highly recommended because the experimental group's N-Gain score value exceeded 55% and was deemed moderately effective. The experimental group's students performed better than the control group's students in terms of test scores. The sixth-grade students' literacy abilities were impacted by the use of a digital multilingual thematic dictionary, and they outperformed those who used a paper thematic image dictionary.

4.2. Suggestions

The suggestions are given to teachers and other researchers. For teachers, it is suggested to utilize the digital multilingual thematic dictionary in learning activities to increase students' literacy skills since the dictionary has a significant impact on students' literacy skills. For other researchers, it is suggested to conduct the experimental study with different variables with wider samples to determine the impact of a multilingual thematic dictionary on another variable.

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