Discovery Learning Model Optimizing Digital Thematic Multilingual Dictionary to Improve Literacy Skills

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ABSTRAK

Studi pendahuluan menemukan bahwa siswa menghadapi masalah keterampilan literasi. Hasil pre-test membuktikan bahwa nilai rerata yang dicapai kelas 4 sebesar 42,49 (sangat rendah), kelas 5 sebesar 63,06 (rendah), dan kelas 6 sebesar 49,58 (sangat rendah). Berdasarkan temuan tersebut, penelitian ini bertujuan untuk menganalisis apakah penerapan model pembelajaran penemuan yang mengoptimalkan kamus multibahasa tematik digital dapat meningkatkan keterampilan literasi siswa sekolah dasar. Penelitian ini melibatkan empat langkah utama, yaitu perencanaan, tindakan, pengamatan, dan refleksi. Sampel berjumlah 84 siswa yang ditentukan secara purposif untuk menentukan tiga kelas dari sembilan kelas yang mewakili kelas 4, 5, dan 6. Tes yang dilakukan yaitu pre-test dan post-test. Pre-test digunakan untuk mengukur tingkat literasi sebelum diberikan perlakuan, sedangkan post-test digunakan untuk menghitung tingkat literasi setelah diberikan perlakuan. Setelah empat sesi perlakuan dan dua post-test, ditemukan bahwa keterampilan literasi siswa dapat ditingkatkan secara signifikan. Nilai rerata yang diperoleh pada siklus II masing-masing sebesar 86,77 (tinggi), 93,66 (sangat tinggi), dan 95,55 (sangat tinggi). Hasil tersebut mengimplikasikan bahwa model pembelajaran penemuan yang memanfaatkan kamus multibahasa tematik digital dapat meningkatkan keterampilan literasi siswa sekolah dasar. Oleh karena itu, sangat disarankan agar siswa secara teratur menggunakan kamus untuk pembelajaran mandiri mereka.

ABSTRACT

A preliminary study found that the students faced literacy skill problems. The results of pre-tests proved that the mean score achieved by grade 4 was 42.49 (very low), grade 5 was 63.06 (low), and grade 6 was 49.58 (very low). Regarding these findings, this study further aimed to analyze whether implementing a discovery learning model that optimized a digital thematic multilingual dictionary could improve the elementary students' literacy skills. This study involved four main steps, plan, act, observe, and reflect. The samples were 84 students determined purposively for deciding three classes among those nine classes representing 4th, 5th, and 6th grades. There were two kinds of tests, pre-test and post-test. The pre-tests were used to measure the literacy level before treatments, while the post-tests were employed to count for the literacy level after treatment. After four sessions of treatments and two post-tests, it was discovered that students' literacy skills could have been notably improved. The mean scores obtained on the second cycle, respectively, were 86.77 (high), 93.66 (very high), and 95.55 (very high). These results imply that the discovery learning model utilizing a digital thematic multilingual dictionary can enhance elementary school students' literacy skills. Thus, it is strongly recommended that students regularly use dictionaries for their self-directed learning.

1. INTRODUCTION

Literacy is an important ability that must be possessed by anybody in the current 21st-century era. Literacy is generally related to a person's ability to read and write (Padmadewi et al., 2022; N M Ratminingsih et al., 2022). Literacy is also determined as a complex and dynamic phenomenon because literacy develops and varies frequently over time. Related to one's basic competence, language literacy becomes the most prominent skill to master (Mkandawire, 2018; Quinn & Wagner, 2018). Language literacy is a competency that underlies a person's language development, namely listening, speaking, reading, and writing (N. M Ratminingsih & Budasi, 2020; Suniyasih et al., 2020). Language literacy is also an essential aspect of English language learning since it enables students to comprehend, create, communicate, and convey information. Furthermore, literacy includes cultural, intellectual, and digital literacy (Moore & Hancock, 2022; Wulandari et al., 2021). Therefore, language literacy is a person's ability to write, read, comprehend, and create, communicate, and convey information which deals with concepts such as culture, intellectuality, and digital literacy.

On the contrary, Indonesian children's literacy skills are still very lacking. The PISA test in 2018 showed that Indonesia was ranked 71st out of 79 countries, and the UNESCO study in 2016 also mentioned that Indonesia was ranked the second lowest in the world (Susanti & Prameswari, 2021; Yani et al., 2021). In addition, Indonesia is also in the last second place out of 8 countries according to the 2016 World's Most Literate Nation survey results (Parmawati et al., 2022). These three pieces of evidence prove that Indonesian children's literacy skill is truly very low and critical, which necessitates serious treatment. The preliminary study administered in SDN 3 Banjar Jawa also proved the same problem. The pre-tests demonstrated that the language literacy skills of 4th, 5th, and 6th-grade students were substantially low. The informal interviews with two teachers revealed that they had taught English using dictionaries, songs, and pictures, but these media seemed not to help the learning process maximumly. They also conveyed there were not enough printed dictionaries in the school. Thus, not all students have adequate access. It was also found that learning activities were not following the demands of 21st century learning, which involved technology in learning. In fact, young learners are digital natives who are more aware of the use of technology (Bagdi & Bulsara, 2023; Bosica et al., 2021).

Therefore, an appropriate solution is needed to improve students' language literacy skills. The implementation of the discovery learning model enhanced students' curiosity and improved critical thinking. It made students more engaged and self-reliant in their exploration of the materials for completing assignments (Lukitasari et al., 2020; Sukartiningsih et al., 2019). Other previous studies on the development of digital thematic multilingual dictionaries proved that digital dictionaries significantly affected elementary school students' language literacy. Digital dictionaries positively impacted students' literacy skills in terms of vocabulary mastery; the students who learned with digital dictionaries performed better than the printed ones (Hakim et al., 2018). The digital dictionary provided users many benefits and conveniences that it can maximize students' vocabulary mastery and literacy skills (Alamri & Hakami, 2022; Ambarwati & Mandasari, 2020). Additionally, the most current research comparing printed and digital thematic dictionaries justified that the digital dictionary outperformed the printed one in language literacy skills (Ratminingsih et al., 2022). Hence, previous studies have confirmed the effectiveness of the discovery learning model and dictionaries in increasing students' literacy skills and other competencies, such as critical thinking, creativity, activeness, and independence.

Considering previous research, the discovery learning model applied in this current research differed in terms of skills to be studied, language literacy skills, and the subjects of the research, that is, young learners. The other substantial difference is that this research integrated digital dictionaries. Furthermore, digital dictionaries as media of learning for elementary school students are still lacking, especially in the EFL context. Most of the previous studies focused on secondary and university levels. Previous study proved that the digital dictionary significantly affected literacy skills, this classroom action research needs to be carried out as a follow-up of the experimental research to confirm whether or not the discovery learning optimizing the digital thematic dictionary possessed relatively stable effect to give improvements in language literacy skills to the elementary school students of SDN 3 Banjar Jawa (Ratminingsih et al., 2022). Thus, the novelty of this study lies particularly in the different research designs, samples of the study, and, more importantly, the use of the discovery learning model as the main framework of the teaching and learning activities. The discovery learning model is a model that aims to direct students to find their knowledge and understanding during studying. Discovery occurs when students use their mental processes to discover concepts or principles. Previous study explains that learning using the discovery learning model focuses on the activities and participation of students, while the teacher only acts as a facilitator or guide (Seminarsih, 2023). Additionally, other study clarifies there are three main characteristics of discovery learning, namely (1) students use and integrate their knowledge to solve problems, (2) all activities are student-cantered, and (3) there are activities that combine new knowledge and existing knowledge (Kristin, 2016). Furthermore, the use of the discovery learning model is considered very suitable for English learning, especially for elementary school students, because this learning model creates varied, student-cantered learning activities and can train students to remember English vocabulary well (Kusuma et al., 2017; Rafael et al., 2022; Ramadhaniyati et al., 2023). Through this model of learning, which also integrates fun activities like songs and games, the students can play an active role in learning activities and be able to find and understand information related to learning.

In this particular study, the discovery learning model optimizing a digital multilingual thematic dictionary adapts the conceptualized six main steps, namely stimulation, identification of the problem, data collection, data processing, verification, and conclusion or generalization. In the stimulation stage, the related vocabularies are introduced in songs to engage the students with fun activities. In this section, the students are trained to listen to the pronunciation of the words in the context with musical amusement. In identifying the problem stage, they are introduced to the crossword puzzle, a problem-solving task in the form of a game. Both songs and games are two powerful media to teach young learners (Ratminingsih, 2016; Ratminingsih et al., 2018). In the collecting data stage, the students are further instructed to collect as much information as possible from the digital thematic dictionary to help them understand the reading materials of the horizontal and vertical lines to complete the puzzle in pairs. In this case, the task focuses more on reading phrases or simple sentences and writing words (Ibrahim et al., 2022; Kalkan et al., 2022). Besides that, the students can also find the pronunciation of the

words in the dictionary. In processing the data stage, they are given tasks in the form of rearranging words and translating simple sentences to train them to read and write sentences more. In the next two stages, in the verification stage, the teacher checks their work and gives feedback, while in the conclusion/ generalization stage, guided by the teacher, the students review the material and recall as many words as possible.

The digital multilingual thematic dictionary used in this research is a dictionary that can be accessed via a computer or smartphone and is designed thematically to facilitate English learning activities for elementary school students (Parmawati et al., 2022; Ratminingsih et al., 2021). Three languages appear in this dictionary: Indonesian, English, and Balinese. This digital dictionary has colorful pictures to attract students' attention (Parmawati et al., 2022; Ratminingsih et al., 2021). In learning activities, digital dictionaries are used at the data collection stage. In this case, the multilingual thematic digital dictionary acts as a tool to assist students in finding vocabulary meanings in a more accurate, efficient, and effective way.

2. METHOD

This research study applied classroom action research approach to solve the literacy problems. Four stages were carried out in this research: plan, act, observe, and reflect (Kemmis et al., 2014). In the planning stage, the researchers prepared the lesson plans, materials, media, tests, and criteria for assessing the students' language literacy skills. The act stage referred to the implementation of the lesson plans with the main treatments of utilizing the discovery learning model and digital thematic dictionary. A pre-test of language literacy skill level was held before the action stage. Four sessions in two cycles in each level were delivered. The observation was carried out to collect data during the implementation with the help of video recording and notes. The reflection stage was conducted as an evaluation process of whether the implementation of the actions taken was successful by giving the students a post-test on language literacy skills at the end of the cycle. The research was further continued with the second cycle considering the post-test results showed that the minimum mastery learning achievement required has not yet been reached. The study was conducted at SDN 3 Banjar Jawa, a bonafide government elementary school in the main city of Singaraja, Buleleng-Bali. The subjects involved in this study were 84 students. The 4th grade consisted of 32 students, the 5th grade had 25 students, and the 6th grade covered 27 students. They were determined purposively after consulting their teachers based on their language literacy problems. The students in this school have learned English since the first grade, so compared to other government schools around the cities, this school represents better handling of English lessons. Data were collected based on the instruments used. There were two kinds of instruments, teaching scenarios and language literacy tests. First, the researchers created the four teaching scenarios of each level and then discussed in the focus group discussion to determine the final draft. Next, the tests (pre-test and post-test) used went to expert judgments and empirical validity before the study. Expert judgments were used to measure content validity, while empirical validity through try-out was done to measure the validity and reliability of the tests. Content validity was analysed using the Gregory formula, while empirical validity was analysed in two ways, the validity was measured using Pearson Product Moment analysis, and reliability was calculated by applying Cronbach's Alpha. The results of the empirical validity of each level's instruments (tests) are presented in Table 1.

Table 1. Results of Content Validity and Reliabilty

	4th-grade test	5th-grade test	6th-grade test	Criteria
CV	1.0	0.97	1.0	Very high validity
R	0.94	0.93	0.91	Reliable

Table 1 shows that the content validity of the tests is categorized as very high. After the try-out, the empirical validity proves that the tests are reliable. Therefore, they are ready to be used in collecting data. The teachers then used teaching scenarios to give treatments to the students. Each cycle was completed in three sessions, two sessions for giving treatments and one session to hold a post-test. The post-test was delivered at the end of the cycle. The research results were analysed descriptive quantitatively through the measurement of the total score, mean score, and percentage of each interval score gained by the students in three different aspects of tests: multiple-choice, rearranging words, and translating sentences.

3. RESULT AND DISCUSSION
Result
Fourth Grade Students' English Literacy Skills

Before carrying out the treatment for cycle 1, a pre-test was given to determine students' initial language literacy skill. There were two themes given, namely things in the classroom (1) and family (2), with aspects

assessed including multiple-choice (MC), rearranging words (RW), and translating (T). Score conversions and predicates follow the guideline in Table 2.

Table 2. Score Conversions and Predicates

Score	Subject	Description
0-59	E	Very Low
60-69	D	Low
70-79	C	Moderate
80-89	B	High
90-100	A	Very High

The 4th grade students' pre-test and post-test results in cycle 1 are displayed in Table 3.

Table 3. 4th Grade Students' Pre-Test and Post-Test Results in Cycle 1

Pre-test								Post-test 1			
Theme 1				Theme 2				Theme 1			
MC	RW	T	Mean	MC	RW	T	Mean	MC	RW	T	Mean
64.44	16.38	30.55	37.12	68.05	49.44	26.11	47.87	78.05	74.16	38.88	63.70
	Mean				42.49				Category		Low
	Category				Very low				Predicate		D
	Predicate				E						

From Table 3, it can be explained that the student's initial literacy skills are categorized as very low (mean score 42.49). The mean score of students' literacy skills after being given treatment in cycle 1 with the learning theme of *things in the classroom* becomes 63.70. If compared to the pre-test mean score, the results of post-test 1 show an increase in literacy skill achievement even though it is still categorized as low.

Based on the findings above, the research was continued in the next cycle (cycle 2) by emphasizing several things, namely (1) learning activity still requires an emphasis on games through crossword puzzles, (2) learning activity still gives an emphasis on rearranging words into sentences because there was 26.47 % (9 students) that have not reached the minimum competency standard, and (3) learning still puts an emphasis on translating activities because there was 88.23% (30 students) need attention and improvement more specifically in terms of translating sentences. The treatment in cycle two was carried out in two sessions with the theme "*family*" The post-test results for cycle two are shown in Table 4.

Table 4. 4th Grade Students' Post-Test Results in Cycle 2

Post-Test 2			
Theme 2			
MC	RW	T	Mean
87.18	85.31	87.81	86.77
Category		High	
Predicate		B	

Based on Table 4, the mean score of students' literacy skills after being given treatment in cycle 2 is 86.77. Compared to the post-test results in cycle 1, the results of post-test 2 show an increase in literacy skill from the mean 63.70 which is initially categorized as low (in cycle 1) to become high (in cycle 2). A very valuable increase occurred in all aspects of the assessment. In more detail, the total number of students who scored below the minimum ability standard in the multiple-choice aspect was only one student (3%), then five students (15.6%) for the aspect of rearranging words into sentences, and three students (9.3%) for the aspect of translating sentences. The mean scores obtained by students in these three aspects have exceeded the minimum ability standard (70), so it can be concluded that this study has successfully increased 4th-grade students' literacy skills after delivering four sessions within two cycles.

Fifth Grade Students' English Literacy Skills

The 5th grade students' pre-test and post-test results in cycle 1 are displayed in Table 5.

Table 5. 5th Grade Students' Pre-Test and Post-Test Results in Cycle 1

Pre-test								Post-test 1			
Theme 1				Theme 2				Theme 1			
MC	RW	T	Mean	MC	RW	T	Mean	MC	RW	T	Mean
81.2	58.4	30.4	56.66	87.6	70.4	50.4	69.47	87.08	63.33	50.83	67.08
Mean					63.06			Category			Low
Category					Low			Predicate			D
Predicate					D						

Table 5 describes that the initial literacy skills of 5th grade students are categorized as low. The mean score of 5th grade students' literacy skills after being given treatment in cycle 1 with the theme *food and drink* is 67.08. Compared to the pre-test result (mean 63.06), there is a slight increase, but not yet significant. Since it is still in the low category.

Because the students' literacy skills in the pre-test and post-test 1 are still in the same category, namely low, the research must be continued in cycle two by emphasizing the following points, namely (1) learning activity still requires an emphasis on games through crossword puzzles, (2) learning activity still needs to be emphasised on rearranging words into sentences because there was 62.5 % (15 students) that have not reached the minimum competency standard, and (3) learning which still focuses on translating activities because there was 62.5 % (15 students) need attention and improvement more specifically in terms of translating sentences. The treatment in cycle two was carried out in two sessions with the theme "*clothes*". The post-test results for cycle two are shown in Table 6.

Table 6. 5th Grade Students' Post-Test Results in Cycle 2

Post-Test 2			
Theme 2			
MC	RW	T	Mean
92.8	91.6	96.4	93.6
Category		Very high	
Predicate		A	

Based on Table 6, students' literacy skills after being given treatment in cycle 2 is 93.6. The data has shown an increase in literacy skills from those that were initially categorized as low (cycle 1) to very high (cycle 2). The improvements occurred in all three aspects of the assessment. A high increase occurred in translating sentences' scores from initially getting a mean score of 50.83 to 96.4. This is an interesting finding. In the aspect of multiple choice and translating sentences, the scores of all students (100%) have exceeded the minimum standard of 70, while in the aspect of rearranging words into sentences, only one student (4%) is still below the minimum standard score. Overall, it can be concluded that this research successfully helps the 5th grade students to improve their literacy skills.

Sixth Grade Students' English Literacy Skills
The 6th grade students' pre-test and post-test results in cycle 1 are displayed in Table 7.

Table 7. 6th Grade Students' Pre-Test and Post-Test Results in Cycle 1

Pre-test								Post-test 1			
Theme 1				Theme 2				Theme 1			
MC	RW	T	Mean	MC	RW	T	Mean	MC	RW	T	Mean
66,29	78.51	11.11	48.95	87.40	65.18	14.81	50.21	82.06	88.96	77.24	80
Mean					49.58			Category			High
Category					Very low			Predicate			B
Predicate					E						

Based on Table 7, the students' initial literacy skills are categorized as very low. The result of post-test one proves that there is an improvement in students' literacy skills from very low to high. The improvements occurred in all three aspects of the assessment. A very high improvement occurred in the aspect of translating from 11.11, 14.81 to become 77.24.

Even though post-test 1 showed high improvement in students' literacy skills, the students' translating scores still need to be improved. Therefore, the treatment in cycle two was needed to increase the translating

ability. The research continued to the next cycle (cycle 2) with an emphasis on translating sentences because eight students (27.5%) needed to be assisted in this aspect. Cycle 2 was carried out in 2 sessions with the theme "*public places*". The post-test result in cycle two is displayed in Table 8.

Table 8. 6th Grade Students' Post-Test Results in Cycle 2

Post-Test 2			
Theme 2			
MC	RW	T	Mean
97.4	96.66	92.59	95.55
Category		Very High	
Predicate		A	

After being given treatment in cycle 2, students' literacy skills achieved a very high improvement in all three aspects of assessment. Table 8 shows the mean score obtained by all students (100%) in these three aspects has exceeded the minimum ability standard score of 70, so it can be concluded that this study also successfully gives very high improvements for the 6thgrade students' literacy skills. From all of the research results involving 2 cycles in three different grades, it can be summarized that the discovery model optimizing the digital thematic multilingual dictionary could gradually help students improving their literacy skills which are measured in terms of recognizing words, comprehending, and translating sentences.

Discussion

Concerning all of the aforementioned, some important findings should be discussed. First, based on the pre-test results, the 4th, 5th, and 6th grade students' initial literacy skills were discovered to be low and very low. These findings corroborate several previous proofs from PISA, UNESCO, and World's Most Literate Nation survey results (Parmawati et al., 2022; Susanti & Prameswari, 2021; Yani et al., 2021). This means that this study strengthens the results of previous studies. Second, the results obtained after giving two treatments in cycle one showed an increase in vocabulary mastery but a lack of the other two aspects. In this case, the students indicated vocabulary mastery improvement in the first cycle. It is proved that the use of the discovery model combining with the digital thematic multilingual dictionary can increase their vocabulary mastery. Vocabulary is the foundation of literacy. The more vocabulary possessed, the better the students' language literacy (Hakim et al., 2018; Ratminingsih et al., 2022).

Since the students under research were still facing problems in writing skills, specifically in arranging words into sentences and translating sentences, cycle two was further needed to maximize the students' literacy skills' improvement with more emphasis on activities such as rearranging words and translating sentence activities. Next, after holding cycle two the results displayed a better improvement in 4th, 5th, and 6th grade students' literacy skills. Most students achieved higher scores in all three aspects of the assessment. Since students' scores at the end of the second cycle exceeded the minimum standard score of 70, then it is concluded that this research can successfully improve the 4th, 5th, and 6th grade students' literacy skills. The improvement after administering two cycles was caused by several factors, namely in terms of the learning model, the design of class activities, and the learning media used. Four learning activity sessions were conducted using a discovery learning model. In this case, the learning model follows six key steps: stimulation, problem identification, data collection, data processing, verification, and conclusions or generalization (Kristin, 2016; Ratminingsih et al., 2023; Seminarsih, 2023).

In the stimulation stage, the songs were used to engage the students with fun activities. The students were trained to listen to the pronunciation of the words and note the vocabulary they found in the song. This activity aroused students' curiosity and motivation. Apart from creating a pleasant and relaxed atmosphere, songs also facilitate language learners with various aspects of language features such as vocabulary, grammar, and pronunciation (Davis, 2017; Ratminingsih, 2016; Wang, 2023). Songs provide accurate pronunciation and intonation examples for students so that it can improve students' pronunciation skills if songs are given repeatedly. Additionally, in teaching English to young learners, using songs is important in providing students stimulus (Ira, 2015; Tyasrinestu, 2019). Songs can allow students to imitate the sounds they hear. By listening to the song, students will remember its vocabulary, and then they can imitate how it is pronounced (Purwanti, 2020; Putri & Rustipa, 2023; Putri & Sya, 2022).

In the identification of problem stage, the students were introduced to a problem-solving task in the form crossword puzzle. When teaching English to young learners, games are seen as an effective medium to stimulate students' creativity, critical thinking, curiosity, and motivation (Ratminingsih et al., 2018; Wang, 2023). Through crossword puzzles, students can recall the meaning of vocabulary that is related to the theme or learning material. Crossword puzzles also enrich students' vocabulary (Wahyudi, 2023; Yuana et al., 2021). Students are trained to think critically and creatively because they must guess the answer for each clue in the crossword puzzle.

In the collecting data stage, the students were instructed to open the digital dictionary link on their smartphone, and they were instructed to collect as many vocabularies as possible. In this case, the digital thematic multilingual dictionary is intended to help students find the meaning of vocabulary more accurately, efficiently, and effectively (Maden, 2020; Zheng & Wang, 2016). Furthermore, the pronunciation feature also helps them to practice their pronunciation skills. Students can also learn how to use the vocabulary in a sentence because this dictionary provides many examples. In addition, colourful pictures in the dictionary attract students' attention and can arouse students' motivation to learn English (Hakim et al., 2018; Rorimpandey, 2023). This learning media is powerful in optimizing students' achievement, especially for literacy skills.

In the processing data stage, students were given two more tasks that focused on reading and writing by rearranging words and translating simple sentences. The rearranging words task is intended to practice students' critical thinking skills and creativity in composing words into sentences (Sutrisna, 2021; Wulanjani, 2016). By giving this task, students will use and train their knowledge in grammatical understanding. Arranging word tasks and translating sentence tasks trains students' critical skills and grammatical understanding (Malik et al., 2022; Warman et al., 2019). Students learn to understand how a word can be used and positioned in a sentence and how to form sentences in two different languages and see how they differ. These two tasks are meant to enrich students' vocabulary and train their ability to produce language, create more challenging learning activities, and train their critical thinking skills.

In the next two stages, the verification and conclusion, teachers reviewed the student's work and provided feedback. On the other hand, under the teacher's guidance in the conclusion/generalization stage, students reviewed the material and recalled as many words as possible. By reviewing and recalling the words, students are directed to put the understood words into their long-term memory. This is in line with previous study state that regular reviewing and recalling content after a gap helps to strengthen the ability to remember it in the longer term (Weinstein et al., 2019). In terms of the media, this research optimized the use of a digital thematic multilingual dictionary. This media successfully improved 4th, 5th, and 6th grade students' literacy skills. Appropriate media plays an important role in the success of teaching and learning activities. As Generation Z students who are more adept at using technology in education and who are proficient with almost all digital devices and unable to function without them, they can increase their motivation to learn when the medium used is one that is digital (Ratminingsih et al., 2023; Takács et al., 2016).

The results of this research support the previous studies regarding the use of discovery learning models and digital dictionaries. Implementing the discovery model in learning activities for two cycles in this research impacted literacy skills and indirectly trained students' critical thinking, creativity, activeness, and independence through various learning activities. Hence, it reinforces by other researches that the use of the discovery learning model can arouse students' curiosity and improve their critical thinking skills (Fahmi et al., 2019; Lukitasari et al., 2020; Sukartiningsih et al., 2019). In addition, discovery learning makes students more active and independent in elaborating on materials and finishing assignments.

Furthermore, the results of this research are also in line with the results of previous research in justifying the effect of digital dictionaries on students' literacy skills. By looking at the results of the student's final post-tests in every cycle, it can be confirmed that the digital thematic multilingual dictionary has improved students' literacy skills (Alamri & Hakami, 2022; Lamido et al., 2021). These results are relevant to previous studies which mentioned that digital dictionaries are a beneficial learning media for enhancing students' literacy skills and the digital dictionary performed better than the printed dictionary (Ambarwati & Mandasari, 2020; Hakim et al., 2018). Therefore, this follow-up action research has proven that the discovery learning model optimizing the use of a digital thematic multilingual dictionary improves 4th, 5th, and 6th grade students' literacy skills.

The implication of this study is that the discovery learning model which optimizes a digital thematic multilingual dictionary can improve the literacy skills of elementary school students. On the other hand, the limitations are: (1) the students need to have a good internet connection, in order to use the digital dictionary, and (2) the school policy which does not allow gadget use in the school makes the use of dictionary is not maximum, and (3) If research is conducted over a limited time period, the long-term effects of implementing learning models or digital dictionaries may not be fully visible. Time limitations may impact the understanding of the extent of changes that occur in literacy skills. If research is highly dependent on digital technology, limited access or readiness of technology in some environments or schools can be an obstacle in implementing this learning model.

4. CONCLUSION

This follow-up classroom action research confirmed that the discovery learning model optimizing the use of a digital multilingual thematic dictionary has succeeded in improving 4th, 5th, and 6th-grade students' literacy skills at SD N 3 Banjar Jawa. Students' literacy skills that were initially very low became substantially increased after giving the treatments for two cycles in each grade. The 4th grade students achieved a high improvement, while the 5th and 6th-grade students achieved very high improvement in literacy skills. Thus, it is suggested that teachers

use the discovery learning model utilizing digital dictionaries for English literacy development, while students are recommended to regularly use dictionaries for self-directed learning in developing their literacy skills.

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