

The Development of Vocabulary Acquisition for Thai Kindergarteners through Digital Storytelling (DST)

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Abstracts

While Digital Storytelling (DST) is an effective teaching and learning resource that has been implemented at many educational levels, particularly in young learner classrooms, its effectiveness in developing vocabulary acquisition of Thai EFL kindergarteners is still understudied. This study investigated the effectiveness of Digital Storytelling (DST) on very young learners' vocabulary acquisition. A group of 22 kindergarteners aged between four and five years old was exposed to ten target words selected from two types of Digital Storytelling (DST) – a combination of a story and animation, and a combination of a song and animation. Wilcoxon Signed Rank Test and Cohen's *d* were adopted to compare the mean scores and observe the effect size of both combinations of Digital Storytelling (DST) respectively. Additionally, content analysis was adopted for qualitative data from the interview. Results indicated that both combinations significantly improved learners' vocabulary acquisition at the significance level of .05. This study also highlighted the effectiveness of Digital Storytelling in that both song and story could enhance the kindergarteners' vocabulary growth greatly. Moreover, the song was selected as their favorite choice the most. The implementation of digital storytelling in kindergarten classrooms could support learners to improve their vocabulary size effectively and positively.

Keywords: digital storytelling; Vocabulary Acquisition; kindergarten; young learners

Introduction

In learning a language, the four primary skills, namely listening, speaking, reading, and writing skills, are the most crucial skills for every language learner. While dissecting the components of language learning, vocabulary undoubtedly plays a critical part since it conveys meaning when reading books, watching movies, or conversing. Although vocabulary is a minor part, having a small vocabulary might make it difficult for users to comprehend any information given. (Wilkins, 1972 : 111) illustrates that "without grammar, very little can be conveyed; without vocabulary, nothing can be communicated," which is consistent with (Carter and McCarthy, 2014 : 47)'s assertion that vocabulary is a fundamental component of language proficiency. Additionally, (Schmitt, 2010 : 112) argues that students carry dictionaries rather than grammar books, implying that the meaning of an unfamiliar term, including its use, is more significant (Komol & Sripetpun, 2014 : 85). Additionally, due to the nature of the English language, parents in the twenty-first century are more inclined to invest in and well-prepare schooling for their children's future. As a result, a proponent of the Critical Period Hypothesis (CPH), develops the concept of "the younger, the better", which means young age is a certain age to learn a language. Similarly, (McDonough, 1981 : 76) indicates that "children are like

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sponges" (p.153) because their brains are capable of effectively absorbing everything around them: babbling imitates their caregivers and observing things through sight and touch, which leads them to begin learning, particularly English language, at an early age.

In Thailand, English is accepted as a foreign language (EFL) which means English is spoken and used exclusively in language classrooms. Consequently, EFL learners cannot use the target language fluently due to a lack of opportunities to practice, and drill, especially the communication skills - listening skills, and speaking skills. With this respect, children from the EFL context are likely to start their language learning at a very young age, and likely to be younger to activate their communication skills, be able to use the language naturally, and increase lexicon size. According to the researcher's observation on the Thai context of English language learning, it is likely to occur in many EFL countries. To illustrate, in Thailand, children are sent to private preschools or kindergartens where they interact with both native and non-native English-speaking teachers to be familiarized with and be able to use the target language fluently.

The 21st-century young learners enjoy learning the target language through a variety of choices of digital storytelling such as 1) mobile learning applications – Khan Academy and 2) YouTube educational channels: Super Simple Songs which are not only well-designed, fun, and colorful but also stimulate children to absorb some basic English knowledge provided such as alphabets, numbers, including concrete topics around them, namely animals, and fruits. Moreover, these free and paid digital media are available to everyone, and everywhere. (Anderson and Chua, 2010 : 32-36) discuss that, in the late 1980s, Digital Storytelling (DST) was developed as a channel to publicize democratic perspectives and popularized and accessible for all afterward. The combination of pictures, animation, and audio convey the messages to audiences easier, and quicker in terms of expressing content to society, especially in education.

Additionally, the characteristics of Digital Storytelling (DST) are likely to support learners' learning styles of Fleming's (1987) VARK model which comprises Visual, Auditory, Reading/writing, and Kinesthetic which believes that each child learns the same thing differently. Kinesthetic is learning by doing. While an auditory learner acquires input through listening (Kirk, 2021 : 35). (Robin, 2006 : 709-716) emphasizes that Digital Storytelling supports learners in many ways, e.g., to activate their collaboration skills, and to enhance their experience through personal ownership and accomplishment, especially empowering classrooms with both mixed ability learners and different learning styles. Nonetheless, there is a dearth of a study examining the use of this new technology to improve very young EFL learners' vocabulary acquisition. Therefore, the findings of this study are valued in early childhood education and to elaborate teachers to apply this technology in their classroom not only engage learners to the new era of pedagogical practices which is more effective to students' achievements but also prepare them to interact with future digital media that are developed rapidly, including applying the resources into their learning valuably, and wisely.

Research Objectives

1. to develop Thai kindergarteners’ vocabulary acquisition through Digital Storytelling (DST)
2. to investigate the effectiveness of Digital Storytelling (DST) on very young learners’ vocabulary acquisition

Research Methodology

A mixed-methods design including quantitative and qualitative research design was used to analyze the collected data which were gathered under the one-group pretest-posttest experimental design since the researcher would like to compare the results before and after receiving the two treatments. Additionally, the qualitative data from the structured oral interviews from each participant were collected and analyzed to examine their opinions towards digital storytelling.

Table 1 Research Design

O ₁	X	O ₂
<p>Pre-test: Ten target words with three picture cards for each word were given to the participants.</p>	<p>Treatment: The six selected combinations of digital storytelling were played along with other activities according to the six lesson plans.</p>	<p>Posttest: The same ten target words with different picture cards were presented to the students to select.</p>

1. Research Participants: The participants were 22 kindergarteners at the age of four to five years old who have been studying at a private school for at least two years and have been interacting with both Thai and English languages either at home or school. They were selected by purposive sampling which used the judgment of the researcher in selecting a specific purpose to answer research questions.

2. Research Instruments: There are four research instruments in this study. First, pre-test and posttest whistled ten words (See Table 2) and two sets of different pictures to avoid learners remembering the pictures from the pre-test stage (See Figure 2). Second, six digital storytelling as treatments were a) three clips of a combination of a story with animation, and b) three clips of a combination of a song with animation. Each digital storytelling provided meaningful and repetitive target inputs with colorfulness, liveliness, clear pronunciation, appropriate to participants’ age, including the suitable length between 3-5 minutes. Third, six lesson plans which each of them lasted 40 minutes and was divided into three stages – 1) presentation – greeting and viewing a selected treatment, 2) practice stage with two follow-up activities; open questions technique, and the Total Physical Response Storytelling, and 3) The retelling strategy was applied during the production stage. To emphasize, the target words and pictures from the pre-test stage were not explained or translated during any stages. Furthermore, those follow-up activities from three techniques are believed to support very young language learners’ respond either orally or physically and observe how well they understand or gain the information from the content they have listened to, read, or learned. Fourth, structured oral interviews with two questions – 1) Which digital storytelling is your

favorite, story, or song? and 2) Why do you like it the most? and a matching game from their favorite combination was used to examine participants' opinions

Additionally, every research instrument not only was designed and selected by the researcher but also was validated and piloted with five kindergarteners before implementing with the participants to inspect its quality by three English language experts which resulted in a high degree of congruence at 0.97. Furthermore, to reduce the stress that might happen to the learners if the data were collected by another teacher which could affect the results of this study, the researcher decided to operate every step by herself.

Question: Which picture is a bug killer?



Figure 1. A question and sample of photo cards for a target word

Table 2. The repetition of each word exposure in each combination

Combination	Target words	Total number of exposures		
		Story 1	Story 2	Story 3
1) A story with animation	Grow	18	3	5
	Seed	14	7	13
	Plant	11	5	6
	Garden	10	8	0*
	Hole	2	0*	0*
2) A song with animation	Scratch	5	6	9
	Itchy	4	13	14
	Apply	2	0*	0*
	Ointment	2	0*	0*
	Bug killer	1	0*	0*

*Low frequency in exposure verbally but can be seen in animation form at least 5 times each.

The data collection process began with the pretest where each target word was pronounced by the researcher with three picture cards, and they were expected to select the correct pictures. Then the first Digital Storytelling (DST) - a combination of a story with animation was used in the first week then followed by the first posttest a day after. In the following week, the combination of a song with animation, and its posttest was conducted. To clarify, each combination and posttest was applied in a different week. After the six treatments, those two questions, and the matching game were applied with the participants by the researcher.

Table 3. Data Collecting

	Mon	Tue	Wed	Thu	Fri
Week 1	a combination of a story with animation; grow, seed, plant, hole, garden				
	Pre-test	Story 1	Story 2	Story 3	Posttest
Week 2	a combination of a song with animation; scratch, itchy, apply, ointment, bug killer				
	Pre-test	Song 1	Song 2	Song 3	Posttest and Structured oral interviews

3. Data Analysis: The data from the collection stage was analyzed and interpreted to answer the research questions. The data analysis comprised two parts using a statistical program to analyze 1) the quantitative data with Wilcoxon Ranked Test and Cohen’s d, and 2) the descriptive qualitative data by content analysis of each participant’s interview. The gathered data were analyzed by two statistical tests and content analysis, 1) the quantitative data with Wilcoxon Ranked Test to investigate the comparison and differences between mean scores of a pre-test and post-test, including 2) Cohen's d to examine the effect size of the treatments, and the qualitative data were analyzed through content analysis of each participant’s interview.

Table 4. Summary of Data Analysis

RQs	Instruments	Data Analysis
1) To what extent can combinations of Digital Storytelling (DST) between (a) a story with animation, and (b) a song with animation improve vocabulary acquisition of Thai kindergarteners?	<ul style="list-style-type: none"> • Pretests • Posttests 	<ul style="list-style-type: none"> • Wilcoxon signed-rank test • Cohen’s d
2) What are the opinions of Thai kindergarteners towards digital storytelling?	<ul style="list-style-type: none"> • Structured oral interviews 	<ul style="list-style-type: none"> • Content analysis

Conceptual Framework

This research implements two types of Digital Storytelling – a combination of a story with animation and a combination of a song with animation as independent variables in order to develop 22 kindergarteners’ vocabulary acquisition which is the dependent variable as shown in Figure 1.

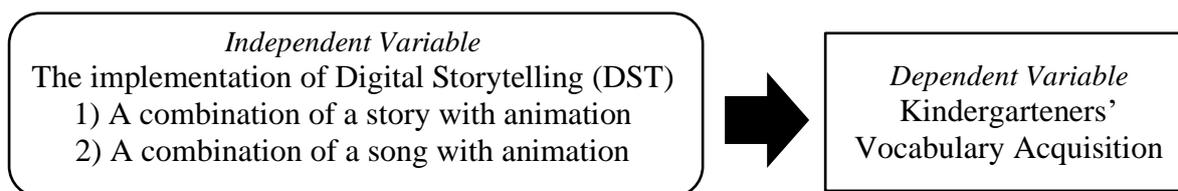


Figure 2. Conceptual Framework

Results

Thai kindergarteners' vocabulary acquisition

The vocabulary pre-and post-test scores of students who participated in Digital Storytelling (DST) with 1) a story combined with animation and 2) a song combined with animation were determined using descriptive statistics for the means and standard deviations. The mean scores for those two treatments were computed and compared using the Wilcoxon signed ranks test to see whether there was a significant difference between the pretest and post-test means. The results revealed that the two treatments significantly improved students' vocabulary acquisition at the .05 level as shown in Table 4.

Table 5. The Mean Scores of Pre-test and Posttest of both combinations

Combinations	<i>n</i>	Pre-test Scores		Posttest Scores		<i>t</i>	<i>Sig.</i>
		<i>M</i>	<i>S.D.</i>	<i>M</i>	<i>S.D.</i>		
Story	22	2.91	1.63	4.77	.612	-5.99	.000*
Song	22	2.68	1.46	4.86	.351	-6.82	.000*

* Significant at the .05 level (sig<.05)

Table 5 shows that the mean score of the posttest of a combination of a story ($M=4.77$) was higher than the mean score of the pretest of a combination of a story ($M=2.91$), and the mean score of the posttest of a combination of a song ($M=4.87$) was higher than the mean score of the pretest of a combination of a song ($M=2.68$). The posttest mean score for both combinations indicated a significant difference of 0.00, which was less than the level of .05. Although the results demonstrated a significant similarity between the post-test scores of those two types of digital storytelling at the 0.00 level, the posttest score of the song combination is higher and impacts kindergarteners' vocabulary stronger than the story combination. In addition, the results of participants' pre-test and post-test scores from both combinations were also calculated using Wilcoxon signed-rank and Cohen's *d* for the effect sizes as shown in Table 6.

Table 6. The pre-and-post-intervention scores of the combination of a story with animation (Wilcoxon Signed Ranks Test)

	<i>n</i>	Mean Rank	Ranks Sum	<i>z</i>	Asymp. Sig. (2-tailed)	Cohen's <i>d</i> (Effect Size)
Negative Ranks	0 ^a	.00	.00	-3.647	.000*	-0.549
Positive Ranks	17 ^b	9.00	153.00			
Ties	5 ^c					
Total	22					

* $p < .001$

a. Post-Intervention Scores < Pre-Intervention Scores

b. Post-Intervention Scores > Pre-Intervention Scores

c. Post-Intervention Scores = Pre-Intervention Scores

As Table 6 indicates, a statistically significant difference between the pre-intervention and post-intervention scores of the story combination [$z=-3.647$; $p<.001$]. The fact that the difference scores are all in favor of the positive ranks suggests and confirms that digital storytelling as the innovation has a significant effect on improving Thai kindergarteners' vocabulary as well as the findings in Table 4, the effect size calculated using Cohen's d statistic (Cohen, 1988 : 32) is shown to examine the magnitude of effect made by the treatment. To be precise, values between 0.1 and 0.3 suggest a small effect, values between 0.3 and 0.5 indicate a moderate effect, and values more than 0.5 indicate a strong effect. Furthermore, the pre- pre-and-intervention scores of the song combination are demonstrated in Table 6.

Table 7. The pre-and-post-intervention scores of the combination of a song with animation (Wilcoxon Signed Ranks Test)

	<i>n</i>	Mean Rank	Ranks Sum	<i>z</i>	Asymp. Sig. (2-tailed)	Cohen's <i>d</i> (Effect Size)
Negative Ranks	0 ^a	.00	.00			
Positive Ranks	19 ^b	10.00	190.00	-3.849	.000*	-0.580
Ties	3 ^c					
Total	22					

* $p<.001$

a. Post-Intervention Scores < Pre-Intervention Scores

b. Post-Intervention Scores > Pre-Intervention Scores

c. Post-Intervention Scores = Pre-Intervention Scores

In this investigation, the effect size is -0.580, which indicates a strong effect. Thus, the implementation of Digital Storytelling with a combination of a song with animation also has a significantly positive effect on vocabulary acquisition of Thai kindergarteners. The data available and the lack of a comparison group make these results relatively difficult to claim a direct link between changes in vocabulary acquisition. However, the target participants demonstrated improvements in acquiring new vocabulary over the scores before utilizing the innovation.

Thai kindergarteners' opinions toward digital storytelling

The structured oral interviews with two questions – 1) Which one is your favorite, story, or song? And 2) Why do you like it the most? Were used to elicit students' opinions on how they felt towards digital storytelling. Following by matching games with those five words from their favorite combination to investigate their word remembering. The results showed a positive attitude towards Digital Storytelling with both combinations of either a) a story with animation or b) a song with animation rated at highly positive level of the Story and Song Posttest outcomes. The data was as follows:

Table 8. Learners' individual vocabulary pre-test and posttest scores

Student N= 22	Story		Song		Choice of Preference*
	Pre-test	Posttest	Pre-test	Posttest	
1	4	5	4	5	Song
2	5	5	4	5	Story
3	5	5	2	5	
4	5	5	3	4	
5	4	5	3	5	
6	5	5	4	5	
7	2	3	2	5	
8	2	5	2	5	
9	0	3	4	4	
10	1	5	4	5	
11	1	5	3	5	
12	3	5	1	5	
13	4	5	5	5	
14	3	5	1	4	
15	1	5	3	5	
16	3	5	0	5	
17	1	4	0	5	
18	4	5	5	5	
19	1	5	2	5	
20	5	5	1	5	
21	2	5	3	5	
22	3	5	3	5	
Total	64	105	59	107	-

Table 8 not only shows the highly positive level of the Story and Song Posttest outcomes of Digital Storytelling with the combinations of a) a story with animation and b) a song with animation but also reveals that both combinations enhanced kindergarteners' vocabulary acquisition positively and effectively. Participants had a highly positive level of the Story and Song Posttest outcomes at 105 and 107 respectively. The pretest and posttest scores of the combination of the song improved from 59 to 107 in total which was the highest positive outperforming. Impressively, Students no. 16 and 17 had as low as zero point for their pre-test score, but they could have full scores at five out of five scores after they had watched the clip. While the combination of a story helped Student no. 9 to improve from one score to three scores for his posttest.

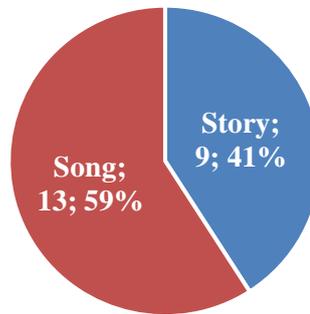


Figure 3. Participants' favorite between story and song

Figure 2 shows that 59% of those who were interviewed indicated that participants chose the combination of a song with animation as their favorite digital storytelling more than the combination of a story with animation as high as 18%. Interestingly, those two students with the highest moving up scores from zero to five, both had different preferences. Student no. 16 opted the song combination as her favorite while the story was chosen by Student no. 17. They responded that the animation and the song that were shown together were cute, and they could dance along with the song. The two questions focused on opinions and their favorite digital storytelling they interacted with as follows:

Student 2: *"I like story because I like Peppa Pig and I like garden."*

Student 3: *"I like story because it's easy."*

Student 9: *"I like story. It is fun."*

Student 12: *"I like song. I can dance."*

Student 16: *"I like song." She stood up then sang and danced.*

Student 17: *"I like song. Fun and happy."*

The results of this study highlight the effectiveness of Digital Storytelling (DST) to enhance very young language learners, acquire new vocabulary significantly and positively, especially the combination of a song with animation which was selected by learners as their favorite the most.

Discussions

Thai kindergarteners' vocabulary acquisition

The results of the study which were stated in the previous chapter, revealed a significant outcome at the 0.001 level in the mean scores of pre-test and post-test of the 22 kindergarteners who were the participants of the study. Both combinations were selected and applied as treatments improved the students' vocabulary acquisition significantly. According to Krashen's five hypothesis theory which convinced that a child has a similar process to acquire both first and second language to first language in their environment by interacting in a conversation naturally without focusing on structures or rules while conveying, but the meaning. Additionally, (Kelly, 2012 : 61) highlighted that incidental learning, in other words learning with an unplanned plan via activities, not only may assist learners enjoy obtaining new knowledge spontaneously in a stress-free environment but also benefit them positively. With this fact, digital storytelling is an optimum way to allow children to engage, interact, and

acquire new content throughout their days, especially during the lockdown of the COVID-19 pandemic across the globe during those chaotic years. Many students at every level only studied and learned via virtual classrooms with many useful technologies (e.g., online meeting, digital media). (Tunçarslan, 2012 : 46) and (Albaladejo, Coyle and de Larios, 2018 : 116-128) support that digital storytelling not only provides stories, songs, pictures and animation which appropriate to young learners since they can acquire new words while listening to either songs or stories and seeing either pictures or animation to understand the meaning of unknown words but also are developed in order to entertain viewers and keep their attention while learning as they are eager to learn new things but easily to get bored. The mean scores of the posttest of Digital Storytelling (DST) showed positive and significant results at 0.00, which was lower than the 0.05 level. Moreover, the combination of a song ($M=4.86$, $r=-0.58$) are higher than the combination of a story ($M=4.77$, $r=-0.549$) and were higher than and a combination of a story. These results corroborate the findings of (Hampu, 2018 : 149-158)'s research paper indicating that his fourth-grade students had a better outcome while learning through a song technique than telling a story technique. The results demonstrated that both types of Digital Storytelling (DST) enhance kindergarteners effectively. Furthermore, (Gentner, 1982 : 257), (Setoh, Cheng, Bornstein, and Esposito, 2021 : 1-24) emphasized that very young learners can acquire nouns and verbs better than other types of words, such as adjectives, adverbs since there are more chance to interact with and considered to be more concrete, and comprehensible. The ten words that were used in this study consisted of five nouns, four verbs and one adjective, however, one of 22 kindergarteners answered the adjective incorrectly in both his pretest and posttest scores. This implies that animations that were provided in each combination are concrete, clear and enhance participants' vocabulary acquisition while engaging the technology and leading them to answer each item correctly.

Thai kindergarteners' opinions toward digital storytelling

The findings regarding the students' attitudes towards digital storytelling to acquire new vocabulary as shown in the previous chapter indicated that the participants had positive viewpoints toward the innovation and were likely to enjoy learning and acquiring the words from both combinations, a story, and a song. These findings support evidence from previous studies (e.g., Albaladejo et al, 2018 : 116-128; Coyle & Gómez Gracia, 2014). Consequently, it is reasonable and possible to underline that the kindergarteners were satisfied while learning through the technology. In this study, the findings indicated that the song combination was selected as their choice of preference higher than the story combination at the interview session. It is difficult to explain this result, but it might be related to factors involved in this study such as the context and nature of children. Although the ages of the participants in this study were four – five years old and they have attended kindergarten for at least two years, their speaking skills are still limited. While having the structured oral interviews to observe participants' opinions and their choice of favorite digital storytelling, they could understand the questions which were asked in English and were able to answer by either giving short answers in English and in Thai verbally or answering physically by acting out which were acceptable. Moreover, according to (Asher, 1977 : 51), a developer of Total Physical Response (TPR), believed that learners can acquire and learn languages through acting out, and follow their teachers without forcing them to speak because they will speak once they are ready. Moreover, forcing them to speak might create a negative attitude and anxiety which might lead them to refuse to engage with the target language. The results proved that applying TPR at the teaching intervention

enhances young learners' understanding of new words clearer. In addition, movement activities are suitable to young learners' development which love to learn new things around them but doing with their five senses – seeing, hearing, smelling, tasting, and touching which are like Fleming's VARK model which was developed during the eighties and consisted of V-Visual, A-Audio, R-Write and K-Kinesthetic. Consequently, participants selected the combination of a song with animation the most (59% of the total) which reflected their opinions that were given during the interview session, “*Dance, happy, fun*”. Finally, Digital Storytelling provides meaningful and authentic learning to learners which is a window for them to open to enjoy learning new different content every day, including offering them a chance to interact with the target language and acquire things around them by engaging unconsciously.

Limitations of the Study

There were four limitations in this study. First, this study was conducted within a very limited time to have different results, especially on the effectiveness of digital storytelling and learners' lexical retention should conduct longer. Second, the number of participants was small so the results could not be generalized and represented by other kindergarteners or young learners in bigger contexts. Therefore, conducting with more participants and in other grades will outperform differently. During the intervention, it was a time of COVID-19 pandemic where the data were collected virtually that led to the third limitation which was the omission of some activities in the lesson plans (e.g., retelling story technique) and needed to be adjusted to make it suitable to the circumstance. Fourth, parent interference, however, the objectives and instructions were explained clearly beforehand to avoid parents' translating any content in Thai to learners which might impact the results. Thankfully, they cooperated well, and the results were accurate to the reality and participants' performances.

Recommendation

1. Implications

The suggested implication of the study is derived from the results and findings of this study that implementing Digital Storytelling (DST) in the classrooms not only supports students to acquire new words effectively but also makes a learning atmosphere positive and enjoyable for all. Digital Storytelling (DST) should be applied in classroom settings as a teaching learning tool in every subject and at every level because the effectiveness together with useful characteristics that provides learners an opportunity to develop their vocabulary acquisition and create positive attitudes toward learning the target language and other subjects. Before commencing activities, 1) directions and procedures should be given and explained to students clearly, and 2) the selected digital storytelling must be viewed and assure that it is suitable to learning content, students' ages, and social backgrounds, including a proper language. Finally, Digital Storytelling (DST) is a great teaching and learning tool but interacting with the target language in real-life context can build learners' experiences, confidence and getting familiar with the language are the most important core of a language learning. Consequently, use the technology wisely by applying it in classrooms with meaningful follow-up activities to offer them chances to be successful language users.

2. *Suggestions for further studies*

More research should be conducted with 1) other levels, such as primary level, 2) more participants and 3) longer duration for data collection to expand the results and find out whether Digital Storytelling (DST) would empower other level students' vocabulary acquisition similarly.

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