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Undercover game to improve vocabulary mastery among Indonesian English course students: An action research study

Wayan Gian Nita Pertiwi[1], **Adaninggar Septi Subekti**[1*]
[1]Universitas Kristen Duta Wacana, Indonesia
***Corresponding Author. Email: adaninggar@staff.ukdw.ac.id

Abstract

This study aimed to investigate the extent to which the use of the *Undercover Game* could improve Indonesian English course students' vocabulary mastery. The study involved eight senior high school students enrolled in an English course at an institution in Yogyakarta, Indonesia. A Classroom Action Research (CAR) design was employed, consisting of three cycles, each of which included planning, acting and observing, and re-planning phases, with an observation checklist and field notes used as data collection instruments. Pre-tests and post-tests were conducted before Cycle 1 and after Cycle 3, respectively. Based on the observations, using the *Undercover Game* helped students find and practice English vocabulary in a fun and engaging way. However, the results of a paired sample t-test indicated that there was no significant difference in these students' vocabulary mastery before and after using the game. These findings highlight the importance of tailoring instructional game rules, designs, and implementations to fit classroom conditions, including adjusting the difficulty level of the games and providing necessary support during gameplay. Future studies could investigate the use of the *Undercover Game* over a longer period to obtain more comprehensive findings.

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INTRODUCTION

Vocabulary is a central and essential part of learning English (Alqahtani, 2015; Endarto & Subekti, 2020). In a canon work on how to teach vocabulary, Thornbury (2002) stated that vocabulary is a basis to develop language mastery and communication in all language skills. Words are the root of communication, and consequently, a strong vocabulary improves all areas of communication (Akdogan, 2017). Regardless of how well learners grasp grammar or speak fluently, meaningful communication cannot occur without a clear understanding of word meanings (Sekhar & Chakravorty, 2017). Students are expected to comprehend the context of words and to understand how to produce them in written and spoken words, and only then will students reach a successful target language use (Akdogan, 2017; Zhi-liang, 2010). The acquisition and learning of English vocabulary can be achieved in various ways and in the process, students need to be provided with opportunities through repetitions and exposure to the words they learn (Laufer & Rozovski-Roitblat, 2011; Rott, 1999; Subekti, 2020).

Furthermore, several factors affect vocabulary learning. These factors include belief, attitudes, motivation, language learning experiences, field of study, course type, class level, gender, language learning environment, language achievements, language proficiency, and vocabulary knowledge (Boonkongsaen, 2012; Pardo, 2004). From these arrays of factors, teachers have to find proper treatments to make sure that students feel welcomed and convinced to learn (Boonkongsaen,

2012; Hartmann & Gommer, 2021; Pardo, 2004). These treatments can take various forms and good teaching techniques involving games could help facilitate students to learn vocabulary meaningfully in a fun and enjoyable way (Akdogan, 2017).

There are two classifications of language games offered by Hadfield (1984); competitive games and cooperative games. Competitive games are games requiring players to become the first. Cooperative games, in comparison, necessitate group work to reach the goal of games. Derakhshan and Khatir (2015) suggested that implementing games for vocabulary learning could make the class atmosphere more interesting and motivating for students. Hadfield (1984) further mentioned that there are several types of games to learn vocabulary; movement games, board games, dice games, drawing games, role-play games, singing and chanting games, team games, word games, and card games.

Recently, several studies have investigated the use of games and vocabulary mastery in various English as Foreign Language (EFL) contexts, for example, in Iran (Alavi & Gilakjani, 2019), Saudi Arabia (Alfadil, 2020), and Taiwan (Chen & Hsu, 2020; Gu & Lornklang, 2021). Specific to the Indonesian context, several studies have also investigated the uses of various games to improve students' vocabulary mastery at various educational levels (Aeni et al., 2019; Agustina, 2018; Anwar & Efransyah, 2018; Diana & Suryani, 2020; Indrawati, 2016; Permatasari, 2019; Prabantari et al., 2014; Putra, 2023; Rahmah & Astutik, 2020; Rosyidi & Nahartini, 2022; Syahr & Kareviati, 2022; Wulansari & Azizah, 2018). For example, a study by Diana and Suryani (2020) study in a Junior High School in Sumatera investigated the use of Word Tail Games used in a Classroom Action Research (CAR) study. It was reported that the game not only improved students' vocabulary but also boosted their confidence. Another CAR study involving Junior High School students was conducted by Permatasari (2019). She implemented the Top and Tail Game. Despite the challenges in managing the class at first, Permatasari (2019) as the teacher researcher of the study could facilitate her students to improve their vocabulary mastery. In a quasi-experimental study involving Indonesian university students, Aeni et al.(2019) also reported that the use of circle games had improved students' motivation to learn vocabulary as well as their vocabulary comprehension.

The plethora of research studies on games and vocabulary suggested that the potentials of games need to be further explored in classroom contexts. For this reason, trying new games for better instructional practices may be desirable. Regarding this, one of many card games that can be practised is Undercover Game. Whilst the use of Undercover Game may not be very popular in educational contexts, some studies, albeit a minority, have tried to investigate the potential of using this game for learning at Junior and Senior High School levels in Indonesia (Ekayanti et al., 2021; Rosyidi & Nahartini, 2022; Syahr & Kareviati, 2022). For instance, a pre-experimental study by Ekayanti et al. (2021) involving 31 Indonesian Senior High School students reported that using Undercover Game could improve students' pronunciation and reduce their hesitation in speaking. Furthermore, the other studies (Rosyidi & Nahartini, 2022; Syahr & Kareviati, 2022) aimed to see whether the game could improve Junior High School students' vocabulary. Dubbing the game a "party game", the study by Syahr and Kareviati (2022) reported the ease of using the game to learn vocabulary in class. The quasi-experimental study by Rosyidi and Nahartini (2022) reported that the game strongly affected students' vocabulary achievement. These findings may suggest the potential of using Undercover Game for language learning. For that reason, it becomes worthwhile to see whether the game can be utilised to improve learners' vocabulary in different learning contexts.

Among learning contexts, fairly under-researched are private English courses. A study by Suryasa et al. (2017) reported that English Course students tended to be more motivated to learn English than those who learned English only at school. They exerted more effort in their learning, going beyond their regular class hours to learn English. Thus, involving private English course students could potentially offer new insights into the plethora of literature, which was thus far fairly overwhelming, with studies involving participants from regular schools. That being said, it could be strategic to conduct a CAR study aiming to find teaching improvements and innovations (Mertler, 2019) and involve private English course students as the participants.

The present study aims to answer this research question: To what extent does the use of Undercover Games improve English Course students' vocabulary mastery? The rationales for conducting the present study are as follows. First, the Undercover Game is quite underused in classroom contexts, even though it is probably quite popular in recreational settings. Several previous CAR studies implementing the game found it to benefit learners' learning. For this reason, the game can be seen as a potential learning medium that can enhance learning in different contexts. Specifically, private English courses could be a strategic context for trying this game, considering that existing studies have overwhelmingly been conducted in regular schools. Additionally, learners at private courses may demonstrate more learning effort as they are willing to study English beyond regular class hours. Thus, conducting a CAR study on an underused game like the Undercover Game in a private course learning context can potentially provide valuable insights for both education researchers and English language practitioners.

RESEARCH METHOD

Research Design

This study was conducted using Classroom Action Research (CAR) by (Kemmis et al., 2014). The CAR is essentially a learning-by-doing method for teachers which is implemented to get new experiences and new inventions in teaching (Kemmis et al., 2014; Mertler, 2019). CAR focuses on the need of understanding how things are happening, rather than merely on what is happening. It is used, among others, to improve the quality of content, process, and learning outcomes in class and to create a proactive attitude in improving the quality of learning in schools (Kemmis et al., 2014). The authors further divided the research procedures of CAR into four steps in one cycle. These are planning, acting and observing, reflecting, and re-planning, as can be seen in Figure 1.

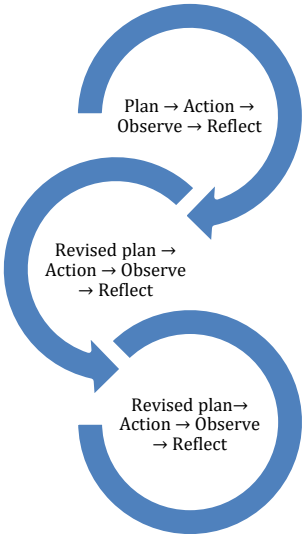

Figure 1. Cyclical CAR Model (Kemmis et al., 2014)

The CAR concept by Kemmis et al. (2014) is a cycle stage that can be repeated until the goal of a study is considered to be achieved (Asrori & Rusman, 2020). In this study, three CAR cycles were conducted and in each of the cycles, the following procedures were taken.

1. Planning
   The first researcher of this study prepared lesson plans and learning media (the Undercover application *Undercover: The Forgetful Spy* and Undercover Game cards). She also designed the pre-test to be conducted in Cycle 1 and the post-test to be conducted in Cycle 3.

2. Acting and Observing
   The researcher conducted a pre-test in Cycle 1 to assess students' vocabulary mastery by implementing the Undercover Game. During the implementation, she observed students' behaviours towards the Undercover Game by making field notes and recording the activities in class. Specifically, at the end of Cycle 3, she also asked the students to do the post-test.

3. Reflecting
   The researcher reflected on each cycle from the observation field notes on students' behaviours in the previous cycle. Based on the results of the reflections, she maintained good practices and improved or modified practices deemed less effective in the previous cycles. For example, she decided not to use the *Undercover: The Forgetful Spy* application in Cycles 2 and 3 and used Undercover Game cards instead because the students were not very enthusiastic about using the application in Cycle 1.

4. Re-planning
   The re-planning step was conducted twice in Cycles 1 and 2. Its purpose was to make better lesson plans in the following cycles based on the results of the reflection stage.

In this study, the CAR adopted a mixed-method design (Mills, 2007) where qualitative data from class observations and the results of the pre-test and post-test were used to know the extent to which Undercover Game could improve students' vocabulary mastery. Apart from the main goal of CAR, to try new class practices for better learning, the application of CAR in this study was also attributed to the popularity of CAR in the field of games and vocabulary. For example, several studies about games for vocabulary in Indonesia were conducted using CAR (Agustina, 2018; Asniwati et al., 2018; Mansur & Fadhilawati, 2019; Nugroho et al., 2012; Permatasari, 2019; Prabantari et al., 2014).

Research Participants

This study's participants were eight Senior High School students who were taking Pre-Intermediate English at a private English course in Yogyakarta, Indonesia. Seven of these eight participants were females, and the other one was male; seven were in their first year of Senior High School, and the other one was in her third year. Their ages ranged from 15 to 17. These participants were recruited based on convenience sampling. It means that the recruitment of these participants was based on the easier access (Gray, 2022).

Research Instruments

This study used the following instruments: observation checklist and field notes, pre-tests and post-tests. The observation checklist and field notes were used to note down the students' behaviours when they were playing the game. In this study, the pre-test consisted of 30 questions in the form of matching, filling out the blanks, and describing the pictures. The post-test conducted after the implementation of Undercover Games for three cycles consisted of 30 questions in the form of multiple choices, filling out the blanks, and making sentences.

The procedure of Undercover Game

The procedures of the implementation of Undercover Game in three cycles can be seen as follow.

1. The first researcher distributed sheets containing the instructions for the game written in the Indonesian language, the first language of the students. She then explained the game instructions orally. She explained that students would be divided into three identities namely Undercover, Civilian, and Mr. White.
2. Students would have categories to be handed out in the cards, for example, public places with words such as "museum" and "library" as seen in Figure 2.

Figure 2. Examples of Undercover Game Cards

3. Students should look for a word related to the secret word. Only the civilians had the secret word. In Figure 2, the secret word is "museum". As can be seen in Figure 2, Mr White did not obtain get any word, so he/she had to pretend to know the secret word.
4. After students understood the explanations, the researcher asked each of the students to take a card.
5. She would mention the part of speech that students had to find related to the secret word they obtained. The students were given around one minute to find the related word from online or offline sources. Only the civilians had the secret word (see instruction 3). However, all the students had to pretend they knew the secret word and the civilians had to be clever enough to deceive the others by not mentioning the word explicitly.
6. The researcher asked the students in turn to mention the word related to the secret word. For example, Civilian could say "picture" (which does not represent a museum); Undercover could say "shelves" (which does not represent a library); and Mr White could say "cupboard" (they could mention the word by collecting clues from other players).
7. In this game, Civilian was expected to win because the word referred to in this game only belonged to Civilian. After one round was over, the researcher asked the students to point to the person who was suspected of being Mr White or Undercover.
8. After the voting, the researcher revealed the card of the eliminated player. After that, the eliminated player must list all the words mentioned by friends who were still in the game.
9. This game was repeated until there were only two identities left and after the last round was finished, the researcher announced the winner.

Data Collection and Data Analysis

The three CAR cycles were conducted from 3 March up to 10 March 2023 by the first researcher with the guidance of the second researcher. The pre-test was conducted before Cycle 1 on 3 March whilst the post-test after the end of Cycle 3 on 10 March. The topics for each cycle can be observed in Table 1.

Table 1. The Schedule of the CAR and the Topics

No.	CAR	Date	Topic
1.	Cycle 1	March 3, 2023	Disease, Symptoms, and Giving Advice
2.	Cycle 2	March 7, 2023	Positive and Negative Imperatives
3.	Cycle 3	March 10, 2023	Adverb of manners

The CAR observation results were reported in detail descriptively per the research question of this study. Furthermore, the pre-test and post-test results were recorded into SPSS 25 to be analysed using a Pair-Sample T-test.

Ethical Consideration

This study applied four basic principles of research ethics, autonomy, confidentiality, beneficence, and non-maleficence (Gay et al., 2012). The participants' autonomy was guaranteed through the use of observation consent forms. Confidentiality was also maintained by not mentioning the name of the private English course institution and the names of the students involved in the observation and tests to avoid data misuse (Gray, 2022). The research activities were also deemed safe and did not harm students, teachers, or the English Course (non-maleficence). Research activities also prioritised mutual agreements between researchers and the English Course institution without burdening either party (beneficence).

FINDINGS AND DISCUSSION

Observation and reflection results of Cycle 1

At the first meeting, the class teacher taught about disease, symptoms, and advice. The teacher conducted the presentation in 45 minutes. Afterwards, the first researcher took over the class and implemented the Undercover Game for 30 minutes. The following are the results.

> During the game, the first researcher prepared the Undercover Game application, *Undercover: The Forgetful Spy*, which was played using only the researcher's phone. The eight students were given some time to read the instructions before the game started. In the first round of the game, the researcher asked the students to mention the symptoms of the secret words, which were "insomnia" and "headache." They could pass or choose to skip if they could not come up with a word. Two students skipped their turns. Some vocabularies were mentioned such as "vision change" and "fainting." In the second round, the first researcher asked the students to explain the cause of the disease. In this round, the students seemed to be more familiar with the game and they also tried to say the words in phrases. In the third round, the researcher asked the students to give suggestions or advice about the secret words and some words appeared like "taking medicine" and "not staying up late."

Reflecting on what had been obtained in Cycle 1, several plans for Cycle 2 were formulated. These can be seen in Table 2.

Table 2. The Reflections of Cycle 1 and Plans for Cycle 2

	Reflections	Plans
1.	The students were still getting familiar with the instruction of Undercover Game so they needed some trials to get accustomed.	The first researcher would re-explain the instructions in Cycle 2.
2.	The time to get the card and identity through the Undercover Game application took a very long time. Some students also did not seem to be enthusiastic because they could not see their identity on the card they had as there was only one phone. They had not installed the application on their respective phone.	Undercover Game cards would be used in the following cycles. It was to reduce the time consumed for taking cards and to allow each student to see their respective identity.

Observation and reflection results of Cycle 2

Five students attended the class in Cycle 2. With the topic of "Positive and Negative Imperatives." The main teacher opened the class with a presentation which took about 45 minutes. After the teacher presented and gave the exercise to students to finish, the researcher took over the class for 15 minutes for the game. The following are the results.

Conventional cards were used in this cycle. The secret words were "library" and "museum." The first researcher divided the instructions of each round into characteristics of the place that directed the students to mention nouns and the do's activities which directed them to mention verbs. The students by then seemed to have been familiar with the instructions of the game and gave extra effort to win. Learning from the previous cycle, the first researcher gave students more time to find words through various platforms such as *Google Translate, Quillbot,* and *U-dictionary* for one minute. As a result, they were able to find new nouns. They mentioned "statues", "shelves", "old stuff", and "convenient places". They also mentioned verbs like "sightseeing", "look around", and "explore".

Reflecting on what had been obtained in Cycle 2, several plans for Cycle 3 were formulated. These can be seen in Table 3.

Table 3. The Reflections of Cycle 2 and Plans for Cycle 3

	Reflections	Plans
1.	The game was too short to play because only five students attended the class. The first researcher needed more preparation to conduct more games well.	She would plan more games in case there was still much time left to play the game.
2.	The students needed more chances to apply the words they had found to the material they had learned.	The first researcher would add more instructions to make sentences using the words students had mentioned.

Observation and reflection results of Cycle 3

Eight students attended the class. The material was about adverbs of manners. After the teacher taught it for around 45 minutes, the first researcher took 20 minutes to conduct the third cycle of the Undercover Game and the post-test. The following are the results of observation in Cycle 3.

In this game, the students were asked to find adjectives and adverbs. The first researcher gave students one minute to prepare. The secret words in this cycle were "baby" and "older people." Three students mentioned the adjectives "cry", "child" and "care" as adjectives and "tiny" as an adverb. The researcher immediately corrected them. Students could also mention "adorable", "slight", "dainty", and "noisy" as adjectives. During this cycle, the researcher tried to emphasise the adjectives and adverbs and asked the students to keep listing all the words they heard in their notebooks. Cycle 3 was running very well. The students could follow the instructions given and dealt with some pronunciation corrections by the researcher. They seemed to enjoy the game better than in the previous two cycles. In the last round, the researcher asked students to apply the adjectives and adverbs they had found in the sentences according to the adverbs of manners.

Pre-Test and Post-Test Results

The results of the pre-test and post-test can be seen in Table 4, where six students obtained higher grades in the post-test after the game, whilst two students obtained lower grades in their post-test. A paired sample t-test was performed to determine whether there was a significant difference between the pre-test and post-test. The results can be seen in Table 5.

From Table 4 and Table 5, it can be seen that even though the post-test mean score *(M= 64.00)* was higher than the pre-test mean score *(M= 58.25)*, there was no statistically significant difference between the two scores before and after the Undercover Game was introduced to the classroom *(p > .05)*.

Table 4. Pre-Test and Post-Test Results

No	Students (pseudonyms)	Pre-test score	Post-test Score
1.	Jojo	75	82
2.	Angel	37	58
3.	Melan	57	53
4.	Sisca	57	67
5.	Tya	57	65
6.	Rasty	47	45
7.	Rere	63	65
8.	Sumi	73	77
	Total Score	466	512
	Mean Score	**58.25**	**64.00**

Table 5. The Results of Paired Sample T-test of Pre-test and Post-test Scores

Pre-test (N=8)		Post-test (N=8)		T-test	Sig.
M	***SD***	***M***	***SD***	***t***	***p***
58.25	12.57	64.00	12.08	-2.08	.08

The finding of this study was different from those reported in previous studies on the uses of games for vocabulary, where they reported statistically significant effects of the uses of games for vocabulary (Alavi & Gilakjani, 2019; Alfadil, 2020; Chen & Hsu, 2020; Gu & Lornklang, 2021). In Taiwan, Chen and Hsu (2020) found that there was a significant improvement in students' vocabulary scores of college students after the implementation of a serious game *Slave Trade* ($t = 66$, $p = .00$). Several experimental studies through independent sample t-tests also reported that their games were attributed to significant differences in vocabulary mastery. Gholamreza and Pourhosein (2019) found that their experimental class outperformed the control class after implementing a bingo game ($p = .00$). Similar results were also reported in Taiwan after the implementation of the Picture-word Game (Gu & Lornklang, 2021) and in Saudi Arabia after the implementation of Virtual Reality Games *($p < .05$)* (Alfadil, 2020). Furthermore, the findings of the present study were slightly similar to those of an experimental study by Saleh and Althaqafi (2022) in a Saudi Arabian kindergarten context. They found no significant difference in the vocabulary mastery of the students in the experimental group after the implementation of educational game tools *($p = .89$)*.

Regarding this study's findings, qualitatively, as observed in the three CAR cycles, students produced new words and seemed very excited about the game. They understood the instructions and could produce new words as required. Nonetheless, the observable behaviours where students seemed to learn new words were not manifested in the significant improvement of vocabulary mastery, as seen from the t-test results. This may happen because of several possible factors.

First, the instructions for the Undercover Game may seem complicated for those who have never played it before. Two of the eight students still asked how to play the game even though they were already given the instruction paper. Hartmann and Gommer (2021) reported that using educational games with clear and communicative explanations of the game instructions can lead to successful game implementation. However, due to the limited time available for conducting the game, clear instructions may not have been effectively delivered in this study. As a result, students only became familiar with the game as they played it.

Second, the three cycles in three meetings may be too short for vocabulary learning and this may negatively affect students' understanding of the material and the game to make them get used to it. As a comparison, a qualitative study by Syahr and Kareviati (2022) involving 28 Junior High School students as the participants produced generally positive results in students' engagement and vocabulary development after spending 4-6 meetings implementing Undercover Game. A rather old

yet relevant study (Rott, 1999) aimed to know how long exposure was needed by students to get used to getting an understanding of vocabulary. Rott (1999) found that students needed at least six times exposure to vocabulary. In line with that, Alfadil (2020) conducted more than 12 meetings of experimental research, each lasting 35-45 minutes. Alfadil (2020) and Chen and Hsu (2020) agreed that repetition and exposure helped students remember the vocabulary and get used to the vocabulary quickly and consistently.

Furthermore, learning vocabulary through games could be fun, so students looked excited while doing it; in comparison, the atmosphere of the tests could be perceived as serious, and this may play a part in affecting students' achievement in the tests, either positively or negatively. As observed during the CAR cycles, when the game was about to be held, the students looked excited and looked forward to it. The use of Undercover Game could build enthusiasm to learn as well as to play. During the Undercover Game, the students were enthusiastic about winning. This enthusiasm, however, was not manifested in the post-test results. When playing games, students were not required to be successful in vocabulary. They just needed to enjoy the game and be a winner. However, in the test, apart from the time allotted, 25 minutes, students who already knew the purpose of the research might not take the test seriously because it did not affect their grades in the English course. Concerning this, a study by Penk et al. (2014) found that students would perform well, be more concentrated, and be motivated when facing high-stakes tests rather than low-stakes tests. The more useful the test is perceived by students, the more motivated they are to get a high score (Penk et al., 2014).

All in all, several important points can be taken away from the present study. As observed in the implementation of three CAR cycles, students were enthusiastic about learning new vocabulary through Undercover Game. Nonetheless, there was no significant difference between their pre-test and post-test results, indicating that the improvement of their vocabulary, however observable during the CAR cycles, was not much. These findings may be caused by several factors mainly attributed to several limitations during the implementation of the game. In the future implementation of Undercover Game, the game may be used in a small class. Considering that the steps of the instructions in the Undercover Game are quite long, it is not recommended to implement the game in a large-scale class unless the class has been divided into several small groups where each group has a representative who fully understands how to play the game. Finally, despite all the possible limitations, the present study may encourage teacher researchers to continually find innovations based on which better learning for students can be achieved.

CONCLUSION

This study contributes to adding new insights into the plethora of literature on the use of games for vocabulary learning, dominated by experimental studies. In this sense, the CAR study offered a unique addition, which, despite its lack of generalizability in a wider context, may inform teacher researchers in Indonesia and beyond of the potential of continuous vocabulary teaching innovations. This includes implementing a game like Undercover Game, which was thus far rarely used in educational contexts.

Implications of the findings of this study can be outlined as follows. The lack of significant impact of the Undercover game on vocabulary development in this study may also inform teachers on the importance of adjustment to the condition of the class. That is when an instructional game is used, teachers should consider whether a certain game should be modified in terms of rules, design, and implementation. This includes adjusting of the game's level of difficulty to match learners' proficiency level, incorporating specific vocabulary for practice, and providing necessary support during gameplay to ensure that learners could actually catch up with the game.

This study has several limitations. First, as the game was rarely used in educational contexts, there were not many research findings with which the findings of this study could be compared. Second, in this study, the researcher facilitating the game was not the teacher of the course. She was only given 15-30 minutes to conduct the game after the teacher finished the class sessions. This greatly reduced the flexibility of implementing the game as well as the exposure to the game, probably resulting in not very optimal results of vocabulary learning. Furthermore, as this study was CAR, conducted in a specific context with a limited number of participants, the findings of this study are

not to be generalised to a wider context. Though a degree of replication may happen in contexts sharing the same characteristics, another CAR study may be necessary. That being said, future studies may explore the use of the game for longer periods in different educational contexts, for instance, outside Indonesia.

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